Appendix 1

Extinction Risk and Long-Term Population Viability for Florida Scrub-Jays Under Five Alternative Reserve Designs in Charlotte County

Preliminary Results

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These are preliminary results of spatially-explicit population viability simulations to test the long-term viability of Florida scrub-jay populations under a variety of potential Reserve Designs and management options. The Reserve Design Alternatives are based on the document "Charlotte County Scrub-Jay Habitat Conservation Plan: Reserve Design Alternative Decision-Making Rules" produced by Quest Ecology in collaboration with the Technical Advisory Committee. Alternatives include: 1) a Baseline which includes all suitable and potentially suitable scrub-jay habitat on public and on private lands, but only where development has not yet exceeded 40%, (development is defined as parcels containing a structure within our potential and suitable scrub-jay habitat polygons). This alternative assumes that all private lands are acquired, and all are managed to ensure optimal habitat conditions exist for Florida Scrub-Jays. Alternative 2 is the most conservative and is comprised only of existing public lands with suitable and potentially suitable scrub-jay habitat. This alternative assumes little or no acquisition, but that all public lands are managed for optimum conditions. Alternative 3 includes all public lands and only those private lands that are least fragmented and have <20% development within suitable and potentially suitable scrub-jay habitat. Alternative 4 includes all public lands, least fragmented private lands with <20% development immediately adjacent to public lands, and/or private lands with suitable or potential scrub-jay habitat that could be managed as corridors between public lands. Alternative 5 included all public lands, private lands that were considered essential corridors, and contiguous polygons of scrub habitat >20-25 acres that occurred within suburban developments, but that had no houses within the polygon boundary. We specifically sought only polygons that were more regular than irregular (spider-like) in shape because the latter would be far more difficult to manage within an urban landscape.

For Alternative 5, we modeled three variations. In the first, we assumed all jays within existing suburban developments, regardless of the preserve polygon size in which they occurred, we modeled using suburban demographic performance. However, because the selected polygons are potentially manageable, we also conducted a simulation in which the jays within protected polygons had optimal demographic performance but all other jays in unprotected suburban habitats had suburban demographic performance. We caution that substantial data exists that even in these manageable patches within suburban habitat, optimal demographic performance may not be achievable, but the simulation results provide insights into the possible effect of extinction risk if the assumption were met. Finally, to simulate the possible effect of translocation, we included one simulation of Alt 5 in which all patches were occupied and all protected patches had optimal demographic performance. Substantial Florida scrub-jay populations that occur within highly developed areas of Englewood and Deep Creek were not included in any of the Reserve Design Alternative because development in these areas is greater than 40%. However, these jays were included in each of the simulations. We do not expect these birds to persist, but they might provide a source of immigration and colonists to move to and sustain populations on public lands.

Ultimately, these simulations will present the data in a spatially-hierarchical format, starting with simulation results for the entire county, then for four regions within the county (West County, Mid-County, Deep Creek, and Prairie Creek), and then for each patch within the four regions. The simulation presented here is for the entire county and does not include simulations that may reveal regional and patch dynamics. For example, for the county-wide simulation, we assumed that all habitat patches included in each alternative research design was occupied at its maximum carrying capacity, which is an optimistic scenario because we know that patches within the county are fragmented and potentially isolated, thereby reducing the probability that even with appropriate management, maximum carrying capacity could be reached. However, this is not an unrealistic scenario because translocation could be

used to move birds from larger well-connected portions of the Charlotte County landscape to these more isolated preserves.

Because several of the Reserve Design Alternatives include patches designated specifically as corridors to facilitate movement between occupied patches (Alternatives 3, 4, and 5), we conducted two different modeling runs for every simulation with different assumptions about dispersal. Even models specially tailored to the biology of a single species suffer from some uncertainty. We know more about the stage-specific survival and fecundity of the Florida scrub-jay than for most other birds, but we still know relatively little about the specific search and dispersal strategies of jays, especially as they differ relative to landscape configuration. We do know that jays travel farther in fragmented habitat than they do in contiguous habitat, but those birds that travel farther appear to be less successful. Because of this uncertainty and the relative importance of dispersal in providing demographic rescue in fragmented habitat, we ran each scenario using two sets of dispersal parameter settings, corresponding to "high" and "low" dispersal ability (Table 1). All settings were identical except for certain parameters affecting dispersal. In the following table, we provide two simulation results, the first derived from simulation with the assumption of "low" dispersal and the second under the "high" dispersal assumption. We do think that the assumption of high dispersal is valid for the fragmented landscape in which jays occur in Charlotte County.

We provide the starting population size at the start of the simulation. Because potential habitat for Florida scrub-jays in Charlotte County can be characterized as Type 1 (xeric oak scrub, ideal for Florida scrub-jay) and Type 2 or 3 habitats (non-scrub habitats in which jays might occur if associated with Type 1 habitats) and because Type 2 and 3 habitats sometimes have small patches of xeric oak scrub that is difficult to detect using soil maps or even aerial photo interpretation, we determine the maximum carrying capacity for each size depending on the relative proportions of Type 1 and Type 2-3 habitats. For all Type 1 habitats, we assumed the maximum carrying capacity as the total acres divided by 25 acres, the size of a typical scrub-jay territory. When Type 2 or 3 habitats occurred within a patch, we also used a ratio of one jay group per 25 acres for the area of Type 2 or 3 habitats that equaled Type 1 habitat. When additional Type 2 or 3 habitats occurred or when it occurred within a patch where no Type 1 habitat occurred, we assumed a density of 1 scrub-jay group per 100 acres. However, we also assumed that not all habitats could be managed and occupied by jays simultaneously. For example, some habitat was likely to have recently been burned or some might be too long since last burn and, in both cases, might not be occupied. Thus we assumed a managed carrying capacity at 70% of the total carrying capacity. For example, if a site was 100 acres, comprised of 25 acres of Type 1 and 75 acres of Type 2, then the carrying capacity was calculated as follows: 50 acres (Type 1 habitat and the equivalent acreage of Type 2)/25 acres, plus 50 acres of remaining Type 2 habitat/100 acres with the result multiplied by 0.70, or [(50/25) + (50/100)] * 0.70, which is a carrying capacity of 1.75 groups. However, in some patches, especially private lands where some human development had occurred, we used the same estimate as for Type 1 habitats (i.e. 1 group per 25 acres). Scrub-Jay territories in suburban habitats are considerably smaller than in fire-maintained natural habitats, but some habitat is not suitable because of the human development, thus the 1 group per 25 acres was a compromise between potentially higher density in scrub habitat and loss of some of that potential habitat to development.

Table 1. Dispersal parameters under assumptions of low and high dispersal tendancies[1].

Parameter[1]	High dispersal		Low dispersal	
	Male	Female	Male	Female
Delay-and-foray dispersal				
Assessment sphere (# terr)	7	4	7	4
Prob. settling w/ unpaired breeder	1.00	1.00	1.00	1.00
Prob. settling in unoccupied	0.75	0.75	0.75	0.75
Floater dispersal				
Prop. 1st year helpers disapp. becoming floaters	0.50	0.75	0.25	0.75
Prop. older helpers disapp. becoming floaters	0.50	0.75	0.25	0.75
Prob. settling w/ unpaired breeder	1.00	1.00	1.00	1.00
Prob. settling in unoccupied territory	0.50	0.50	0.50	0.50
Prob. settling as helper	0	0	0	0
Detection radius (meters)	1500	1500	1000	1000
Daily survival in permeable habitat (scrub)	0.9988	0.9988	0.9988	0.9988
Daily survival in neutral or avoided (non-scrub)	0.8700	0.8700	0.8700	0.8700
Daily movement distance	Inverse	Inverse	Inverse	Inverse

[1] All dispersal parameters derived from Stith 1999.

Similarly, these different habitat types have different effects on scrub-jay demographic rates. Where jays occurred in Type 1 or the equal area of Type 2-3 habitats, we used optimal scrub-jay demographic rates. However, when the birds are confined to Type 2-3 habitats we used suboptimal demographic rates. Similarly, when scrub-jays occurred in landscapes where some human development had occurred, we used suboptimal demographic rates. We used the same rates for both suburban and suboptimal native habitat (Table 2).

When conducting the regional and patch-specific we have the opportunity to test some additional hypotheses about the implementation of the Reserve Designs. For example, we could begin some simulations with the total number of jays within a patch below carrying capacity to see if the rate of immigration into that patch is sufficient to reach carrying capacity within the simulation time. This could reveal whether the corridors established in certain Reserve Design Alternatives were adequate and whether translocation might be necessary to achieve simulation population levels. Similarly, some patches are adjacent to Sarasota County and they are in the process of developing their own Habitat Conservation Plan. The success of Sarasota's plan could have a direct effect of the viability of scrub-jays within Charlotte County. We can repeat simulations with different management alternatives for Sarasota County, such as one with the "Status Quo", i.e. the extant distribution of jays in Sarasota County or one in which aggressive acquisition and habitat management results in a considerable increase in population numbers, distribution, or population viability. In most cases, these simulations had little effect on extinction risks. For example, whether Sarasota County conducted a HCP or not had little effect of reducing extinction risks in Charlotte County. This was somewhat surprising until we examined the amount of true connectivity between the counties. North of Eleanor Avenue and the Tippecanoe areas, jays occur largely within North Port. North Port was not a participant in the Sarasota County HCP and most of those birds occur within a suburban matrix, thus it is likely those birds go extinct during an simulation and contribute little to persistence in Charlotte County. Similarly in the

West County region, there appears to be strong connectivity to quite a few jay groups in Sarasota County; however, most of the jay families that occur within 8 km of potential reserve sites or public lands in Charlotte County are suburban jays, occurring in the Englewood or Venice suburbs. Relatively few jays occur in potentially manageable preserves within frequent dispersal distance on Sarasota County. Because the suburban jays go extinct in most simulations, a gap occurs during the simulation even though none appears at the start. These patterns functionally isolate Charlotte County from Sarasota County, thus the decision to pursue an HCP in Sarasota had little effect on the simulation outcomes in Charlotte County or for any region within Charlotte County. For this reason, we do not present results of the simulations under the assumption of the HCP, but only with the extant jays for that county.

Table 2. Demographic parameters assumed in the simulation models for Florida scrub-jays in optimal, suboptimal, and suburban patches[1,2].

Parameter	Optimal		Suboptimal or suburban	
	Male	Female	Male	Female
Survival				
First-year	0.350	0.300	0.243	0.220
Older helper	0.740	0.625	0.724	0.620
Novice breeder	0.740	0.740	0.720	0.720
Exp breeder w/ helpers	0.770	0.770	0.750	0.750
Exp breeder w/o helpers	0.800	0.800	0.760	0.760
Fecundity				
Novice breeder		0.50		0.25
Exp breeder w/ helpers		0.57		0.25
Exp breeder w/o helpers		0.77		0.25

[1] Optimal and suboptimal demographic performance derived from Woolfenden and Fitzpatrick 1984, 1996.
[2] Suburban demographic performance derived from Bowman 1998 and Bowman and Woolfenden 2002.

The following tables (2a and 2b) present the results from initial county-wide simulations. Each simulation was run for l00 years, and we repeated each run 100 times to provide a statistically robust picture of the projected outcome for each scenario. We provide both the mean and standard deviation for the 100 runs of each simulation and the results of both the low and high dispersal scenarios.

Results include the mean population size at the end of the 100 simulation runs, the extinction and the quasi-extinction (probability of the population following below 10 pairs) probabilities. All of these parameters can be used to estimate the viability of the population. At the county-level, all of these are relatively meaningful and without ambiguity. For example, both the extinction and the quasi-extinction probabilities represent the highest observed probability of extinction or quasi-extinction during each simulation rather than the terminal value at the end of a simulation. At the county-wide level, the values clearly correspond with extinction probabilities for the entire county and are thus easily comparable among Reserve Design Alternatives. At the patch level, these comparisons are more ambiguous since a small population with a maximum carrying capacity of less than 10 will necessarily have a quasi-extinction probability of 1.0, even though it might be stable and with long-term persistence, especially if it occurs within a well connected landscape.

Similarly, simulations that include empty patches that subsequently grow as a result of colonization or translocation would have an extinction risk of 1.0. Thus, especially in patch to patch comparisons, any single metric might be misleading; thus, it is useful to use all three. The relative difference between starting population size and mean population size at the end of simulations might be as useful or better an indicator that extinction risk.

These results suggest that extinction risk is relatively high in Charlotte County under all Reserve Design Alternatives, but is lowest under the baseline conditions and Alternative 5, especially when we assumed optimal demographic performance in large polygons within suburban habitats and that all protected polygons were fully occupied. It does seem clear that the existing public lands in Charlotte County (Alternative 2) are not adequate to sustain the population without additional protected lands that could 1) increase the size of populations occurring on protected, manageable lands, and 2) increase the connectivity between these properties.

It is possible that simulations with a more optimistic scenario for scrub-jay conservation in Sarasota County or scenarios in which we increased the relative attractiveness of corridor habitats for dispersal might alter these population projections, but we believe the relative differences among the five Alternatives are likely to persist.

Table 2a. Charlotte County habitat, pairs, and potential territories under Base Reserve Design.

Habitat	Acres		
Type 1	3191		
Type 2 and 3	8032		
Jays	Occupied 2009	Potential for Alt 2,3,4 and Base[1,2]	Potential for Alt 5
Optimal	16	102	149
Suboptimal	12	22	22
Suburban	132	187	140

[1] Potential excludes FSJs that fall outside of any potential reserve design

Table 2b. Charlotte County population simulation statistics.

	Base	Alt 2	Alt 3	Alt 4	Alt 5_sub	Alt5_opt	Alt5_opt_allocc
Total starting # of territories[1]	358	358	358	358	358	358	358
Proportion starting in reserve[2]	0.79	0.19	0.66	0.69	0.47	0.47	0.47
Proportion starting in private[3]	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Proportion starting occupied[4]	0.45	0.45	0.45	0.45	0.45	0.45	1.0
Mean ending population size Mean ending pop s.d.	5.34 – 49.30 4.63 – 21.08	1.12 – 18.17 1.08 – 7.54	3.43 – 39.35 1.68 – 16.48	4.25 – 45.57 2.71 – 22.03	4.01 – 42.96 3.41 – 18.75	14.52 – 84.38 11.80 – 26.42	30.61 – 104.52 15.39 – 25.48
Extinction risk	0.92 – 0.23	1.0 – 0.81	0.98 – 0.28	0.97 – 0.20	0.97 – 0.29	0.44 – 0.19	0.26 – 0.01
Quasi-extinction risk (10 pairs)	1.0 – 0.57	1.0 – 1.0	1.0 – 0.63	1.0 – 0.53	1.0 – 0.60	0.76 – 0.29	0.42 – 0.19

[1] Includes all FSJ groups at the start of a simulation, including groups that do not occur within any potential reserve design

[2] The proportion of all groups (occupied and unoccupied) starting a simulation that occur within the boundaries of an alternative reserve design

[3] The proportion of all groups (occupied and unoccupied) starting a simulation that occur on private property

[4] The proportion of all groups starting a simulation that are extant; the remainder are potential territories that habitat has the potential to support but are unoccupied at the start of the simulation

Appendix 2

Charlotte County Florida Scrub-Jay Habitat Conservation Plan

Technical Advisor Reserve Design Recommendations

In February 2011, a series of four alternative Reserve Designs were drafted, reviewed and approved by the Technical Advisory Committee (TAC). The four alternative designs varied in the amount of potentially suitable habitat that would need to be protected and managed to sustain populations of Florida scrub-jays in Charlotte County. These varied from a design that included only existing public lands to a base design which included all suitable and potentially suitable scrub-jay habitat on public and on private lands, but only where development has not yet exceeded 40% (development defined as parcels containing a structure within our potential and suitable scrub-jay habitat polygons). The reserve design alternatives did not consider social, economic, or political issues. To test the potential biological viability of each of these reserve alternatives, each alternative was evaluated using a spatially-explicit, individually-based Population Viability Analysis (PVA). This analysis considered whether each alternative protected enough scrub habitat in an appropriate spatial structure to minimize the risk of extinction for scrub and used the best available data on scrub-jay demography and movement patterns in similar landscapes.

In May 2011, Dr. Reed Bowman presented the results of the PVAs to the TAC for each of the four Reserve Design Alternatives. Overall, county-wide extinction risks were relatively high, so the TAC re-evaluated the potential reserve alternatives and decided to add an additional alternative. This fifth alternative included all public lands, all private lands that might serve as essential corridors between public lands, and suitable and potentially suitable habitat on private land in suburban areas where ≥ 25 acre contiguous 'blocks' of habitat free of residential or commercial development could be delineated. Blocks of potential scrub-jay habitat ranging from 25 – 90 acres were identified in suburban areas adjacent to Tippecanoe I and II, and within suburban developments in Eleanor Avenue, Deep Creek, Harbour Heights, North and South Gulf Cove, and Prairie Creek Estates. In contrast to Alternative 4, Alternative 5 added patches of potential habitat that exist within a suburban matrix of ¼ - ½ acre size lots, but only where they occurred in contiguous blocks of > 25 acres.

The PVA was then applied to Alternative 5 and the addition of suburban patches reduced the overall extinction risk for the county, but the effect differed among the various regions that had been defined by the TAC and spatially-delineated during the PVA. These regions were the West County (all of the County west of the Myakka River), Mid-County (east of the Myakka River and west of Deep Creek), Deep Creek, and the Prairie Creek region (east of the Peace River). The effect of Alternative 5 on reducing extinction risk was highly variable among regions, largely because the greatest reduction in extinction risk under Alternative 5 occurred only when we also assumed that optimal demographic performance could be achieved in these suburban patches and when the model simulation began with all potential patches at carrying capacity. The validity of these two assumptions varies among the four regions.

Alternative 5 did little to reduce extinction risk in the West County, largely because the potential habitat has the capacity to support only about 30 srub-jay groups and these are relatively fragmented from one another. Even within the suburban developments of Gulf Cove North and South, relatively little potential habitat existed in large contiguous blocks without human development. Thus, Alternative 5 varied little from Alternative 4. In addition, most of the

potential connectivity with Sarasota County exists through dense suburban development in the Venice region where scrub-jay populations are declining rapidly and likely to be extirpated in the near future creating nearly complete isolation from scrub-jay populations to the north.

In the Mid-County region, Alternative 5 reduced extinction risk only when we assumed both optimal demographic performance and full occupancy. However, in this region these assumptions are unlikely to be valid. Most of the added parcels occur in dense suburban development. The best available data suggest that suburban populations, even at relatively low human densities, are unlikely to achieve optimal demographic performance regardless of habitat quality (Bowman 1998; Breininger 1999). Identified parcels in the Eleanor Avenue area consisted entirely of ¼ - ½ acre platted lots, thus acquisition would be extremely difficult and the mosaic pattern of public and private lands that is the frequent outcome of land acquisition in "megaparcel" projects such as these, often prevents the effective application of management, such as prescribed fire. However, some public lands already exist in this region and these are managed specifically for scrub-jays. Alternative 5 identified potentially suitable parcels adjacent to the Tippecanoe sites that, if acquired, could add to the contiguous acreage of the public sites and could be more easily managed, thus increasing the viability of populations on those public lands. This likely contributed to the relatively low extinction risk observed during some model simulations for this region.

Despite having the largest population of extant scrub-jays among the four regions, Deep Creek had a relatively high extinction risk in all PVA alternatives, including Alternative 5. As with the Mid-County region, the assumption of optimal demographic performance for this region is questionable because all birds occur within a relatively dense suburban matrix. However, Deep Creek is a source for dispersing jays to both the Prairie Creek and Mid-County regions (K. Miller, unpubl. data), thus a strategy of preserving jays in this region for as long as possible increases the probability that protected lands in these other regions reach their carrying capacity as they are managed and/or restored because of emigration from Deep Creek. This function may eventually decline as the populations in Deep Creek decline, but maybe only after the other regions attain maximum carrying capacity. This increases the validity of our optimal and all-occupied assumptions for those regions and increases the probability that we achieve the modeled extinction risks for those regions.

For the Prairie Creek Region (East County), Alternative 5 reduced extinction risks only a small amount relative to Alternative 4, largely because few dense suburban areas exist in this region. This region has the lowest extinction risk of all regions and is probably the primary source of long-term persistence for scrub-jays in the entire county. Potentially suitable habitat on private lands in this region occurs in an exurban matrix of parcels of 5 acres or greater and, as such, had been included in Alternative 4. Fewer data exist on the viability of jays in an exurban matrix, since previous research on urbanization and jays was conducted in suburban areas with lot sizes of ¼ - ½ acre. The comparison of demographic rates of suburban areas with natural areas, suggests that the assumption of optimal demographic performance in exurban sites has greater validity than in suburban areas. In addition, this region has the greatest amount of public lands which can support scrub-jay populations and it has connectivity among these sites, thus the assumption of all-occupied habitat also has greater validity.

Based on the results of the PVAs and the comparison of extinction risks among the various design Alternatives, we conclude that none of the alternatives are suitable if applied equally

across all four regions. Instead, we offer the following recommendations that would govern the final Reserve Design in each region and county-wide.

1) Manage and/or restore all existing public lands on which potential exists to achieve both carrying capacity and optimal demographic performance. When possible, acquire adjacent private lands that also have potentially suitable habitat so that local scrub-jay populations can increase. Few opportunities exist for this in the West County region, but in the Mid-County regions some opportunities may exist adjacent to the Tippecanoe site, in the Deep Creek region adjacent to some of the existing public lands, and in the Prairie Creek region, specifically in Prairie Creek Estates where parcels are adjacent to Prairie Creek or Shell Creek Reserves.

2) We do not recommend attempting to acquire "megaparcel" (i.e. comprised of ¼ lots) properties embedded in relatively dense suburban areas (unless these parcels potentially serve as stepping stones, enhancing connectivity [see point 3 below]). The best available data suggests that optimal demographic performance will be difficult, if not impossible, to achieve in suburban parcels. Outside of Charlotte County and, *without exception,* scrub-jay populations in such habitats have declined and many have been extirpated. Patches of native habitat in a suburban matrix are more likely to be susceptible to edge effects, high traffic densities, the effects of pesticides on native arthropods (a critical food resource for scrub-jays), the effects of human-provided foods, and changes in both the natural and domesticated predator community. Conservation easements are an alternative to fee-simple acquisition but because these parcels have multiple-owners and each owner typically has only a ¼ lot, easements would have to be done individually which has little economic justification. Platted "megaparcel' acquisition in other parts of the state have not been successful (i.e. less than 100% of the targeted parcels have been acquired) and scrub-jay populations in these areas have declined due to the inability to manage habitat in a matrix of public and private properties. Habitat management implementation and costs are typically more expensive in the suburban/urban matrix than rural areas because of smoke management, the increased need for coordination and support, and higher potential property liability associated with prescribed fire in this matrix.

   Based on the above rationale, we are not recommending acquisition within most of the suburban sites where potential habitat and/or extant scrub-jays occur, with the potential exceptions of areas noted in point 1 (above).

3) Because the Prairie Creek region had the lowest risk of extirpation, has the greatest acreage of public lands that can be managed for scrub-jays, has the greatest amount of relatively large, single owner properties with potentially suitable habitat that might be target for protection, and has many smaller parcels (but >5 acres) of potentially suitable habitat that occur in an exurban or rural matrix and can serve as potential stepping stones enhancing connectivity among public lands, we recommend that most of the protection effort be focused in this region.

   In addition to large, single-owner properties in the Prairie Creek region, we recommend protection, whether through acquisition or easements, of the many parcels of potentially suitable habitat that occurs within the exurban/rural matrix in the Prairie

Creek Estates and Washington Loop areas. In addition to contributing to the overall size of the regional scrub-jay populations, these areas have an extremely important function as corridors or stepping stones, providing critical connectivity between larger scrub-jay populations on public lands (Prairie and Shell Creek, and SWFWMD properties). Because these patches tend to be larger than suburban patches (>5 acres versus ¼ acre) and because they occur in a less developed landscape, they are more easily and cost-effectively managed and they have greater potential to support scrub-jay groups that are able to achieve self-sustaining demographic performance. This lends support to the assumptions used in the PVA, suggesting that these populations are more likely to achieve the long-term persistence predicted by the PVA than would populations that occur in a more suburban matrix.

Thus, the final rationale for Charlotte County's Florida Scrub-Jay Habitat Conservation Plan Reserve Design can be summarized as follows: 1) Manage all public lands with potential suitable scrub-jay habitat to maximize carrying capacity and demographic performance, and where possible expand the amount of habitat through acquisition of contiguous properties; 2) With possible exceptions adjacent to public lands in the Deep Creek area and the Tippecanoe sites (as outlined in the previous point), do not invest in acquisition or protection strategies for potential habitat that consists of multiple ownerships of small lots (¼ – ½ acre lot "megaparcels") embedded in a suburban matrix; and 3) Acquire and/or protect potential suitable habitat in exurban and rural landscapes where those parcels are larger (>5 acres) and serve the function of increasing connectivity through the establishment of corridors or stepping stones. These sites are primarily in Prairie Creek Estates and the Washington Loop areas.

Appendix 3

County Minimization Review Process

Parcels less than 3 acres

- No clearing during nesting season March 1st through June 30th
- Recommend planting of native scrub oaks

Parcels outside the Reserve

Parcels 3 - 20 acres

- No clearing during nesting season March 1st through June 30th
- Recommend planting of native scrub oaks
- Where proposed development will occur on 50% or less of the parcel; preservation of scrub vegetation where feasible will take place; if not planting of scrub oaks at a 2:1 ratio (based on the number of oaks removed) will be required
- Where proposed development will occur on more than 50% of the parcel; 50% of scrub habitat onsite will be preserved through a conservation easement, where feasible
- Where proposed development will occur on a parcel within 850 feet of a scrub jay preserve; 50% of scrub habitat onsite will be preserved through a conservation easement

Parcels 20 – 100+ acres

- No clearing during nesting season March 1st through June 30th
- Recommend planting of native scrub oaks
- Where proposed development will occur on 50% or less of the parcel; where feasible preservation of all scrub habitat will be preserved through a conservation easement
- Where proposed development will occur on more than 50% of the parcel; a minimum of 50% of all scrub habitat onsite will be preserved through a conservation easement
- Where proposed development will occur on a parcel within 850 feet of a scrub jay preserve; preservation of all scrub habitat, to the greatest extent possible, will be preserved through a conservation easement

Parcels within the targeted Reserve

Parcels 3 - 20 acres (within the reserve)

- No clearing during nesting season March 1st through June 30th
- Require planting of native scrub oaks
- Where proposed development will occur on a parcel within the reserve; preservation of at least 50% of the parcel and 50% of the scrub habitat onsite will be preserved through a conservation easement, where feasible

Parcels 20 – 100+ acres (within the reserve)

- No clearing during nesting season March 1st through June 30th
- Require planting of native scrub oaks
- All scrub habitat is to be mapped and preserved to the greatest extent possible through a conservation easement
- Preservation of at least 50% of the parcel or 100% of the scrub habitat onsite will be preserved through a conservation easement, where feasible

Appendix 4

Eastern Indigo Snake Construction Precautions and Guidelines

Standard protection measures for the Eastern indigo snake per USFWS guidelines will be implemented during any development or construction covered by the Charlotte County Scrub-Jay Habitat Conservation Plan (HCP). The following indigo snake protection plan has been prepared to outline these measures.

This plan provides guidelines for construction activities within potential habitat for the Eastern indigo snake, and for construction personnel, should the snake be encountered during construction activities. The following elements of the plan shall be implemented:

- An educational poster will be posted in appropriate places at the construction site (see attached). The poster includes instructions on how to proceed should an Eastern indigo snake be encountered during construction activities. The poster will be laminated for weather-proofing, and will be posted and replaced as needed throughout the duration of the construction phase.

- Educational hand-outs will be distributed to construction personnel (see attached). These hand-outs will provide background, descriptions of the indigo snake, laws governing indigo snake protection, and procedures to follow should an Eastern indigo snake be encountered during construction activities. Contact names and phone numbers will be provided.

- On-site meetings will be conducted by a project biologist with the engineers and site supervisors to provide instructions, review and distribute educational material, and answer any questions they may have about the indigo snake, protection procedures, and construction protocols. These meetings will be held prior to the commencement of construction, and as needed throughout the construction phase.

- A qualified biologist will be available at all times during construction in case consultation is required. A biologist may be present at times during construction, as deemed appropriate, particularly when construction is taking place in those habitats with a high likelihood of occurrence of Eastern indigo snake.

Eastern Indigo Snake Construction Precautions and Guidelines

Life History

The Eastern indigo snake (*Drymarchon corais couperi*) is the largest non-venomous snake in North America, with individuals reaching up to 8 feet. It is a docile snake, which has contributed to its decline in population. These snakes have uniformly blue-black coloring, except under the chin, where they are typically reddish-orange in color.

Eastern Indigo Snake (*Drymarchon corais couperi*)

The indigo snake inhabits a variety of habitat types in Florida, ranging through wetlands, forested uplands, and occasionally in citrus groves, where it frequently uses armadillo and gopher tortoise burrows for shelter and egg-laying. Indigo snakes lay five to twelve white eggs which hatch in August and September. Juveniles are approximately 2 feet long when they hatch, and exhibit a lighter color with a faintly banded pattern.

The Black Racer is the snake that is most similar in appearance to the Eastern indigo. The Black Racer has a whitish chin and has black coloring that is duller than the glossy black of the Eastern indigo. Indigo snakes also tend to be thicker in diameter with larger scales than the Black Racer. The Black Racer is a much more aggressive snake and WILL BITE if approached or restrained.

Protection

The Eastern indigo snake has been classified as a threatened species by the Florida Fish and Wildlife Conservation Commission (FWC) and by the United States Fish and Wildlife Service (USFWS). The 'taking' of an Eastern indigo snake is strictly prohibited by the Endangered Species Act, and is punishable by law. 'Take' is defined by USFWS as any attempt to harm, harass, pursue, hunt, shoot, wound, kill, trap, capture, collect, or engage in any such activities. Penalties for violation of the Endangered Species Act are a maximum fine of $25,000 for civil offenses and a maximum fine of $50,000 and/or imprisonment for a criminal violation. Penalties for violating Florida's law prohibiting 'take' include a $500 fine and/or 60 days imprisonment for the first offense.

Encountering an Eastern Indigo Snake On-Site

If an Eastern indigo snake is encountered by the construction crew, they should stop all work immediately. They should NOT attempt to move the snake, but someone should watch the snake as it moves away on its own, to determine where the snake is heading. Construction shall not resume until the snake is at least **100 yards** away from **all** areas of construction. A crew-member should immediately inform their direct supervisor of the snake's presence. The supervisor is then responsible for contacting the Charlotte County Natural Resources Division at (941) 613-3220. Charlotte County biologist(s) will conduct a site review as appropriate and/or provide instruction as to how to proceed. A report of the snake's presence and location will be documented and copied to USFWS. Likewise, if a snake is accidentally killed during construction, or is found dead, Charlotte County personnel should be contacted immediately. The County will investigate and bring the incident to the attention of USFWS, followed by a written report.

Appendix 5

Amberjack Environmental Park
Phase I and II
Land Management Plan

FCT Project No. 94-020-P4A
FCT Project No. 04-004-FF4

Prepared for

Florida Communities Trust
U.S. Fish and Wildlife Service

October 2012

Prepared By
Charlotte County Community Services
Parks and Natural Resources Division

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1.0 INTRODUCTION

Amberjack Environmental Park, FCT project #94-020-P4A, is a 225-acre tract of environmentally sensitive land located on the Cape Haze peninsula in western Charlotte County. It is located south of State Road 776, west of Charlotte Harbor, and east of County Road 775 and the Lemon Bay Aquatic Preserve, in Sections 27, 28, 33, 34, Township 41 South, Range 20 East, Charlotte County. The project site is situated in an area that is primarily residential and green space, bounded to the north and east by multi- and single-family residential developments, a not-for-profit preserve (abandoned golf course restoration project); State of Florida public preserve land and undeveloped privately-owned property to the east and west, and commercial development to the south. A location map is presented as Figure 1.

Two separate parcels totaling 34 acres have been added to Amberjack Environmental Park as Phase II (FCT project #04-004-FF4). The two parcels were part of the original Amberjack Slough/Scrub FCT application, but were not originally acquired. The site is located in Section 34, Township 41 South, Range 20 East, contiguous to the park along its east boundary, as identified in Figure 3. The northern 25 acre portion of Phase II was purchased in part for the Charlotte County Capital Improvement Projects Florida scrub-jay Habitat Conservation Plan (CIP HCP) for mitigation associated with the widening of Winchester Boulevard North, a Charlotte County roadway. This area will be managed specifically as Florida scrub-jay habitat, as required by stipulations of State and Federal permits. This Phase II addition provides an important connection between the existing Amberjack Environmental Park and the 5,000 acre Cape Haze Management Unit of the Charlotte Harbor Buffer Preserve. This will assist in the implementation of the Regional Wildlife Habitat Plan and the Coastal Corridor initiative.

The majority of Amberjack Environmental Park (hereinafter, Park) consists of oak scrub and scrubby flatwoods habitats. These xeric communities in the coastal area are unique to Florida, and are considered among its most distinctive ecosystems. Like other coastal scrub, that on which the Park and the Phase II addition are situated has suffered losses from degradation and fire suppression and lack of formal land management. The site currently supports one family of Florida scrub-jays (Aphelocoma coerulescens coerulescens), listed by the Florida Fish and Wildlife Conservation Commission (FFWCC) and the U.S. Fish and Wildlife Service (FWS) as a Threatened Species, but was documented to support five families in 1992. Amberjack also supports native mesic pine flatwoods and three regionally significant wetlands. In addition to Florida scrub-jays, several other State and Federally listed plant and animal species are known to inhabit the property, including Florida coontie (Zamia floridana), golden leather fern (Acrostichum aureum), gopher tortoise (Gopherus polyphemus), Florida mouse (Podomys floridanus), and various species of wading birds.

Amberjack Environmental Park was acquired with grant funding from Florida Communities Trust. Charlotte County provided a 50% match from ad valorum funds, there are no additional restrictions that these funds have on the use of the property. Literature and advertising will identify that Amberjack was acquired with funds from the Florida Communities Trust. This Management Plan outlines the management activities for the park and was developed to ensure that Amberjack will be developed and managed in accordance with the Grant Award Agreement (Appendix A) and in furtherance of the purpose of the grant application. Key management strategies include

prescribed burns and exotic/invasive species removal. Amberjack is open to the public. Trails facilitate public enjoyment of this site; regularly scheduled tours are available for the public. Only passive use recreation (e.g. hiking, bird watching, etc.) are allowed within the park.

2.0 PURPOSE

Amberjack Environmental Park was purchased primarily for the preservation of its natural communities. The 34 acre, Phase II addition, was purchased primarily for use as mitigation for the aforementioned Charlotte County roadway construction project, as habitat for the Florida scrub-jay. The Park and Phase II will also provide for unique passive recreational opportunities and environmental education. Scrub is one of Florida's most rare and distinctive communities, supporting many endemic plant and animal species. This xeric, pyrogenic (i.e., fire-adapted) community has suffered losses, fragmentation, and degradation, particularly in the coastal counties. Acquisition of Amberjack seeks to preserve a significant tract of this community in western Charlotte County. Purchase of the property also protects several wetland areas, one of which historically served as a headwater for Lemon Bay, a Florida Aquatic Preserve.

The Project Site will be managed for the conservation, protection, and enhancement of its natural resources and for public outdoor recreation that is compatible with the conservation, protection, and enhancement of the site. In order to meet these goals, the following key management objectives have been established for the project site:

- Re-establish, as much as site constraints will allow, optimal habitat conditions for the Florida scrub-jay, gopher tortoise, Florida mouse, and any other listed wildlife species that utilize Amberjack Environmental Park.
- Include mechanical treatments, as may be necessary and prescribed burning in order to restore the fire-dependent communities' onsite, while re-establishing natural, historical fire regimes.
- Eradicate invasive, nonnative vegetation and wildlife from the Park and Phase II.
- Provide opportunities for passive recreational opportunities at the Park and Phase II that are compatible with the land management goals for the site.
- Provide environmental education of the public and visitors of the Park through programs that may include guided walks, a volunteer program, educational kiosks, informational signage, and partnerships with local schools, universities, and private environmental organizations.

These objectives do not allow for the displacement of any natural habitat or environmental community by another by management design: i.e. it is not acceptable to manage mesic flatwoods for scrub-jay habitat.

The future land use change to "Preservation" and the zoning change to "Environmentally Sensitive" were finalized in 2007. A total of 903 potential residential units were removed with acquisition of the original Amberjack project site. An additional 411 potential residential units were removed with acquisition of the Phase II addition. Both projects are completely within the AE flood zone.

Objectives of Recreation and Open Space Element, of the Charlotte County, Smart Charlotte 2050 Plan that would be furthered by managing the Mitigation Area include:

- **REC Objective 1.2 Park and Recreation Maintenance and Management**
  To protect and maintain existing parks and assets to preserve physical, environmental, functional, recreational and aesthetic values.
- **REC Policy 1.2.1 Public Awareness**
  The County shall protect, restore, and manage natural resources in parks and provide interpretive information regarding environmental resources, conservation easements and ecosystems within parks. The County shall consider the proper long-term ecological functions and recreational value of the land and will work to increase public awareness and understanding of ecological systems.
- **REC Policy 1.2.2 Park Management and Maintenance Guidelines**
  The County shall develop and implement guidelines for all park assets and improvements that will serve to provide a uniform basis for establishing management and maintenance practices and criteria which consider periodic, short and long-term needs.
- **REC Policy 1.2.3 Invasive Species Removal**
  The County shall develop and pursue invasive, exotic plant and animal eradication programs for parks and open space by 2012.

Objectives of Natural Resources Element, of the Charlotte County, Smart Charlotte 2050 Plan that would be furthered by managing the Mitigation Area include:

- **ENV Policy 2.2.7 Environmental Acquisition and Management**
  The County shall acquire and manage environmental lands using all available opportunities including, but not be limited to: levying an ad valorem tax; obtaining State, Federal and non-profit grant funding; land swaps; public/private partnerships; public/public partnerships (such as Florida Communities Trust); community land trusts; and conservation easements. All lands acquired by the County for preservation shall be managed to retain their environmental value.
- **ENV Policy 2.2.11 Land Management**
  The County, or duly authorized management agencies, shall develop and implement long range management plans for preservation or conservation lands consistent with the natural resources found on these properties.
- **ENV Policy 2.2.12 Public Awareness of Environmental Lands**
  In cooperation with other government agencies and non-profit groups, the County shall work to increase public awareness, appreciation, and (consistent with the resources found at each site) access to the publicly owned preserves and environmental parks within the County's borders.
- **ENV Policy 2.3.6 Exotic Plant Removal**
  The County shall continue to enforce the removal of invasive exotic plants. The County shall also prohibit the planting of species listed as noxious weeds by 5B-57.007, Florida Administrative Code, and listed as invasive species on the Florida Exotic Pest Plant Council Invasive Plant Lists.
- **ENV Policy 2.3.8 Environmental Education**
  The County shall support efforts to increase the public's understanding and stewardship of wildlife, natural communities, and other natural resources through partnerships with non-profit organizations such as the Florida Master Naturalist Program, the Florida Yards and Neighborhoods Program, and the University of Florida Food and Agricultural Sciences program.

Acquisition and management of this Mitigation Area will also further the acquisition and management goals of the Florida Department of Environmental Protection (DEP) by

adding conservation and recreational lands adjacent to Charlotte Harbor Buffer Preserve.

3.0 NATURAL AND CULTURAL RESOURCES

Amberjack has a diverse assemblage of natural communities within the property, including Xeric Hammock, Upland Hardwood Forest, Scrub, Scrubby Flatwoods, Mesic Pine Flatwoods, Wet Flatwoods, Maritime Hammock, Alluvial Forest, Salt Marsh, and Coastal Dune Lake. The natural communities are delineated in Figure 4, Natural Communities Map.

3.1 Natural Communities

Natural Communities Inventory

The natural communities of Amberjack Environmental Park have been mapped according to the Florida Natural Areas Inventory (FNAI) designations (Appendix 4). The natural communities are described in detail below. Staff continually monitors the site on a regular basis throughout the year. When occurrences of previously unknown protected and special plant and animal species are observed onsite these observations will be reported to FNAI utilizing the FNAI Field Report Forms or on the FNAI web site at: http://www.fnai.org/FNAI_data/RareSpeciesDataForm.cfm.

Xeric Hammock

Several patches totaling approximately 13 acres of xeric hammock are found throughout the site. FNAI characterizes xeric hammocks as a denser low-canopy forests with little or open understory with shrubs characteristic of scrub. Typical plants in a xeric hammock include live oak (*Quercus virginiana*), sand live oak, saw palmetto, sparkleberry (*Vaccinium arboreum*), pignut hickory (*Carya glabra*), redbay (*Persea borbonia*), American holly (*Ilex opaca*), wild olive (*Osmanthus americanus*), and beautyberry (*Callicarpa americana*). Typically, xeric hammocks develop when fire has been excluded for 30 or more years. When fire occurs, typically every 30 to 50 years, it may be devastating and change the community.

In some portions of xeric hammock on the site, primarily in the north and central areas, understory vegetation is sparse and fire fuel loads are generally low. Other areas of this community are dense with saw palmetto. This indicates differing original communities from which the xeric hammock developed. FNAI classifies xeric hammock as “rare or uncommon in the State.”

Scrub

The park contains approximately 48 acres of scrub divided into three areas of the park. The FNAI ranks scrub habitat as imperiled both in-state (S2) and globally (G2) (FNAI 2010). Florida scrub communities are unique to the state, although several neighboring states have similar habitats. FNAI characterizes scrub to be dominated by evergreen shrubs with or without a canopy of pines. Scrub is found on white sandy infertile soils, groundcover, if any, consists of lichens and herbs. Common vegetation includes sand pine, sand live oak, myrtle oak, Chapman’s oak, scrub oak (*Quercus inopina*), saw palmetto, rosemary (*Ceratiola ericoides*), rusty lyonia (*Lyonia ferruginea*), scrub hickory (*Carya floridana*), scrub palmetto (*Sabal etonia*), hog plum (*Ximenia Americana*), silkbay (*Persea humilis*), beak rush (*Rhyncospora* spp.), milk peas (*Galactica* spp.), and staggerbush (*Lyonia* spp.) (FNAI 2010).

The condition of scrub habitat within the park varies widely from good condition to badly overgrown due to fire suppression. The scrub on the east side of the property is one of

the few places in our region of rosemary scrub. The scrub in the north end of the property was probably scrubby flatwoods originally and persistently grows dense palmetto. Both mechanical vegetation reduction and prescribed fire will be utilized to restore and maintain this community.

Scrubby Flatwoods

Amberjack contains approximately 64 acres of scrubby flatwoods. Like scrub, scrubby flatwoods are mostly limited to Florida; FNAI ranks scrub habitat as imperiled both in-state (S2) and globally (G2) (FNAI 2010). FNAI characterizes scrubby flatwoods by an overstory of widely spaced pines and a short, shrubby understory of saw palmetto (*Serenoa repens*), scrub oaks, wiregrass (*Aristida* spp.), rusty lyonia, lichens, and tarflower (*Bejaria racemosa*) (FNAI 2010). The scrubby flatwoods communities onsite are in fairly good condition; some areas, however, are overgrown to varying degrees due to fire suppression. Both mechanical vegetation reduction and prescribed fire will be utilized to maintain this community.

Mesic Pine Flatwoods

The park contains approximately 44 acres of mesic pine flatwoods habitat. The Florida Natural Areas Inventory (FNAI) indicates mesic flatwoods occur throughout Florida and the lower southeastern coastal plain (FNAI 2010). FNAI characterizes mesic pine flatwoods by an open canopy of tall pines with a low ground layer of shrubs and grasses, with little to no midstory vegetation. Common ground vegetation includes saw palmetto, gallberry (*Ilex glabra*), runner oak (*Quercus minimia*), shiny blueberry (*Vaccinium myrsinites*), wiregrass (*Aristida ssp.*), and broomsedge (*Andropogon* spp.) (FNAI 2010). Much of the pine flatwoods on site have been thinned and is in good condition. Additional work is still needed in areas, and both mechanical vegetation reduction and fire will be used to maintain this community.

Hydric Hammock

Two areas of hydric hammock are found within the park, totaling about 20 acres: One in the northern half of the site, surrounding the tidal swamp and open water area, and a narrow strip in the southern half of the site adjacent to the slough. These areas are inundated during the rainy season and the soil remains saturated for all but the driest months. These areas will be maintained by hand and mechanical means to safeguard against invasive exotic species.

According to FNAI; hydric hammock is an evergreen hardwood and/or palm forest with a variable understory typically dominated by palms and ferns occurring on moist soils, often with limestone very near the surface. While species composition varies, the community generally has a closed canopy of oaks and palms, an open understory, and a sparse to a moderate groundcover of grasses and ferns. The canopy is dominated by swamp laurel oak (*Quercus laurifolia*) and/or live oak (*Q. virginiana*) with varying amounts of cabbage palm (*Sabal palmetto*), American elm (*Ulmus americana*), sweetbay (*Magnolia virginiana*), red cedar (*Juniperus virginiana*), red maple (*Acer rubrum*), and water oak (*Q. nigra*). Cabbage palm is a common to dominant component of hydric hammock throughout most of Florida. In addition to saplings of canopy species, the understory may contain a number of small trees and shrubs including swamp dogwood (*Cornus foemina*), small-leaf viburnum (*Viburnum obovatum*), common persimmon (*Diospyros virginiana*), swamp bay (*Persea palustris*), wax myrtle (*Myrica*

cerifera), American beautyberry (*Callicarpa americana*), and needle palm (*Rhapidophyllum hystrix*). Vines may be frequent and diverse, while herbaceous cover, when present includes mostly graminoids and ferns. Epiphytes such as air-plants (*Tillandsia* spp.), and shoestring fern (*Vittaria lineata*) increase in frequency to the south along with other more subtropical shrubs such as myrsine (*Rapanea punctata*), and wild coffee (*Psychotria nervosa*).

Mangrove Swamp and Coastal Lake

Mangrove swamp (formerly Tidal Swamp) is described by FNAI as a dense forest occurring along relatively flat, low wave energy, marine and estuarine shorelines. The dominant plants of mangrove swamp are red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), white mangrove (*Laguncularia racemosa*), and buttonwood (*Conocarpus erectus*). These four species can occur either in mixed stands or often in differentiated, monospecific zones that reflect varying degrees of tidal influence, levels of salinity, and types of substrate (Odum and McIvor 1990). Red mangrove often dominates the lowest (or deep-water) zone, followed by black mangrove in the intermediate zone, and white mangrove and buttonwood in the highest, least tidally-influenced zone.

A significant wetland (approximately 17 acres) traverses the northern portion of the property from the west. Once forming the headwaters of Lemon Creek, a tributary of Lemon Bay, an Aquatic Preserve, the tidal connection was severed with the construction of the residential development and golf course on the immediate north side of the property, and by the construction of County Road 775 and Gasparilla Pines Boulevard. Although the roadways and development were constructed with culvert pipes to allow for flow, the historical creek and its wetlands were filled and channelized to an extent that the headwater is now essentially impounded with very minimal flow.
The wetland includes approximately 12 acres of open water, known as Lemon Lake, and 4.5 acres of fringing mangrove swamp. Past water quality monitoring events indicate that it is still subject to limited tidal influence. The entire wetland area is inundated regardless of tide, except for the winter months and times of extreme drought, when it is completely dry regardless of tide.

The open water is dotted with red mangrove. The dominant vegetative species within the fringing tidal swamp are white mangrove (*Laguncularia racemosa*), and black mangrove (*Avicennia germinans*). Other vegetation includes giant and golden leather fern (*Acrostichum danaeifolium* and *A. aureum*), sand cord grass (*Spartina bakeri*), buttonbush (*Cephalaanthus occidentalis*), and golden canna (*Canna flaccida*). Golden leather fern is listed by the State of Florida as a Threatened Species.

Depression Marsh

According to FNAI, depression marsh is characterized as a shallow depression, usually rounded depression in sand substrate with herbaceous vegetation or subshrubs, often in concentric bands. Depression marshes typically occur in landscapes occupied by fire-maintained matrix communities such as mesic flatwoods, dry prairie, or sandhill. The concentric zones or bands of vegetation are related to length of the hydroperiod and depth of flooding.

This marsh is an isolated wetland in the south-central part of the property, surrounded by mesic flatwoods. The marsh is about 5 acres, it is depressional, and is seasonally

inundated. Except for widely scattered cabbage palm and dahoon holly around the outer fringe, it is a treeless community with a dense herbaceous stratum. The dominant vegetation includes marsh St. John's wort (*Hypericum fasciculatum*), sand cord grass, beakrushes (*Rynchospora* spp.), and panic grasses (*Panicum* spp.). Other vegetation includes swamp fern, pink sundew (*Drosera capillaris*), spikerushes (*Eleocharis* spp.), marsh thoroughwort (*Eupatorium leptophyllum*), redroot (*Lachnanthes caroliana*), marsh pink (*Sabatia grandiflora*), and yellow-eyed grass (*Xyris* sp.). Most management in this community will consist of exotic invasive plant treatment.

Slough
As described by FNAI: Sloughs are the deepest drainage ways within swamps and marsh systems. They are broad channels inundated with slow moving or nearly stagnant water, except during extreme droughts. The vegetation structure is variable with some sloughs dominated by floating aquatics, others by large emergent herbs, and still others by a low or sparse canopy. Canopied sloughs are characterized by various swamp species, particularly Carolina ash (*Fraxinus caroliniana*) and coastalplain willow (*Salix caroliniana*), with or without a mixture of large emergent herbs and floating aquatic plants.

Amberjack Slough, traverses the southern part of the site, covering about 7 acres. This wetland once formed headwaters of the west branch of Coral Creek, a tributary of Gasparilla Sound, found in the Charlotte Harbor Aquatic Preserve. The hydrology and tidal connection were substantially altered in the 1960's with dredge and fill activities downstream of the property and with the installation of a power line access right-of-way, which parallels the property to the east. No tidal influence, and little, if any flow persists. The center of the wetland (i.e., the slough proper) is inundated throughout the year to the east/south, with saturated soil conditions throughout the year.

The eastern portion of the slough is dominated by a herbaceous stratum. Vegetation includes saw grass (*Cladium jamaicense*), arrowhead (*Sagittaria lancifolia*), star rush (*Dichromena colorata*), sedges (*Cyperus* spp.), swamp mallow (*Kosteletzkya* sp.), saltbush (*Baccharis halimifolia*), southern water hemp (*Amaranthus* australis), and various opportunistic grasses. The western side of the slough is dominated by Carolina willow. The slough has been infested with Brazilian pepper. Approximately 5.5 acres of trees were cut, and treated, twice since the summer of 2001. Brazilian pepper has regenerated throughout the treated area. The slough has also been subjected to physical impacts from feral hogs and unauthorized vehicular access. Department staff will continue to monitor these areas to remove infestations of nonnative plants and animals as they occur.

Listed Plant Species
Protected plant species identified by staff to date include Florida coontie (*Zamia floridana*) listed by the Florida Department of Agriculture and Consumer Services (FDACS) as Commercially Exploited, golden leather fern a Threatened species, and cinnamon fern (*Osmunda cinnamomea*) a Commercially Exploited species. These and other listed plant species will be protected. Staff utilizes appropriate management techniques as outlined by the State and Federal guidelines.

3.2 Wildlife – Listed Species

Charlotte County maintains a list of all species observed within Amberjack Environmental Park by County staff and is provided with the annual stewardship report. This list includes birds, mammals, amphibians, and reptiles. As additional species are observed throughout the changing of seasons, via wildlife surveys or during management efforts, the list will be updated.

Species found on the Federal and/or State endangered and threatened species lists are referred to as "listed species." These lists are the results of both biological and political processes; other lists are available which are based purely on the biological status of each species. For management purposes, Charlotte County Parks and Natural Resources also refers to the biological status as reported by FNAI.

Listed animal species that have been observed in Amberjack Environmental Park include:

Listed Species of Amberjack Environmental Park

Endangered (E), Threatened (T), Species of Special Concern (SSC)

Common Name	Genus	Species	State	Fed
Bald Eagle	*Haliaeetus*	*leucocephalus*	Delisted: Protected	
Brown Pelican	*Pelecanus*	*occidentalis*	SSC	
Florida Scrub-jay	*Aphelocoma*	*coerulescens*	T	T
Little Blue Heron	*Egretta*	*caerulea*	SSC	
Florida Sandhill Crane	*Grus*	*canadensis pratensis*	T	
Snowy Egret	*Egretta*	*thula*	SSC	
Tricolored Heron	*Egretta*	*tricolor*	SSC	
White Ibis	*Eudocimus*	*albus*	SSC	
Wood Stork	*Mycteria*	*americana*	E	E
American alligator	*Alligator*	*mississippiensis*	SSC	T
Gopher Tortoise	*Gopherus*	*polyphemus*	SSC	
Florida Mouse	*Podomys*	*floridanus*	SSC	

Charlotte County is committed to managing the various ecological communities at Amberjack to increase the diversity of flora and fauna, including both listed and common species. A key part of such management is ongoing monitoring. Monitoring takes place in the form of opportunistic observations, semi-formal surveys associated with monthly site inspections, and formal surveys for certain species and species diversity. Specific species surveys that are conducted include those for Florida scrub-jay and gopher tortoise.

All native wildlife species are protected in the park.

3.3 Soils

The soils (Figure 5) at Amberjack are dominated by Immokalee sand, found in the scrubby flatwoods and palmetto scrub areas, and Smyrna fine sand, associated with the mesic flatwoods areas. Orsine fine sand and Satellite fine sand are associated with some isolated scrub and xeric hammock. Punta fine sand is found associated with the Rosemary scrub. Anclote sand, depressional is associated with Lemon Lake and the

Pomano fine sand, depressional is found in Amberjack Slough, the depression marsh, and the wetland area on the east end of Lemon Lake.

3.4 Invasive/Exotic and Feral Species Management

Exotic/Invasive Plants

Exotic invasive plant species reduce the quantity and quality of habitat available for native wildlife. Amberjack Environmental Park is located adjacent to both other natural lands and by residential areas, providing surrounding seed sources for exotic invasive species.

Exotic invasive species that have been observed within the park include Brazilian pepper and Japanese climbing fern (*Lygodium japonicum*). These species are ranked as Category I according the 2010 List of Invasive Species from the Florida Exotic Pest Plant Council (FLEPPC). Currently, all exotic invasive species are at manageable levels. Staff attempts to eradicate nuisance exotics upon discovery. Due to the small size of current exotic invasive plant infestations there are no plans for re-vegetating treatment areas. Staff will continue to review on a case by case basis if re-vegetation is needed at the time of treatment.

Prevention is the most effective method of control; staff continually monitors the sites for early detection and control of populations. Currently, efforts to eradicate these Category I species closely parallel the exotic species control plans recommended by FLEPPC. Application of the most recent treatment recommendations by species are available via the FLEPPC web site (http://www.fleppc.org/).

Exotic/Feral Animals

Feral pigs (*Sus scrofa*) are a problem on Amberjack Environmental Park. The trapping program involves ongoing trapping with an independent trapper, as well as breaks in trapping to prevent the pigs from becoming “trap shy”. Although, the trapping program has been very successful, the pig population is continually regenerated from the state lands adjacent to the park.

Monitoring

The site is monitored on a regular basis, to exclusively assess the presence of invasive/exotic plant and animal species.

3.5 Prescribed Burning and Restoration

Prescribed burning has taken place on Amberjack since its purchase for both ecosystem restoration and maintenance. Each of the major vegetation communities found on the park; mesic flatwoods, scrubby flatwoods, and scrub, are fire adapted and the use of prescribed fire is considered to be the best way for staff to manage a healthy ecosystem.

The burn plan for the mesic flatwoods includes mechanical treatment, when fuel loads dictate, and the burn cycle at 2-4 years, as recommended by FNAI to further the goals of habitat restoration and maintenance to maximize the biodiversity of both the flora and fauna of the mesic flatwoods community.

The burn plan for the all of the scrub component habitats includes mechanical treatment, to create ground fuel to carry fire, with the burn cycle at 5-12 years; this is a more aggressive burn interval than the standard 8-15 years as recommended by FNAI due to

the quick understory growth for coastal scrubby communities. This management regime will further the goals of habitat restoration and maintenance to benefit the Florida scrub-jay and associated scrub species.

The hydric communities, depressional marsh, slough, hydric hammock and mangrove swamp, do not have specific burn goals, as they are not considered pyrogenic communities. Fire may run into these communities in the ecotonal areas from the burning of the adjacent communities, thus preventing hardwood encroachment.

Burn priorities and rotations schedules are revisited throughout each year as both management resources and growing conditions change. All management units have perimeter fire-lines which are maintained throughout the year. Burning is coordinated with the Florida Forest Service (formerly the Florida Division of Forestry) and the FFS has pertinent information on file. Charlotte County's outreach program to inform residents of the area of the benefits of prescribed burns includes presentations, direct mailings and additional coordination with FFS.

3.6 Habitat Conservation Plan Requirements

The purchase of Phase II aided in obtaining an Incidental Take Permit from the United States Fish and Wildlife Service (USFWS) for impacting scrub-jays. The property will be managed in perpetuity for scrub-jay conservation. As part of the Incidental Take Permit, the County prepared a Florida scrub-jay Habitat Conservation Plan (HCP). The HCP outlines the biological goals and objectives to mitigate for the impacts to scrub jays, these goals, objectives, management considerations and monitoring requirements are outlined below:

- Biological Goals:
    - Reduce extinction risk and increase population persistence by acquiring, restoring, and permanently managing identified Florida Scrub-Jay habitat.
    - Enhance recovery potential of the impacted Charlotte County Metapopulations.
    - Protect the biological integrity and species diversity that is characteristic of the scrub systems by returning the mitigation areas to conditions representative of the historical landscape.

- Biological Objectives:
    - Acquire the scrub tracts identified in section 2.8 of this document.
    - Apply mechanical treatments to reduce the tree canopy to less than 20% and to eliminate nonindigenous invasive tree species. Logging operations shall be used as the primary mechanical technique to thin pine trees and to remove tree sized (> 3.0 inch diameter at breast height (dbh)) scrub oaks and cabbage palms. Nonindigenous invasive species will be removed with a combination of cut-stump herbicidal control, bulldozing, mowing, or bull-hogging. Pines will be thinned to 20%-30% of the canopy, but will not be removed in their entirety.
    - Initiate an aggressive restoration burning program (in areas that are remote enough) after completion of mechanical treatments. Burns will be conducted during the summer fire season, post nesting (July) wherever conditions within the burn prescription allow. Where fire is not practical,

vegetative debris will be removed from site, shrub height will be reduced mechanically and open areas will be created mechanically.
  - Establish a comprehensive monitoring program that annually, for the term of the ITP, monitors the success of the applied mechanical and fire management treatments in achieving the biological objectives. The presence of optimal Florida Scrub-Jay habitat requirements found in Fitzpatrick et al. 1991 and described in section 5.4 will be used by the applicants to measure achievement of these biological objective at the landscape scale.
  - Explore the potential of establishing interagency partnerships with FWS, FWC, DEP, SWFWMD, and DOF and/or obtaining additional funding through grants for management and education.

- Management Considerations:
  - The scrub and scrubby flatwoods will be managed with a combination of fire and mechanical means. The scrub and scrubby flatwoods will be managed for Florida Scrub-Jays according to methods in the most current Habitat Requirements issued by the United States Fish and Wildlife Service or the Florida Fish and Wildlife Conservation Commission.
  - Scrub will be maintained so as not to exceed 3 meters (9.8 feet) in height. Fire and mechanical management will decrease the height of the scrub oaks, as well as decrease the density of saw palmetto and other woody vegetation.
  - Fire frequency will be determined based on habitat parameters from monitoring events at individual sites, rather than set time intervals. Mitigation areas will be managed in mosaic landscape so that the compensation areas maintain microhabitats and variability.
  - Within one year from acquisition, exotic flora and fauna will be removed, and the tree canopy and sub-canopy will be reduced.
  - Fire breaks will be placed along existing jeep trails, plow lines, or disturbed areas whenever possible.
  - Feral cats will be trapped and removed from the mitigation area.

- Monitoring:
  - Habitat assessments shall be performed annually during the spring (February-March). Details will include representative 10 meter^2 plots for assessments of pine canopy coverage, canopy height, percent oak coverage, percent bare sand, scrub oak height, species composition and coverage of nonindigenous species.
  - Records on mechanical or fire (both prescribed and wild) will be recorded.

  - Representative photo points, at least one per 25 acres, will be randomly installed in several locations within each of the compensation areas for long term vegetation monitoring. Qualitative and quantitative sampling will be conducted.
  - Florida Scrub-Jay surveys will be conducted at least twice annually; pre-nesting (February) and post-fledging (July). Surveys will be conducted according to standard Florida Scrub-Jay protocols.

3.7 Greenways and Trails

Charlotte County Resolution No. 980440A0 pledged to develop an integrated system of trails, greenways, corridors, preserves, and waterways, in order to provide a foundation for the eco-tourism industry, provide wildlife corridors, and enhance public access to and appreciation of the County's natural resources. Amberjack Environmental Park enhances Charlotte County's integrated network of greenways by creating publicly-owned, passive-use open space adjacent to and in the general vicinity of this integrated network. A map of publicly-owned land within the vicinity of the Park is provided in Figure 6.

Amberjack Environmental Park has about five and half miles of walking trails, which connect to the Charlotte Harbor Buffer Preserve State Park on the East side of the property. DEP does not maintain trails for hiking on this portion of the state park, but foot access is allowed to the public; no additional facilities are provided.

3.8 Archeological, Cultural, and Historical Resources

The Florida Master Site File maintained by the Florida Department of State, Division of Historic Resources, has no archaeological sites recorded for the Project Site. However, four sites are located on adjacent properties, and the potential for archaeological sites on Amberjack may be high. An archeological survey was conducted in 2002 and is provided in Appendix C.

The Historical Resources will be contacted immediately if evidence is found to suggest an archaeological or historic resource/site at the Mitigation Area. If artifacts or historic sites are discovered, collection or disturbance will be prohibited without authorization from the Division of Historical Resources. If artifacts or historical sites are discovered, the Division of Historical Resources will be coordinated with and management will comply with Chapter 267, Florida Statutes, Section 267.061 2(a) and (b). Any significant resources will be interpreted for the public using educational signs.

4.0 SITE DEVELOPMENT

4.1 Existing Physical Improvements

Existing physical structures within the Park include fences and gates, walking trails, parking areas, boardwalks, and a wildlife observation platform. These improvements are designed to improve the ability of the general public to enjoy the natural resources of the Park while protecting these resources.

- **Entrance Signage** – An entrance sign, bearing the Charlotte County logo and park name has been installed. Included is an additional acknowledgement identifying the Park as being purchased with funds from "Florida Communities Trust"
- **Kiosk** – A two-paneled kiosk at the main trailhead has been erected and will include educational panels and a large park map will be featured.
- **Interpretive Signs and Kiosks** – An existing two-paneled kiosk at the main trailhead includes educational panels; a large park map may be featured.
- **Trail Signage** – Directional trail signs have been installed at all trail intersections.
- **Fencing** – Four strand smooth wire fencing is installed around the perimeter of the park and delineates the boundaries. Gates with pedestrian walk-throughs are strategically placed to allow pedestrian access.

- **Walking Trails** – Five and half miles of walking trails exist throughout the park. Most trails are native surface and serve as fire breaks for prescribed burning. A crushed shell surface trail makes a loop through mesic and scrubby flatwoods and scrub, providing an ADA accessible experience.
- **Observation Docks / Boardwalks** – The trail system includes two observation docks overlooking Lemon Lake.
- **Observation Platform** – A wildlife observation platform has been installed in the scrub on the east side of the park.
- **Parking Areas** – A pervious parking is available at the main trailhead providing 22 parking spaces.

4.2 Proposed Physical Improvements

Proposed physical improvements will provide for appropriate public access, while meeting the management goal of conservation, protection, and enhancement of the Park's natural resources. Charlotte County will request written approval from FCT before undertaking any alterations or physical improvements that are not addressed in the MP.

Prior to the commencement of any additional proposed development activities, measures shall be taken to determine the presence of any archaeological sites. All planned activities involving known archaeological or potential sites shall be closely coordinated with the Department of State, Division of Historical Resources in order to prevent the disturbance of significant sites.
Surveys had also identified any protected vegetation or wildlife inhabiting the site. Site plans have been adjusted accordingly to protect any such species. Relocation of listed species may be considered as an alternative. Any relocation efforts will adhere to all permits as may be required by FWC and USFWS. The development of nature trails, interpretive signs and displays, observation areas, and permanent fire breaks will utilize existing roads, trails, disturbed areas, and fire breaks to the greatest extent possible in order to minimize disturbance of native vegetation and reduce fragmentation.

Additionally, the following improvements are under consideration and may be included, pending resources and local interest:

- **Wildlife houses –** Bird houses, such as blue bird, kestrel, and screech owl boxes may be put up in strategic locations for the enhancement of nesting habitat, wildlife viewing and environmental education.

4.3 Public Education and Outreach

The Division is committed to providing appropriate passive outdoor recreational opportunities by allowing public access to the Park. Additional educational programming opportunities designed to facilitate a greater understanding and appreciation of the natural resources may be provided as appropriate and as the need and public interest develops. The environmental education program may include:

- **Organized excursions into the Park**. Organized programs will aim to meet FCT requirements based on staffing and funding. Currently a non-profit organization is contracted to lead educational nature walks throughout the year. Additional organized programming may be developed by staff or by non-profit organizations at the direction of the Division. Such programs could include:
    - Evening/night tours featuring frog and owl calls.

  - Daytime nature walks featuring the plants and natural communities.
  - Daytime nature walks featuring birds and other wildlife.
- **Self-guided excursions into the Park.** Trail signs and educational kiosks (including a large site map) will be installed at the Park. Trail maps and a wildlife checklist will be available on the Division website.

4.4 Easements, Concessions and Leases

No easements or leases are found on Amberjack Environmental Park. No concessions have been granted to date. Charlotte County will provide FCT with 60 days prior written notice and information regarding: any lease of any interest, the operation of any concession, any sale or option, any use other than by a member of the public, and management contracts of Amberjack with non-governmental persons or organizations. Charlotte County acknowledges that prior to any execution of any document it will require review and approval by FCT. Any fees that are collected will be placed in a segregated account and go to the upkeep and maintenance of the project site.

5.0 MANAGEMENT NEEDS

5.1 Coordinated Management

The Parks and Natural Resources staff is committed to working with all interested parties in accomplishing the management goals. As appropriate, FFS and DEP staff from the Charlotte Harbor Preserve State Park is contacted for coordination of activities, including cooperative ventures where we receive and/or provide assistance in mechanical vegetation reduction and prescribed burning. Coordination also takes place with FFS, DEP, and FWC concerning wildlife management. The Charlotte County Sherriff's Office, FWC law enforcement, and DEP each coordinate in security aspects of the property.

Staff also works to maintain open lines of communication with the surrounding residential developments when planning and implementing management activities such as prescribed burning.

5.2 Maintenance

The Division has the responsibility for managing and maintaining the Park. The maintenance objectives for the Park are visitor and employee health, safety, and welfare, maintenance of aesthetic qualities, and protection of natural resource values. Structures, such as bridges and fences, are inspected during monthly site inspections for maintenance and repair needs. Exotic vegetation treatment needs are met with both habitat management and trail maintenance activities. The site will have staff available to perform routine maintenance tasks, including

- Mowing and pruning of vegetation around the entrance, parking areas, trails, and fire breaks
- Upkeep and cleaning of the facilities (including parking areas, fencing, kiosks, and signage)
- Garbage and debris removal
- Land Management (including removal of exotic species and prescribed burning)

The Division may utilize contracted and/or volunteer services as needed to assist in maintenance tasks.

5.3 Security

Charlotte County is concerned about both the safety of visitors and the protection of natural resources. The Parks and Natural Resources Division ultimately has the responsibility for site security, including prevention of vandalism, property damage, unauthorized vehicle access, and trespassing. A three-part approach to site security is employed:

- **Signage and Fencing** – Signs and fencing shall be installed to restrict vehicle access and warn against other restricted or prohibited activities.
- **Staff** – Division staff shall monitor the integrity of the fences, repair damage by vandalism, monitor the site for evidence of ATV use, and take measures to clarify restricted areas and activities to citizens with signage
- **Sheriff, Fire/EMS, and FFS** – Shall respond to emergency calls from citizens

Activities that that are not compatible with passive natural resource based activities are prohibited. Such prohibited activities include alcoholic consumption, social gatherings except for nature hikes, personal acts considered indecent or not appropriate for all ages and all groups within the general public, disturbance of the peace, hunting except for the contracted removal of exotic and/or nuisance animals, harassing of wildlife, harvesting, destruction and/or removal of vegetation, any other activity that may have a negative impact on visitors, wildlife and/or the ecosystem.

All wildlife species are protected, including venomous snakes and other dangerous animals, and shall not be killed, harmed or harassed by visitors or staff unless they present an immediate, clear and unavoidable threat, or are part of an exotic species removal program to be carried out by authorized personnel only. Safety against wildlife species is not considered a viable reason to carry a lethal weapon. Except when carrying a concealed weapon for personal safety, accompanied by a license to do so by the state, possessing a firearm, bow, crossbow, trap or other hunting device is considered the intent to hunt or take wildlife and is prohibited.

5.4 Staffing

The Division will provide staffing, management, and maintenance for the Park. A full time Environmental Specialist will be directly responsible for all land management activities. Assistance from other Environmental Specialists and additional Department staff will be available as needed and the support of the Division Manager and other administrative positions will be available. Additional staffing may be obtained through volunteers, non-profit organizations, and/or contracted services as needed.

6.0 COST ESTIMATE AND FUNDING SOURCES

A portion of this Park was acquired using funds from FCT. The remainder was funded by Charlotte County Local Option Sales Tax. The Park will be managed using ad valorem County taxes.

- **Natural Resource Protection**
  - Exotic vegetation treatment - $15,000
  - Exotic/Feral animal removal - $1,500
  - Habitat photo-monitoring – $100
  - Remote camera wildlife monitoring and security - $850

  - Feral animal/Exotic plant monitoring – in house
  - Listed species survey – in house or volunteer
- **Resource Enhancement**
  - Controlled burning – $640 (Up to 40 burnable acres per year at approximately $16 per acre, in house cost)
  - Mechanical thinning - $37,800 (One rotation of management units, approximately 60 acres at an estimated $630 per acre)
- **Educational Program**
  - Educational signs and kiosk - $3,400
  - Contracted Services (Nature Walks) - $1060
- **Maintenance**
  - Mowing and pruning of vegetation around the entrance, fence, parking area, trails, and fire breaks - $3,000 annually
  - Upkeep of facilities (parking area, fencing, kiosk, signage) - $300 annually ($300 per fence repair, estimate 1 repairs per year)
  - Periodic Exotic Species Treatment -$5,000 per event

- **Staffing** – See Section 5.5

7.0 PRIORITY SCHEDULE

A priority schedule that details a timeline for major events is included in Exhibit B. This priority schedule covers 2011-2020.

8.0 MONITORING AND REPORTING

8.1 Stewardship Report

It is the Division's responsibility to provide an Annual Stewardship Report each year on October 30th, as required by Rule 9K-7.013 F.A.C. which evaluates the implementation of the Management Plan.

Any proposed modification of the Management Plan and/or undertaking any site alternations or physical improvements that are not addressed in the FCT-approved Management Plan requires FCT review and approval.

8.2 Habitat Assessment Monitoring

The goals of habitat assessment monitoring are to evaluate management efforts to ensure they are meeting ideal habitat requirements that are required for the associated plant and animal species to thrive. Evaluations from these monitoring efforts will be included in the Annual Stewardship Report.

Monitoring efforts have been described in Sections 3.1, 3.4, and 3.5. Those monitoring efforts are summarized as:

- Ongoing inspection for feral pig damage and exotic plants.
- Listed Plant Survey
- Scrub-jay surveys – minimum once every year
- Gopher tortoise surveys in association with management activities
- General surveys/site inspections.

9.0 REFERENCES

Arny, N. 2006. *Common oaks of Florida*. FOR51. University of Florida, IFAS Extension.

Ashton, R. and P. Ashton. 2007. *The natural history and management of the gopher tortoise (Gopherus polyphemus* Daudin). Ashton Biodiversity Research & Preservation Institute.

Behm, A. and M. Duryea. 2003. *Fire in the wildland-urban interface: considering fire in Florida's ecosystems*. University of Florida Institute of Food and Agricultural Services.

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

FLEPPC. 2005. *List of Florida's Invasive Species*. Florida Exotic Pest Plant Council. Internet: http://www.fleppc.org/list/05list.htm

Florida Natural Areas Inventory, 2011. Interent: http://www.fnai.org/

Florida Natural Areas Inventory and Florida Department of Natural Resources. 1990. *Guide to the natural communities of Florida*.

Hipes, D., D. Jackson, K. NeSmith, D. Printiss, and K. Brandt. 2001. *Field guide to the rare animals of Florida*. Florida Natural Areas Inventory.

Luer, G.M. 2002. *Archaeology and faunal analysis at Amberjack Bay*. Florida Anthropological Society. Publication No. 15, Archaeology of Upper Charlotte Harbor, Florida. September, pages 49-71.

Myers, R. and J. Ewel. 1992. *Ecosystems of Florida*. University of Central Florida Press.

Soil Conservation Service. 1981. *Soil survey of Charlotte County*. United States Department of Agriculture.

Wunderlin, R. P., and B. F. Hansen. 2008. Atlas of Florida Vascular Plants (http://www.plantatlas.usf.edu/).[S. M. Landry and K. N. Campbell (application development), Florida Center for Community Design and Research.] Institute for Systematic Botany, University of South Florida, Tampa.

Figure 1: Location Map

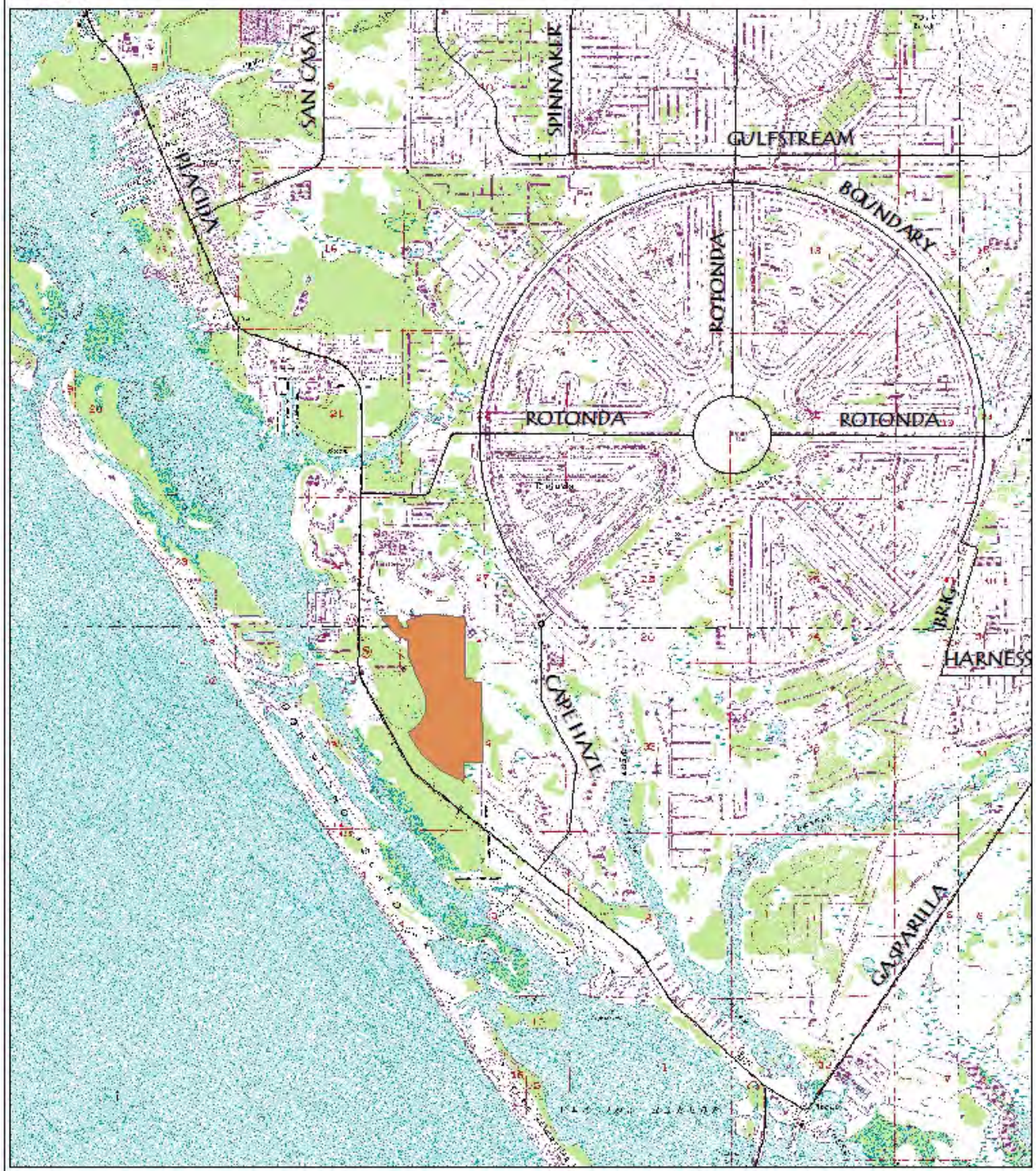


Figure 2: Aerial Overview

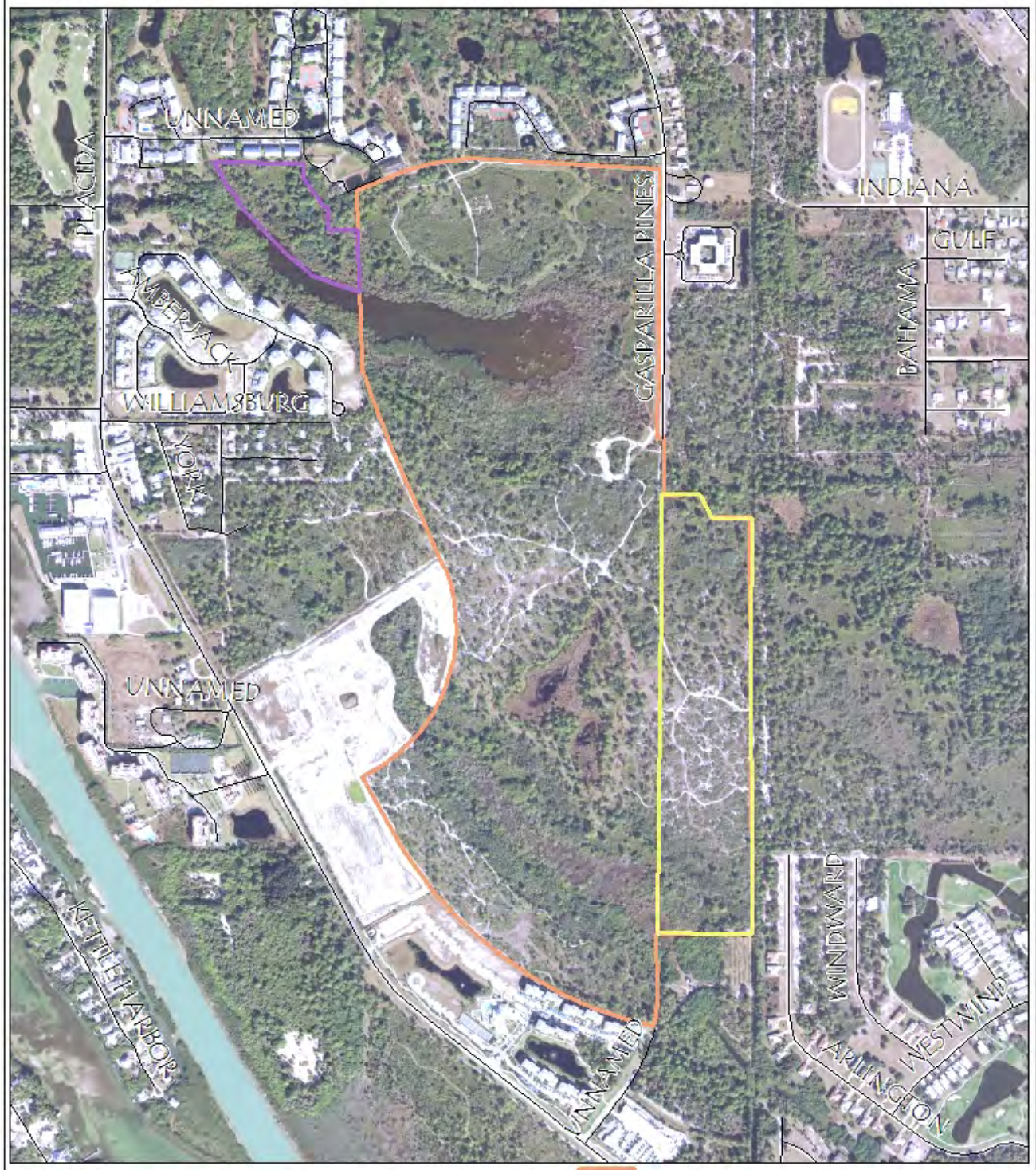


Figure 3: Master Site Plan

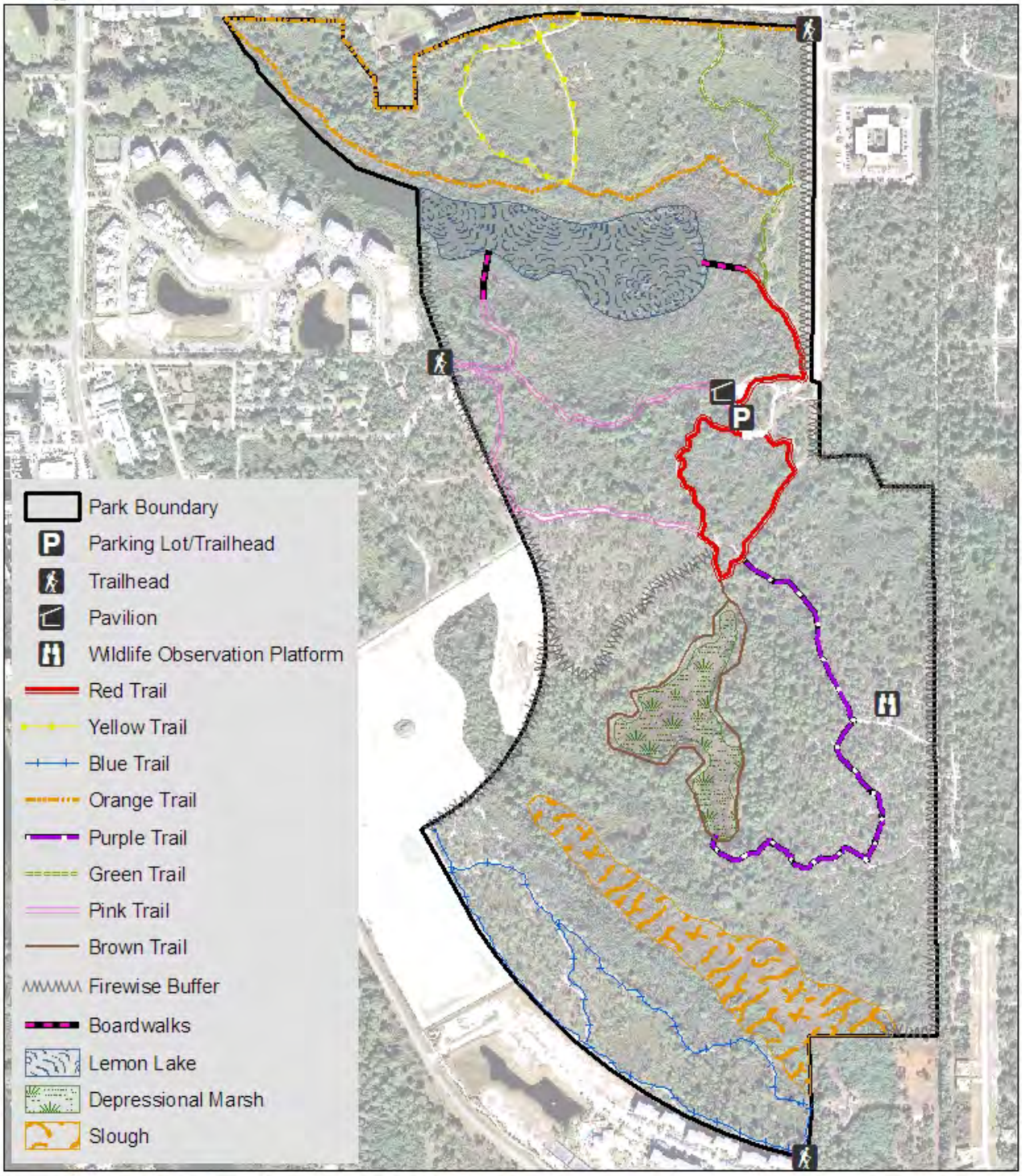


Figure 4: Natural Communities

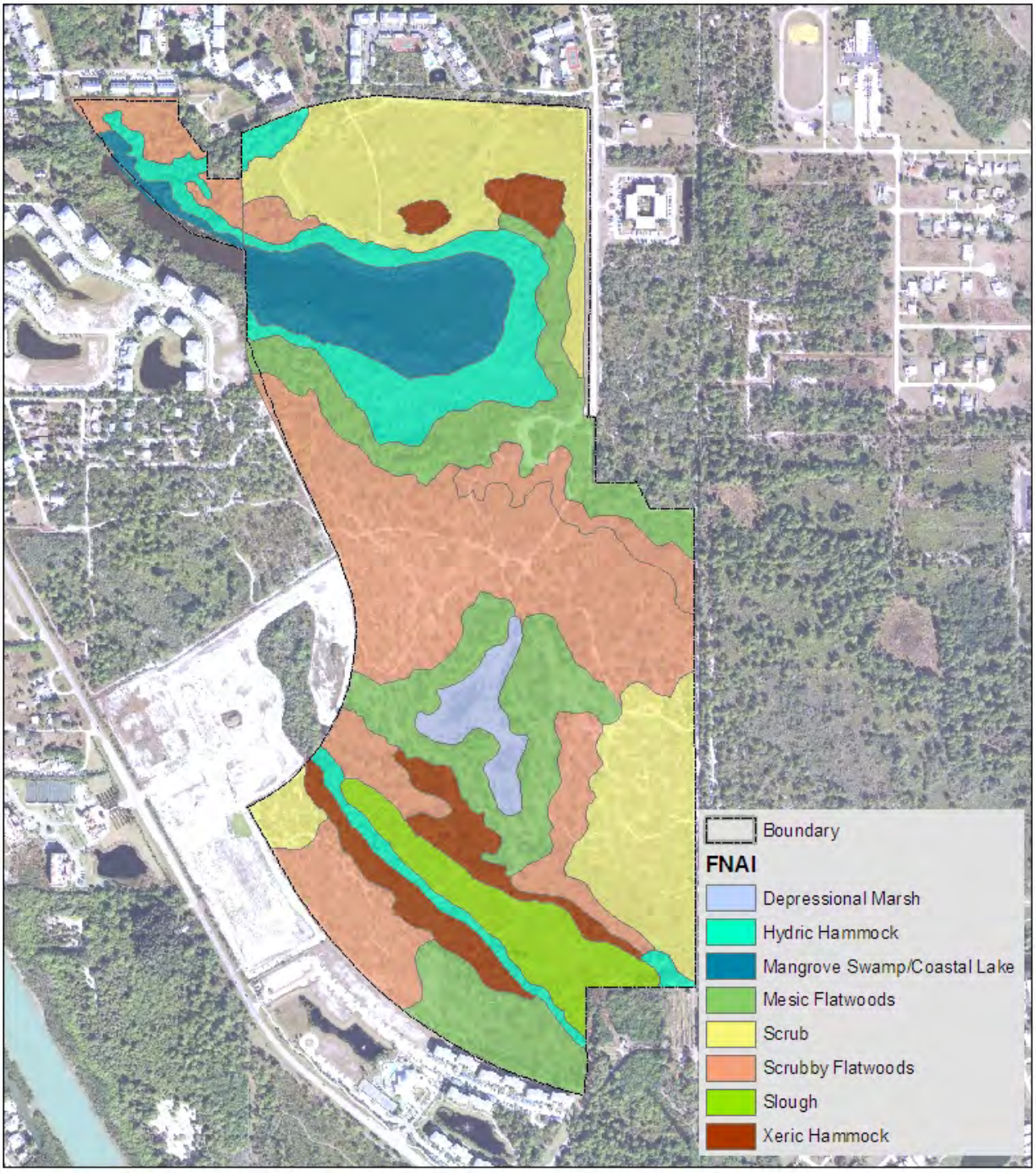
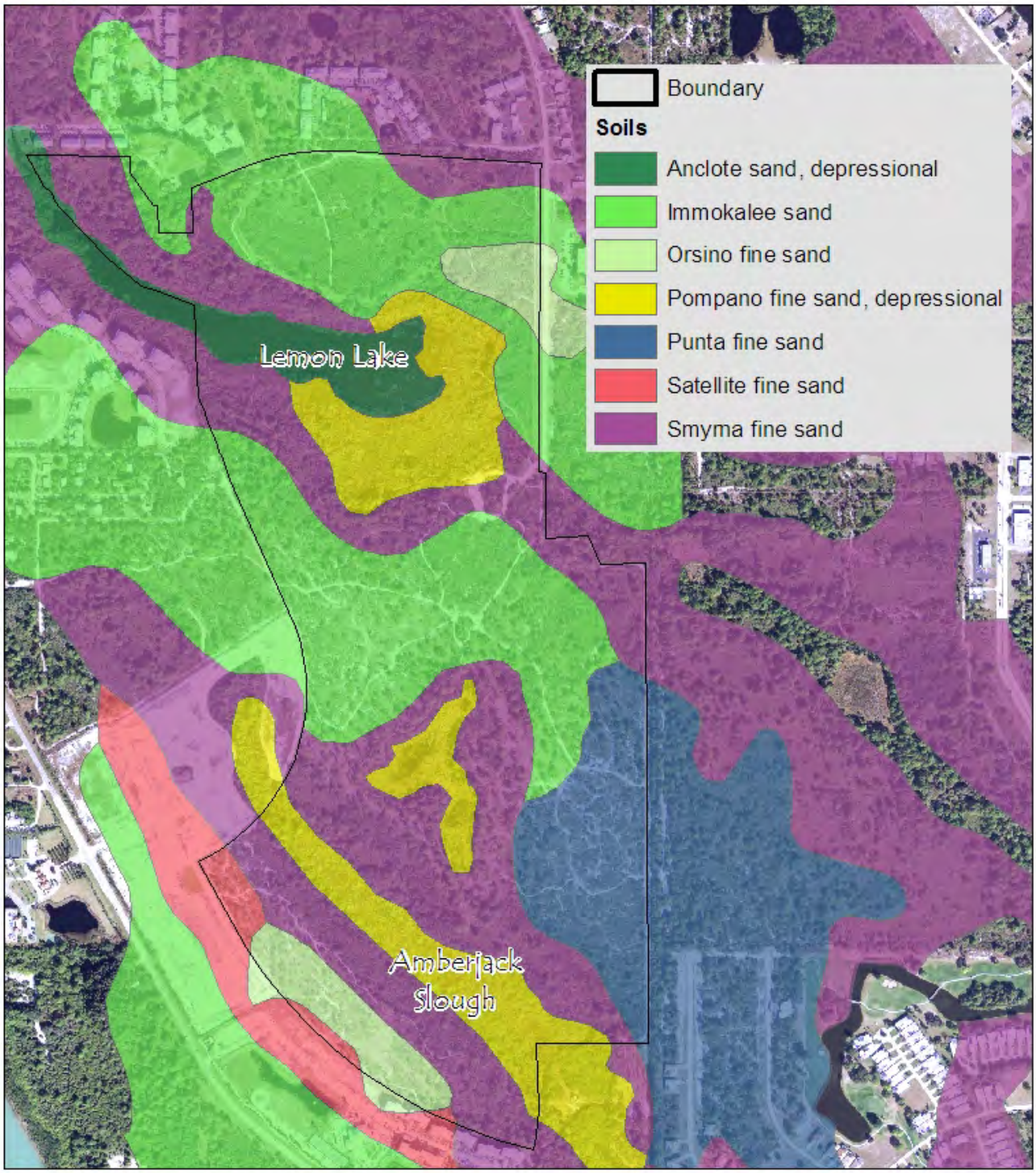


Figure 5: Soils



Amberjack Environmental Park

0 600 1,200 2,400 Feet

Figure 6: Public Conservation Lands

Figure 7: Management Units

Amberjack Environmental Park

0 600 1,200 2,400 Feet

Figure 8: FEMA

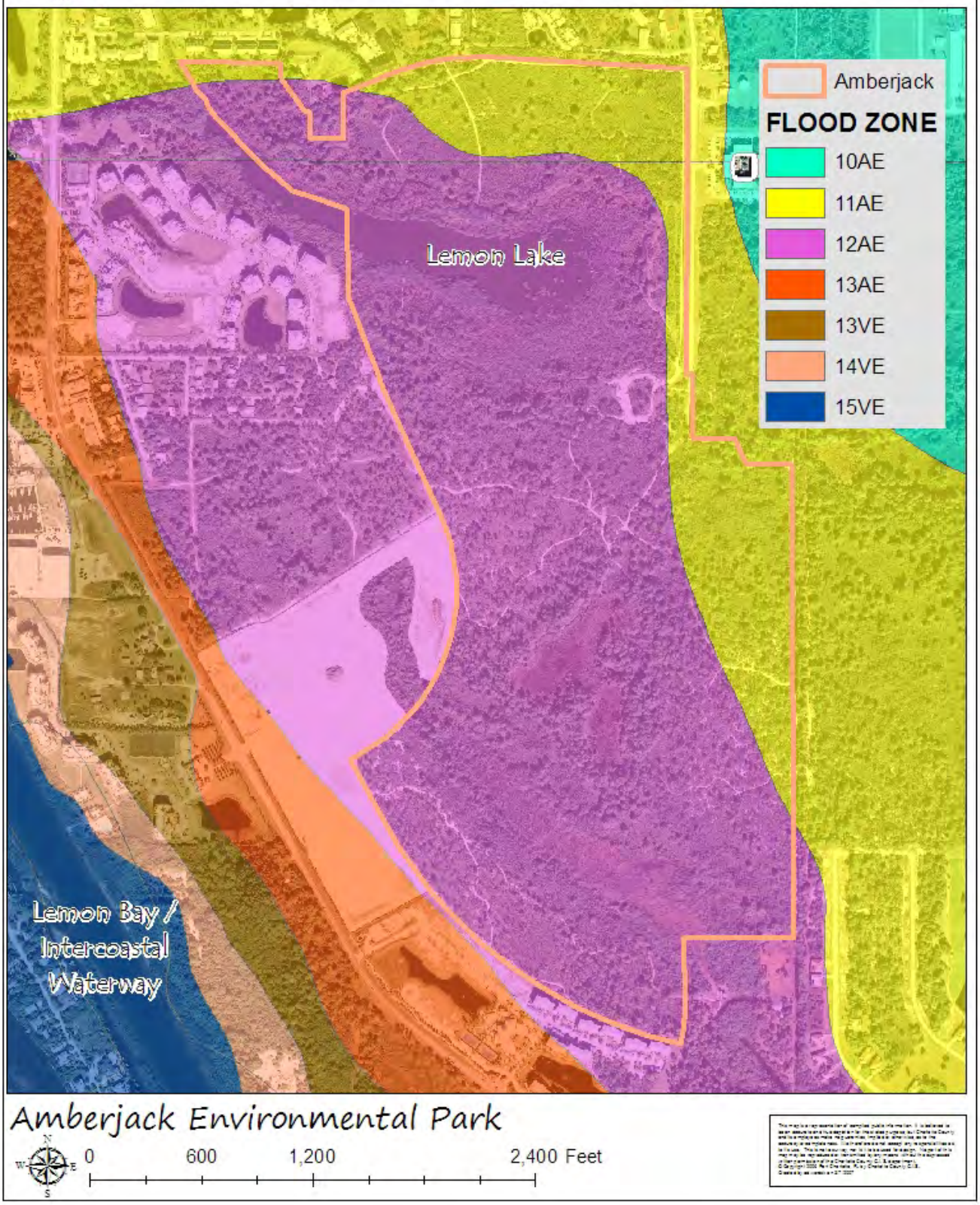


Figure 9: Storm Surge

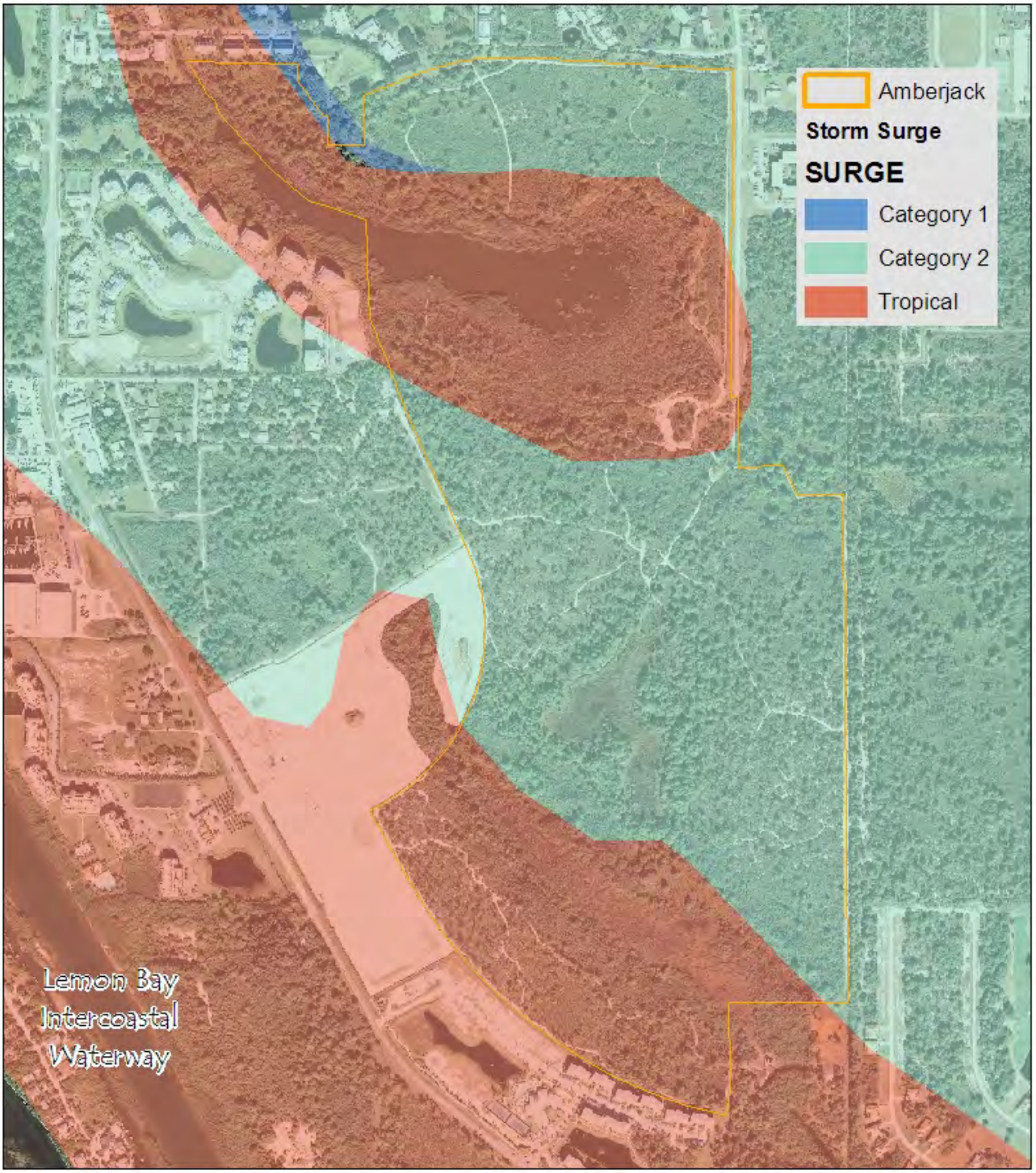


Figure 10: Zoning

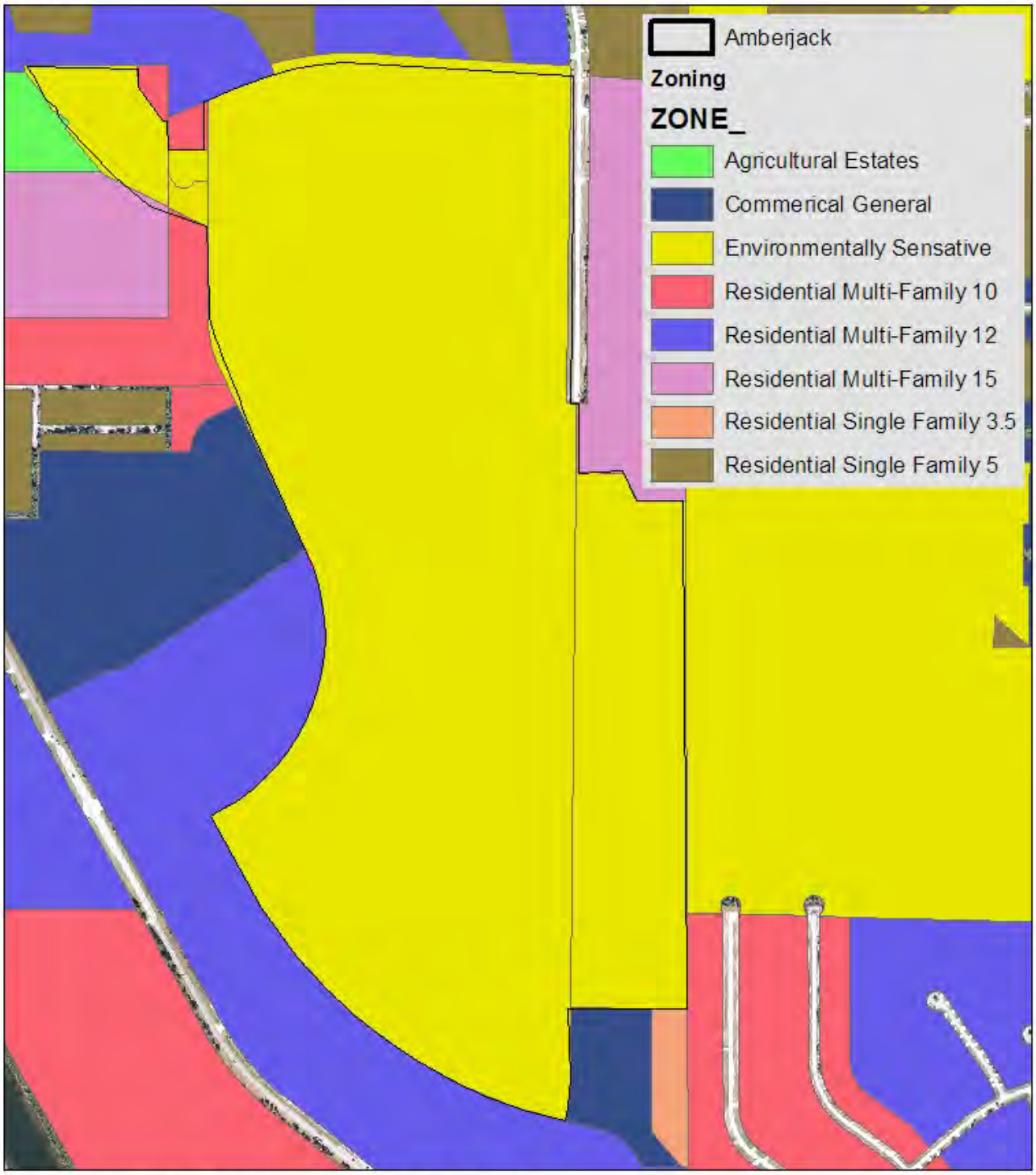
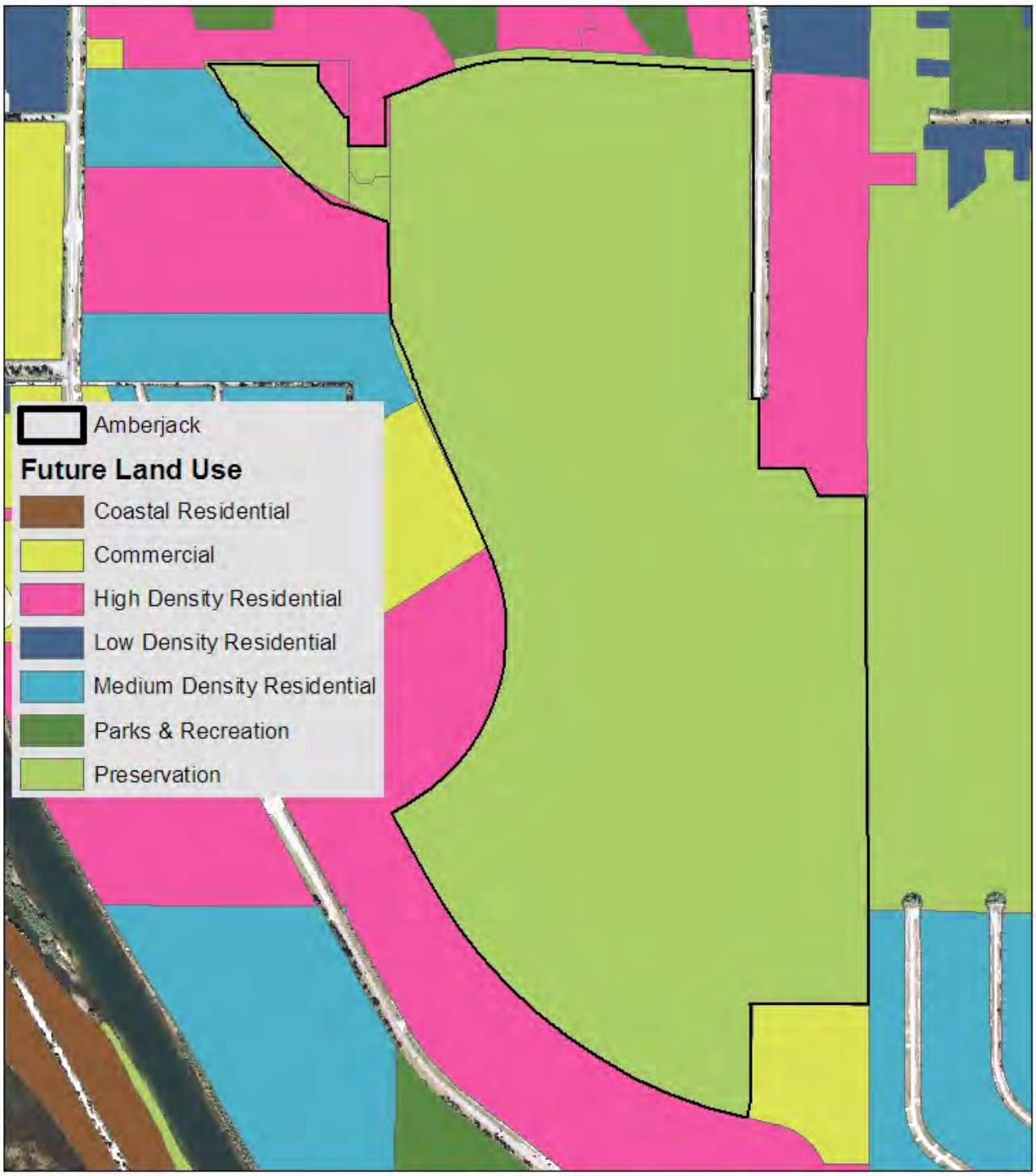


Figure 11: Future Land Use



I. Introduction & General Information

1. Project Name and Location

Oyster Creek Park (FCT Project # 98-026-P8A) is 135.22 acres of property located in West Charlotte County. Oyster Creek Park is located on the north bank of Oyster Creek, east of County Road 775 in Section 8, Township 41S, Range 20 E in Charlotte County.
A location and boundary map is provided as exhibit G.

The project site is located on Oyster Creek within the greenway waterway corridor known as the Oyster Creek, Lemon Bay Aquatic Preserve, Ainger Creek waterway. This site is also located within the Charlotte County Urban Service Area. The project site consists of 126.71 acres of scrubby pine flatwoods, 2.72 acres of mangrove swamps, 1.69 acres of Brazilian Pepper surrounding the borrow pit, 1.01 acres of Brazilian Pepper invaded cabbage palm and laurel oak hammock, 1.71 acres of streams and waterways, .65 acres of salt marsh and a 0.73 acre borrow pit.

Approximately 137 acres of land from the acquisition of San Casa properties (FCT project # 99-064-P9A) will be added to the existing Oyster Creek Environmental Park. The project site addition is located adjacent to the north and south sides of Oyster Creek. It is east of C.R. 775 and West of San Casa Boulevard in sections 8 and 9, Township 41S, Range 20E in Charlotte County.
A location and boundary map is provided as exhibit H.

The San Casa addition to Oyster Creek Environmental Park is located on the Oyster Creek waterway within the greenway waterway corridor known as the Oyster Creek, Lemon Bay Aquatic Preserve, Ainger Creek Waterway. The site is also located within the Charlotte County Urban Services Area. The project site consists of 100 acres of pine flatwoods and scrubby pine flatwoods, 9.5 acres of disturbed pine flatwoods that are invaded with Brazilian peppers, 7.7 acres of mangrove swamp, 0.5 acres of herbaceous uplands, 18.1 acres of xeric oak scrub, 0.04 acres of freshwater marsh, 1.15 acres of freshwater marsh with Brazilian peppers and 0.76 acres of embayments

Cedar Point Park addition, Phase II (FCT Project #01-024-FF1) is five parcels of land surrounded by the waters of Oyster Creek and the existing 88 acre Cedar Point Environmental Park. The site is approximately 17 acres and is adjacent to Oyster Creek Environmental Park (FCT Project # 98-026-P8A) and the San Casa property (FCT project # 99-064-P9A). The property is located off the north bank of Oyster Creek, west of C.R. 775 where the mouth of the creek meets up with Lemon Bay. It lies in Section 8, Township 41S, Range 20 E in Charlotte County.
A location and boundary map is provided as exhibit I.

Cedar Point Park addition, Phase III (FCT Project # 03-091-FF3) is one parcel of land surrounded by the waters of Oyster Creek and the existing 88 acre Cedar Point Environmental Park and the 17 acre Cedar Point Park addition, Phase II. The site is approximately 1.87 acres and is adjacent to Oyster Creek Environmental Park (FCT Project # 98-026-P8A) and the San Casa property (FCT project # 99-064-P9A). The property is located off the north bank of Oyster Creek, west of C.R. 775 where the mouth of the creek meets up with Lemon Bay. It lies in Section 8, Township 41S, Range 20 E in Charlotte County. The project site was previously under private ownership and is being acquired by the Lemon Bay Conservancy, Inc. and managed by the Charlotte County Parks, Recreation, & Cultural Resources Department. Charlotte County will assume responsibility for the land management plan, reporting requirements, and all land management activities including natural resources protection, and resource restoration and enhancement activities.
A location and boundary map is provided as exhibit I.

The Cedar Point Park addition, Phase II and Phase III is located on Oyster Creek within the greenway waterway corridor known as the Oyster Creek, Lemon Bay Aquatic Preserve, Ainger Creek waterway. Oyster Creek is identified as a Class II Outstanding Florida Waters, & Aquatic Preserve as outlined in the Florida Administrative Code (FAC). This site is also located within the Charlotte County Urban Service Area. Cedar Point Park addition, Phase II and Phase III is predominately pine flatwoods with a wetland component consisting of a mangrove fringe located on the south end of the property. Several wetland species inhabit the mangrove fringe including particular benthic species that are sheltered throughout the mangroves. The uplands supply adequate habitat for Florida State listed species such as white ibis (*Eudocimus aalbus*), snowy egret (*Egretta thula*), Bald Eagle, (*Haliaeetus leucocephalus*), gopher tortoise (*Gopherus polyphemus*), and Osprey (*Pandion haliaetus*). The Division of Historical and Archeological Resources identifies an archeological site located within the property boundaries.

2. Summary of Project and Management Objectives

The Oyster Creek Environmental Park site is unique because it is immediately across the street from Cedar Point Environmental Center and immediately adjacent to Lemon Bay High School, which serves West Charlotte County and South West Sarasota County. There will be an on-going effort to gain the support and enthusiasm of the school staff to utilize Oyster Creek Environmental Park as an outdoor laboratory of the curriculum that is currently taught in the classroom. In addition, the support that the community has given financially as well as through volunteer work at Cedar Point will aid the Oyster Creek site as it becomes a site that is managed and cared for.

The San Casa project site addition to Oyster Creek will be used for outdoor recreation activities, environmental education, conservation and

preservation. Site improvements will include a canoe/kayak landing on Oyster Creek that will access the Blue waterway trail system. From this location paddlers will be able to connect to Lemon Bay Aquatic Preserve, Ainger Creek and the Gulf Coast Heritage Trail. A combination of pedestrian foot and bike trails will be provided for hiking and biking to scenic overlooks and fishing areas. Restoration of the Oyster Creek shoreline and the shoreline of an unnamed tributary will include removal of exotic invasive vegetation and replanting with native vegetation. A prescribed burn plan will be developed and implemented to maintain natural fire-dependant vegetative communities. A feral animal removal program shall be developed and implemented for nonnative wildlife found on the project site. Active sports recreation will be located in a 50 acre outparcel on the east side of the property, which will be connected to the existing 12-acre park that has 2 pop warner fields.

The Cedar Point Park addition, Phase II and Phase III will complement Cedar Point Park and expand a greenway connecting two previously FCT projects, Oyster Creek Park, and the San Casa addition. The site will provide and expand outdoor recreation, environmental education, historical interpretation and public access to Lemon Bay Aquatic Preserve, Ainger Creek Waterway Greenway, and Oyster Creek Conservation Area. This will be done by establishing nature trails and constructing interpretive displays throughout the project site. Other management goals include exotic invasive removal programs, feral animal removal programs, and a fire fuel management plan.

3. Summary of Contents of Management Plan

The management plan will guide park staff and volunteers on the best and most appropriate methods on how to maintain, preserve, and manage Oyster Creek Environmental Park, the San Casa addition, and the Cedar Point Park addition, Phase II. The purpose of the site and site development are discussed as outlined in the plan, as well as supported by the community. The site location and purpose of this project was brought to the voters and supported by providing the finances to manage the site. The key management activities will be discussed in detail. The funding, management schedule, and priorities will be outlined. Monitoring and maintenance will be detailed to ensure the long term health of this environmental site.

Grant funding from the Florida Communities Trust has made Oyster Creek Environmental Park, the San Casa addition, and the Cedar Point Park addition, Phase II and Phase III a possibility. This management plan is developed to ensure that the sites will be managed according to the grant award agreement and in furtherance of the purpose of the grant application.

II. Purpose of the Project

1. Purpose of Acquisition and Future Uses

The purpose of the Oyster Creek Environmental Park, San Casa addition and Cedar Point Park addition, Phase II and Phase III is to preserve uplands and wetlands for wildlife management, outdoor recreation, environmental education, and create a greenway linkage and wildlife corridor between three separate parcels of land. The amenities at these parks will compliment and expand the facilities and programs that are currently in place at Cedar Point Environmental Park. This includes seminars, guided trail walks, educational activities, and interpretive features. We would like to encourage the park user to begin their environmental experience at the Environmental Center at Cedar Point with information from a knowledgeable staff. Park participants will be able to ride their bikes on the nature trails, fish in designated areas, learn about and enjoy the environment around them on the shoreline lookouts. Canoers or kayakers will be able to land and hike on the nature trails then sit for a picnic lunch in a natural area. Students at Lemon Bay High School will have more area to learn and explore in the outdoor classroom.

The Cedar Point Park addition, Phase III is purposeful for all the above and will also compliment phase II of the existing Cedar Point Park. This acquisition is important in order to keep condominium development out of the middle of a 105 acre environmental park.

The Charlotte County Parks, Recreation, & Cultural Resources Department will be responsible for the development of future amenities. It is the responsibility of the Parks, Recreation, & Cultural Resources Department to implement and maintain a countywide approach to environmental education, outdoor recreation, and land management.

2. Key Management Objectives

A. To remove exotic and nuisance species from identified areas and develop a preventative maintenance program to eliminate the future spread of nuisance species.

B. To conduct seasonal surveys of listed plant and animal species and preserve the habitat to protect, restore, and preserve the plants and animals.

C. To develop the site with outdoor recreational amenities that allows the public to have an environmental experience without destroying the natural resources.

D. To provide ongoing outdoor educational programs for youth in crisis groups that encourage positive actions and an appreciation of natural resources.

E. To compliment the countywide greenway network, waterway and pedestrian trail system.

F. To develop a responsible prescribed burn plan for the entire site and develop fire breaks along the park property boundary.

G. To develop a storm water management plan that will not degrade, and where possible improves the water on site and runoff that enters Oyster Creek/Lemon Bay. Retention facilities will be designed to mimic a natural system and provide wildlife habitat.

H. To coordinate with The Florida Game and Fresh Water Fish Commission and the Florida Department of Environmental Protection for guidance on protection and restoration of listed animal species and their habitat.

3. Comprehensive Plan Directives

Oyster Creek Environmental Park, the San Casa addition, and the Cedar Point Park addition, Phase II will further the following Charlotte County Comprehensive Plan Directives:

A. Acquisition of the Oyster Creek Park property will further the goals, objectives and policies of the Recreation and Open Space, Future Land Use, Coastal and Conservation Elements of the Charlotte County Comprehensive Plan. A copy of the appropriate elements of the Charlotte County Comprehensive Plan is included in the attached Appendix.

B. Purchase of the acquisition areas will further Objectives 1, 3, 4 and 8 and Policies 1.1, 1.5, 3.2, 3.3 and 4.1 of the Recreation and Open Space Element of the Charlotte County Comprehensive Plan by providing recreational opportunities and public access to the Oyster Creek, Lemon Bay Aquatic Preserve, Ainger Creek Waterway Greenway.

C. The Conservation Element of the Comprehensive Plan, Objectives 3, 12, 15; Policies 12.1, 12.4, 15.1, 15.2; Ordinance 93-11 and Policy 17.2 will be furthered by protecting surface-water quality, preserving conservation lands and protecting historical and archeological resources.

D. Maintaining the hydrological and ecological functions of streams and estuaries will further objective 2 of the Coastal Management Element of the Comprehensive Plan.

The addition of the San Casa properties to Oyster Creek Park will further the following Charlotte County Comprehensive Plan Directives:

E. To develop a prescribed burn plan for the site and a fire break line along the boundary of the project site that interfaces residential developments.

F. To provide passive recreational opportunities such as hiking, biking, wildlife and plant observation.

G. To compliment the countywide greenway network, waterway and pedestrian trail system.

H. To develop a stormwater management plan that will not degrade, and where possible improves the groundwater quality on site and runoff that enters the waters of Oyster Creek and Lemon Bay.

The addition of the Cedar Point Park properties to Oyster Creek Park and San Casa addition will further the following Charlotte County Comprehensive Plan Directives:

I. To preserve its historical, archaeological, architectural, and scenic resources under the Historic Preservation Element.

J. To compliment the countywide greenway network, waterway and pedestrian trail system.

4. Land Use Designation Amendment

The current land use for Oyster Creek is designated as low density residential and the current zoning is agricultural estate. The zoning designation will be changed to environmentally sensitive land and the future land use to preservation. The current land use for the San Casa addition is designated as agricultural, having one unit per acre. The land use designation will be changed from low density residential to parks and recreation. The Lemon Bay Conservancy, Inc.'s parcel, Cedar Point Park Phase III and the Cedar Point Park addition, Phase II is made up of five parcels. The current land use for all five parcels is designated vacant residential. The future land use varies with the following designations, parks and recreation, low density residential and high density residential. The land use designation for all five parcels will be changed to preservation and the zoning to environmentally sensitive. The Parks, Recreation, & Cultural Resources Department is committed to changing the zoning designations to conform to the amended future land use designation within one year of acquiring each project site.

In order to amend a future land use and zoning designation, the Parks, Recreation, & Cultural Resources Department will fill out an application which will be reviewed by the Board of County Commissioners (BCC). Following the approval of the BCC, the proposed amendments will be transmitted to the

Department of Community Affairs for recommendation and ultimately, final revision of the County's Future Land Use Map and Zoning Areas.

5. Project Site Public Identification

Upon acquisition, the Oyster Creek Environmental Park, the San Casa addition, and the Cedar Point Park addition, Phase II and Phase III will be identified on the entrance sign, informational signs, educational kiosks, and park brochures. The information will relay that this facility is open to the public and has been purchased through funds from the Florida Communities Trust Preservation 2000 Program and Charlotte County. All other literature and advertising will state that the parcels were acquired with funds from the Florida Communities Trust and will be operated as a natural conservation area or an outdoor recreational area.

III. Site Development

All site development will be performed in accordance to the County's Comprehensive Plan and done in cooperation with Lemon Bay High School. Oyster Creek Park and Lemon Bay High School will share entrance ways and stormwater retention. The existing Cedar Point Park, Cedar Point Park addition, Phase II and Phase III, Oyster Creek Park, and San Casa addition will be designed to link together with a pedestrian circulation system and complement each other functionally and environmentally.

1. Physical Improvements

Currently, there are no existing physical improvements on the projects sites.

A. Entrance Sign

The park entrance signs will be provided by the Parks, Recreation, & Cultural Resources Department and maintained at both main entrance areas to each project site. They will be the standard park entrance signs that are sand blasted and will display the Parks, Recreation, & Cultural Resources Departments logo and FCT logo. The signs will be displayed by the entranceway of each park along County Route 775 and San Casa Road. The following language will be posted on the portion of the sign: "Funding for the acquisition of this site was provided by the Florida Communities Trust using Preservation 2000 funds and Charlotte County." The signs will be at least 2'x3' in dimension.

B. Biking Access and Accommodations

This park is part of an ongoing linear trail system throughout Charlotte County (See exhibit “Q”). Route 775 is presently under construction. There will be bike lanes and sidewalks provided on County Route 775 connecting to State Route 776. Route 776 has recently constructed bike lanes and sidewalks throughout the new construction area. Sidewalks have been constructed on San Casa Road. The public will be able to walk or bike to the parks from the communities of Englewood, East Englewood, Grove City and Rotonda. Bike paths and bike way stations with bike racks will be provided at several locations throughout Oyster Creek and the San Casa addition to the park.

C. Time Frame

Construction documents and permitting are complete for Oyster Creek Park. Site improvements will begin in the spring of 2004. The development of this site will be funded through the allocations from the one- percent sales tax extension.

The Cedar Point Park additions, Phase II and Phase III are intended to supplement the existing facilities at Cedar Point Park. Any minor improvements are proposed to occur by the fall of 2006. The master site plan has been adopted by the Board of County Commissioners and was provided in the August 2002 stewardship report.

Construction documents for the San Casa addition are currently being created and permitting is in preliminary stages. Initial work will take place shortly after. A master plan for the San Casa addition will be adopted in the winter of 2005.

Work on all project sites will be implemented in phases. Future improvements and development will be budgeted on an annual basis in capital improvement projects (CIP).

D. Access Compatibility to Project Site

Charlotte County Government is committed to making parklands accessible to all members of the public. In this site, parking, restrooms, playgrounds, picnic areas, some observation decks, and a portion of the trails will be accessible. Access to the project site will be developed following all state, federal and ADA construction standard guidelines. A project to widen county road 775 has allowed the county to develop a crosswalk and pedestrian light to connect Oyster Creek to Cedar Point Park. A grant application has been submitted for a footbridge connecting Cedar Point Park and Oyster Creek Park under the CR 775 Oyster Creek bridge. A footbridge is also planned to be constructed

across Oyster Creek that will connect Oyster Creek Park and the San Casa addition. These linkages will greatly enhance the access compatibility factor throughout the project sites.

E. Alterations of Natural and Disturbed Areas

Proposed alterations to the site that are required for the proposed improvements (per FCT Conceptual Management Plan, April, 1998) are described below. All development features (alterations) will be planned, designed, field located and constructed so as to have the least possible impact to existing natural features, vegetation and wildlife.

<u>The following elements are associated with the Oyster Creek Park project site:</u>

a. Entrance road and parking: A 500 ft entrance drive and 22 parking spaces are proposed in the southeastern corner of the site for optimum entry from CR 775 and future linkage to Lemon Bay High School circulation system.

Parking spaces (22 x 162 sq.ft. = 3,564 sq.ft. + 2 x 400 sq.ft. = 800 sq.ft. = 0.1 acre): There will be 20 crushed rock or shell car parking spaces along the roadway, each being 9 feet wide and 18 feet long. There will be two (2) parking spaces for each dock, three (3) for each picnic area, four (4) at the restrooms and six (6) trailhead spaces at the east end of the road. Two bus spaces will be included for schools and other community groups. A retention pond for the parking area may be required. If so, it will be designed to mimic the natural environment and provide wildlife habitat. When designing of this park, the Parks, Recreation, & Cultural Resources Department will make a commitment to maintain a 25' buffer between the parking areas and wetland areas.

b. Picnic facilities (3,200 sq.ft. =0.07 acre): Four (4), 20' x 40' picnic areas are proposed in conjunction with the one (1) fishing dock and one (1) observation deck located along the creek between the highway and the tributary. Each area would have two tables, with trash receptacles. A twenty-five foot buffer will be provided between the picnic areas, parking and the wetlands.

c. Public restrooms (720 sq.ft. =0.02 acre):

- One composting toilet restroom will be located half way between the highway and tributary to service the picnic areas, and

- One composting toilet restroom will be located in the primitive camp area. Each area will be elevated approximately three (3) feet with soil and will impact an area 16 by 20 feet.

d. Trail system (9,000 linear feet = 56,000 sq.ft. = 1.3 acres): The trail system will have about 9,000 feet of trails and a 100' "bridge" across the tributary to allow visitors to tour the park and to provide access to the canoe landing, scenic overlooks, fishing areas and a small group primitive campground (per FCT Application, April 1999). Half of the trail system will be 6' wide and half will be 8' wide. The 100' tributary "bridge" will be 6'-8' wide, to support passage by an all-terrain vehicle for maintenance and emergency purposes.

The final trail layout will be designed to maximize the educational and passive recreational potential of the site and to minimize impacts to existing native vegetation, wildlife and ecological features. Trails will be located so as to require the least possible clearing and/or impact to native vegetation. Where possible, trails will be constructed to protect and/or enhance existing environmental features. The majority of the main "nature trail" will be 5'-6' wide with a permeable, crushed shell/rock or mulch surface to maintain ground water recharge. A relatively small portion of the trail, especially west of the tributary, may be hard surface (asphalt, concrete) to accommodate the handicapped.

Per FCT guidelines, permeable trails will be located at least 15 feet and paved trails will be located at least 25 feet upland of wetlands to protect the water quality of wetlands on and adjacent to the park and reduce disturbance of the listed species that use these habitats.

e. Canoe/kayak landing: The canoe/kayak landing is proposed to provide non-motorized access to Oyster Creek, Lemon Bay and the Ainger Creek Waterway Greenway canoe trail.

The canoe landing will be located near the parking area along Oyster Creek. This site provides a safe, easily accessible landing area with minimal disturbances.

f. Scenic Overlooks of Oyster Creek (600-800 sq.ft. = 0.1 acre): Two (2) scenic overlooks will be strategically located east of the tributary to offer the most scenic views of the creek and the best opportunity to observe/study nature while requiring little or no impact to that area. A bench or small, elevated deck may be constructed at these sites to enhance viewing.

g. **Fishing/observation docks (200-300 sq.ft. per dock):** Two (2) short, hand-railed, T-docks are proposed east of the tributary where suitable shoreline and open water conditions present the opportunity to fish with a pole or rod. Obviously, visitors will use these as observation decks as well. Typically, the docks will be 5' wide and extend 20' beyond the shore, with a 5' x 16' terminal deck with benches.

The canoe landing, overlooks and fishing areas/decks will be located for minimal impact to shoreline areas fronted with mangrove or marsh.

h. **Interpretive signage and kiosks (400 sq.ft.):** Signage will be located throughout the park to identify trails, facilities and educational features. A kiosk is proposed near the parking area where visitors can see a map of the park and learn about the wildlife and natural habitats within the park.

i. **Primitive campground (1.5 acre):** A small, primitive campground is proposed in the northwest corner of the park to provide "special use permit" tent camping for small groups engaged in outdoor educational activities. The 15-20 site, limited access (gated) camping area will be located away from day use areas.

j. **Property fencing (8,250 linear feet):** The perimeter of the park will be fenced in pressure treated posts and 4 inch mesh galvanized wire. No native trees over 4 inches in diameter will be cleared to construct the fence. Throughout the perimeter boundary fence there will be pedestrian walk through for local neighbors. At these locations park rules will be posted and educational information displayed.

k. **Invasive exotic vegetation eradication:** The Florida Environmental Inc. FCT study (April, 1998) and Charlotte County Natural Resource ecologists have identified several acres that have been invaded by the noxious exotic, Brazilian Pepper. Most of the Pepper is concentrated around a pond in the northern portion of the preserve, with other Pepper scattered along the shorelines of Oyster Creek and the tributary. Left unchecked these noxious exotics can seriously degrade the quality of native habitats. Consequently, a major goal of this management plan is to eradicate all invasive exotic vegetation in the parks.

Large monocultures of exotic vegetation will be mechanically removed. The resultant clearings will be revegetated with native

vegetation that has been displaced by the exotics. Scattered, individual exotic plants occurring along the shorelines and elsewhere in the park among native plants will be manually eradicated. Where removal of the stump and root system may damage surrounding native vegetation, the plant will be cut flush with the ground and the remaining stump/root system will be treated with a proven effective herbicide (Garlon 4) or Rodeo.

Proposed alterations to the San Casa addition to Oyster Creek Environmental Park that are required for the proposed improvements (per FCT Conceptual Management Plan, May 1999) will be planned, designed, field located, and constructed so as to have the least possible adverse impact to existing natural features, vegetation and wildlife. All recreational facilities and parking areas, except shared facilities located on the 50-acre out parcel will be located a minimum of 100 feet from the San Casa addition project site.

The following elements are associated with the San Casa project site:

a. Entrance Road and Parking

- **Roadway:** A short looped driveway will access the eastern edge of the environmental park from the adjacent active park.

- **Parking Spaces (24,000sq.ft = 0.5 acres):** Parking for the San Casa addition will be located on the project site and is intended for use by the public using the FCT acquired portion of the San Casa parcel. This area will accommodate approximately 20 cars. Parking for the adjacent 50-acre active site will be located on the active site, not on the San Casa addition project site. Any stormwater retention for parking areas will not be located on the FCT acquired San Casa addition.

b. Group Pavilion: (2,500-sq. ft. = .057 acres): One group pavilion is located near the parking lot. Trashcans will be provided in the picnic area. A 25-foot buffer will be provided between the picnic shelters, paved trails and the shoreline of Oyster Creek.

c. Public Restrooms (360 sq.ft. = .01 acre): There is one restroom proposed for the site. The restroom may be located along the hiking trail in the western area of the park.

d. Trail System (14,000 linear feet = 87,080 sq.ft. = 2.0 acres) : Trails will be located to maximize the environmental educational

components and passive recreation opportunities. The trail will minimize impacts to existing native vegetation, wildlife and ecological features. The trail system will include a pedestrian boardwalk/bridge across Oyster Creek linking the San Casa addition to Oyster Creek Park.

e. **Canoe & Kayak Landing (400 sq.ft. = .01 acres):** The canoe & kayak landing will be located along the Oyster Creek waterway. It will provide a soft landing point for paddlers to safely dock while they explore the land.

f. **Invasive Exotic Plant Removal**- The invasive exotic plants observed on the site includes Brazilian Pepper (*Schinus terebinthifoluis*) and Australian Pine (*Casuarina equestifolia*). Charlotte County is committed to restoring the 9.5 acres of Pine Flatwoods/Brazilian Pepper shown on the FLUCCS map provided and any other invasive exotic vegetation found on the project site.*

g. **Scenic Overlooks (200 sq.ft = .005 acres):** One scenic overlook will be strategically located on the north shore of the property along Oyster Creek to offer the most scenic views of the waterway and the most opportunity for environmental education near the mangrove and upland habitat interface.

h. **Fishing Pier (200 – 300 sq.ft. = .005/.007 acres):** One hand railed T-dock is proposed along the Oyster Creek waterway where suitable shoreline and suitable open water conditions offer the opportunity to fish.

i. **Interpretive Signage and Kiosks –** Signage will be provided throughout the park that identifies trails, facilities and educational features. Several kiosks are proposed in the park where visitors can learn about habitat areas and associated wildlife found in the park. This will provide an opportunity to educate people about what they can do to help preserve natural areas.

j. **Paved In-line Skating/Fitness Trail – (3,000 linear feet):** A paved in line skating path and jogging path is proposed to travel through the park in-between different habitat areas of the park. The trail will travel through Brazilian Pepper infested pine flatwoods, xeric oak, and freshwater marsh and pine flatwoods/saw palmetto. The trail will help to provide access for removal of the Brazilian Pepper. The path will be a minimum of 8 feet wide and a minimum of 2 feet cleared area on either side of the trail.

k. **Fencing (4,800 linear feet)**: Areas of the park's perimeter will be fenced in pressure treated posts and 4-inch mesh galvanized wire. No native trees over 4 inches in diameter will be removed to construct this fence. Throughout the fenced areas there will be pedestrian walk through for local neighbors. At these locations park rules will be posted and environmental educational material will be displayed.

The following elements are associated with the Cedar Point Park addition, Phase II:

a. **Nature Trail:** A limited trail will complement the existing Cedar Point Park trail system. The trial will be a four foot wide foot path cleared by repetitive walking or hand clearing and at the most using a machete causing minimal disturbance. The trail will be field located and mapped according to site specific occurrences regarding vegetation, hydrology, and listed species.

b. **Wildlife Observation Platform (8 X 10 ft) + Bench:** An observation stop to include a bench will be field located to take advantage of local opportunities for wildlife observation and interpretation. If possible the observation point will be located at the waters edge of Oyster Creek. The platform will be a flat deck that does not require stairs and will be made out of a recycled plastic and wood fiber decking called Trex.

c. **Interpretive Signage:** There will be minimal interpretive signage due to the size of the project site. Interpretive signage will be coordinated to complement the surrounding area signage. The structures will be educational, identifying and explaining the importance of surrounding resources.

Activity	**Date**
Nature Trail	Fall 2006
Wildlife Observation Platform	Winter 2007
Interpretative Signage	Summer 2006
Boardwalk (Phase III)	Fall 2007

There are no existing improvements or structures located on either project site. Parking and access to the sites will be in conjunction with parking and access for Cedar Point Park. Cedar Point Park currently has a parking lot on site with access from CR 775 or Placida Rd.

Surrounding structures, projects sites, their relation to one another, and other related parks or schools in the area are provided as exhibit T

The following elements are associated with the Cedar Point Park addition, Phase III:

a. **Nature Trail:** A limited trail will complement the existing Cedar Point Park and Cedar Point Park addition, phase II trail system. The trial will be a four foot wide foot path cleared by repetitive walking or hand clearing and at the most using a machete causing minimal disturbance. The trail will be field located and mapped according to site specific occurrences regarding vegetation, hydrology, and listed species.

b. **Picnic Shelter:** A small picnic shelter will be constructed as an amenity to the regional trail system. A 25-foot buffer will be provided between the picnic

c. **Interpretive Kiosk:** The interpretive kiosk will be coordinated to complement the surrounding area signage. The literature will be educational, identifying and explaining the importance of surrounding resources and stewardship responsibilities.

F. SUMMARY OF PROTECTION PROVIDED LISTED SPECIES DURING DEVELOPMENT

As a general rule, any proposed alteration or use that might adversely impact listed species is strictly prohibited. Further, as stated in the FCT application, all design and construction of proposed improvements will be coordinated with and follow guidance provided by the Florida Fish and Wildlife Conservation Commission (FWC) and the U.S. Fish and Wildlife Service as needed to protect and/or restore listed species and their habitat.

FEI reported sighting 3 bald eagles and gopher burrows on the site and stated that the mature pine flatwoods provide suitable habitat for the bald eagle, gopher tortoise and the Florida pine snake. To date, no bald eagle nests are known to appear on the property. The eagles observed over the site are believed to reside on nearby Cedar Point Park and were most likely foraging along the creek or possibly in search of new perching or nesting trees.

Most of the gopher tortoise burrows observed are located on the highest areas of the property near the southern boundary of Lemon Bay High School, which has since been purchased by the School

Board for expanding the high school. Because the site is so large, there is ample room to avoid impacting any tortoise burrows or valuable habitat identified by the listed species survey that will be completed prior to finalizing the site plan or activity on the site.

There is approximately 18 acres of Xeric Oak habitat found on the San Casa addition site that will be managed and maintained to provide good quality habitat for Gopher Tortoises and Scrub Jays. The use of prescribed fire, mechanical alteration, design planning and educational signage will be utilized in the protection of these specific habitat areas.

The FCT Application study indicates there are 2.7 acres of tidal mangroves and 0.65 acres of tidal marsh fringing Oyster Creek and the tributary. These wetland communities provide important habitat to several resident listed species (herons, egrets, etc.) and help maintain water quality in the streams and bay. Specifically to protect the mangroves and marsh areas, permeable surface trails will be located at least 15 feet and paved trails will be located at least 25 feet upland of wetlands to reduce disturbance of the listed species that use these habitats. The canoe landing overlooks and fishing areas/decks will be located only at “upland” shoreline areas not fronted with mangrove or marsh.

The Cedar Point Park addition, Phase II is identified on a much smaller scale consisting of identical habitats and similar species. The same precautions and planning efforts will apply. The design and construction of proposed improvements will be coordinated with and follow guidance provided by the Florida Fish and Wildlife Conservation Commission (FWC) and the U.S. Fish and Wildlife Service as needed to protect and/or restore listed species and their habitat.

2. Master Site Plan

Attached are “conceptual” plans for Oyster Creek Environmental Park, the San Casa addition, and the Cedar Point Park addition, Phase II showing existing and proposed physical improvements and activity areas, which provides a visual depiction of the overall development plan for the site.
Note: Charlotte County will request written approval from the FCT before undertaking any site alterations or physical improvements that are not addressed in the FCT-approved management plan and shown on the master site plan

3. Permits

Permits and/or approvals as shown below are required for the following development/activities: (Note: FCT will be notified that all required licenses and permits have been obtained prior to the initiation of any construction on the site.)

Development Activity	Co - B l d g	Co-Tree	SWFWMD	F D E P	Health Dept.	U S C G
Group picnic pavilion	x			x		
Small picnic pavilions	x			x		
Natural Trail system		x				
Restrooms	x			x	x	
Roadway & Parking		x	x	x		
Canoe & Kayak Landing	x		x	x		x
Scenic Overlook	x		x	x		
Exotic plant removal			x	x		
Fishing pier	x		x	x		x
Walkway/paved trail		x	x	x		
Educational signage	x		x			
Stormwater retention		x	x	x		
Mangrove restoration		x	x	x		
Entrance sign	x					
Bike racks	x					
Footbridge	x	x	x	x		x
Primitive Camping	x	x				

4. Easements, Concessions, or Leases

There are no proposed or existing easements. There are no plans to provide any concessions or leases in the parks. Charlotte County Parks and Recreation will provide the Florida Communities Trust a 60 day prior written notice and information regarding any lease of any interest, the operation of any concession, any sale or option, the granting of any management contracts, and any use by any person other than in such person's capacity as a member of the general public and no document will be executed without the prior written approval of the Florida Communities Trust. Prior to the execution of any document, it will require review and approval by the Florida Communities Trust. All fees collected will be placed in a segregated account solely for the proper upkeep and maintenance of the project site.

5. Hazard Mitigation

All three sites are located on the 100-year floodplain of Oyster Creek. Oyster Creek connects directly to the Lemon Bay Aquatic Preserve, which is a Class II Outstanding Florida Waters. All park sites are also located within a greenway waterway corridor known as the Oyster Creek, Lemon Bay Aquatic Preserve, and Ainger Creek Waterway. All structures will meet the appropriate building codes pertaining to hazard mitigation including:

- Structures will be built to withstand 130 mph winds

- Structures will be built meeting the standard height requirements for the zone.

A 100-year floodplain map is provided as exhibit M

IV. Key Management Activities

1. Natural Resource Protection

Oyster Creek Environmental Park is a 135.22 acre site composed of 126.71 acres of pine flatwoods, 2.72 acres of mangrove swamps, 1.71 acres of streams and waterways, 1.69 acres of Brazilian Pepper (*Schinus terebinthifolius*), 1.01 acres of cabbage palm (*Sabal palmetto*), laurel oak (*Quercus laurifolia*), and Brazilian Pepper hammock, 0.73 acres of borrow area, and 0.65 acres of saltwater marshes (Florida Environmental 1998). Due to fire suppression, saw palmettos (*Sereona repens*) in the pine flatwoods are overgrown. Brazilian Pepper has encroached into the cabbage palm and laurel oak hammock, the saltwater marsh, the excavated section of an unnamed tributary and portions of the Oyster Creek shoreline, and the borrow pit.
A FLUCCS map is provided as exhibit Mc

A. Applicable management techniques to protect and enhance the resources on the project site. Management techniques such as the following may be applicable to the site:

a. Baseline survey of plant and animal species:

In March 1998, Florida Environmental, Inc. (FEI) conducted an environmental survey of Oyster Creek Park to identify the dominant plant communities and conspicuous wildlife species residing on and/or utilizing the property. While FEI described the type, size and distribution of dominant plant communities (next paragraph), the FEI report did not provide any associated plant lists.

Additional plant species for each vegetative community are presented below.

Pine Flatwoods (FLUCCS 411, 126.7 acres): About 94 % of the site is covered with a fifty to seventy percent (50-70%) canopy of healthy, mature South Florida Slash Pine. The sub-canopy, above the saw palmetto, is fairly open with wax myrtle at about 10%; rusty lyonia, fetterbush, winged sumac scattered about and an occasional sabal palm. Saw palmetto is dense, covering 50-80% of the midstory. In open areas, broomstraw, wiregrass, blueberry, runner oak, St. John=s

wort, blackroot, pine braken fern and dwarf wax myrtle are the most common ground cover species. Sawtooth fern (blechnum serrulatum) occurs in lower areas and along the creeks and depressions.

Mangrove Swamps (FLUCCS 612, 2.7 acres): Red Mangrove dominate the low mangrove forest that fringes about half of the Oyster Creek shoreline and most all of the tributary that runs north off Oyster Creek. Black and White Mangrove are scattered behind the Reds on higher portions of the intertidal slope.

Saltwater Marshes (FLUCCS 642, 0.65 acres): Black needle rush forms a 5-25 foot fringing tidal marsh along portions of the shoreline that are not mangrove and across the upper reach of the tributary.

Oak - Palm Hammock (FLUCCS 4281, 1.0 acre): Laurel Oak and sabal palm, invaded with Brazilian Pepper form a >hydric hammock= at the upper end of the tributary. Some Blechnum fern survives beneath the dense overstory.

Brazilian Pepper (FLUCCS 422, 1.7 acres): Brazilian Pepper forms a dense monoculture around the borrow pit.

The type, size and distribution of dominant plant communities mapped by FEI are shown on the Oyster Creek Park FLUCCS Map, FEI, dated March 9, 1998.

Although no formal “listed” species surveys have been conducted to date, FEI did observe several listed plant and animal species, including the southern bald eagle (*Haliaeetus leucocephalus*), gopher tortoise (*Gopherus polyphemus*) and coontie (*Zamia pumila*). Additionally, FEI noted that the area provides suitable habitat for the Florida pine snake (*Pituophis melanoleucus mugitus*), listed wading birds, and the West Indian manatee (*Trichechus manatus*).

Charlotte County will conduct a baseline environmental survey of the San Casa addition to Oyster Creek Park to identify dominant plant communities and conspicuous wildlife species residing on and/or utilizing the property.

As shown on the San Casa FLUCCS map (FCT application, May, 1999) the 133 acre site consists of 0.75 acres of herbaceous plants, 97 acres of pine flatwoods / saw palmetto, 9.5 acres of pine flatwoods / Brazilian Pepper, 18.08 acres of Xeric oak scrub, 0.76 acres of embayment, 5.71 acres of Mangrove Forest, 0.04 acres of freshwater marsh, 1.15 acres of freshwater marsh / Brazilian Pepper and 50 acres of pine flatwoods located in the active recreation outparcel.

A FLUCCS map is provided as exhibit N

The Cedar Point Park addition, Phase II consists of 16.35 acres of mesic pine flatwoods with a small mangrove fringe comprising of .65 acres. The Lemon Bay Conservancy, Inc.'s 1.87 acre addition (Phase III) consists of 1.70 acres of mesic flatwoods and .17 acres of mangrove forests. The Cedar Point Park survey administered in 1992 by the Florida Fish and Wildlife Conservation Commission applies to the Cedar Point Park addition, Phase II.

A FLUCCS map is provided as exhibit O

In 1992, a survey of Cedar Point Park was conducted by the Florida Game and Fresh Water Fish Commission (GFC). The survey identified 554 plant species, including 21 threatened species, 5 commercially exploited species and species which were candidates for listing by the United States Fish and Wildlife Service (FWS). An additional 22 species were non-indigenous plant species. The wildlife survey identified 18 mammal, 130 bird, 19 reptile, 10 amphibian, and 7 fish species. Of these, 3 endangered, 2 threatened, 10 species of special concern, 4 FWS candidate species, and 8 Convention on International Trade in Endangered Species (CITES) species (Beever 1992).

Refer to the priority timeline for the schedules of species surveys.

b. Protection plan for listed species:

The project site contains habitat located in a Strategic Habitat Conservation Area, as identified by the Florida Fish and Wildlife Conservation Commission (FWC) for the southern bald eagle. There are currently two active southern bald eagle nests located on the surrounding Cedar Point Park, and commonly used perching snags on the adjacent Oyster Creek Park. The acquisition of this site will expand the natural buffer around the bald eagle nests and protect them from threatening future development. Management of the site will help to ensure the wealth of the bald eagles and promote favorable habitat for the longevity of nesting southern bald eagles. The wetlands provide habitat for many wading birds listed as species of special concern such as the wood stork (Mysteria Americana), white ibis (Eudocimus albus), roseate spoonbill (Ajaia ajaja), little blue heron (Egretta caerulea), reddish egret (Egretta rufenscens), snowy egret (Egretta thula), limpkins (Aramus guaauna), and tricolored heron (Egretta tricolor). In the sparse, drier parts of the mesic flatwoods, the goher tortoise (Gopherus polyphemus) has been observed. All county, state (FWC), (FCREPA), and federal (FWS) guidelines will be followed regarding listed species. Development of the Oyster Creek Park, the

San Casa addition, and the Cedar Point Park addition, Phase II will be minimal (foot trails, primitive camping, biking paths and canoe and kayak launches) and will be designed to avoid impacts on listed species that occur in the park.

Comments on this land management plan regarding listed species will be requested from the Florida Fish and Wildlife Conservation Commission (FWC) six months after approval of the management plan by Florida Communities Trust (FCT).

c. Protection and enhancement plan for native vegetation communities:

Native vegetation communities will be managed in a manner that maintains the natural, functional and/or successional integrity. Vegetation communities that are naturally fire dependent will be periodically burned or mechanically disturbed. Invasive, non-indigenous vegetation will be removed and will be replaced with indigenous species that naturally occur within the vegetation community (where resultant clearing is greater than 4 square feet). All county, state (GFC) and federal (FWS) guidelines will be followed regarding listed species.

d. Protection plan for surface water and ground water quality:

Any activity that might adversely impact surface or ground water quality requires state and/or federal permits. At present, no uses are proposed that would adversely impact surface or ground water quality. Conversely, the management of Oyster Creek, the San Casa addition, and Cedar Point Park addition, Phase II as an environmental park will prevent further residential development of the area, which would have more of an impact on both surface and ground water.

e. Discuss the water quality of Oyster Creek.

The only reliable water quality found for Oyster Creek was found in the FDEP >Storet= database, which shows that Oyster Creek has a >Trophic State Index= water quality classification of >fair=. This was derived from having a Water Chemistry nitrogen value of >47' = >good= and a total phosphorus value of >65' = >poor= (which is natural for many southwest Florida streams). The file also shows that Lemon Bay was rated >fair= north of and >good= south of the Charlotte County line.

f. Stormwater management plan to improve the quality of water entering Oyster Creek through the project site.

The County will coordinate one storm water management plan with the South West Florida Water Management District. The storm water management plan will include the coordination with the adjacent high school. The high school is currently working on a master plan for their campus. The Parks and Recreation project manager will be assisting the school staff on their capital improvement plan, which will include a cooperative effort on retention issues. The storm water runoff from the road has been addressed with the road widening of State Route 775. The retention area that will be designated for road runoff for this region is being designed and permitted at the Cedar Point Environmental Park. Parks and Recreation staff is currently coordinating with many agencies to see that Oyster Creek is protected with the storm water plan for the road widening.

The County is committed to developing a comprehensive storm water plan that improves the waters that are entering Oyster Creek.

The County will eliminate three drainage ditches from the high school that flow into Oyster Creek and aid the high school in dealing with their runoff.

The County will address the drainage concerns that are created with the burrow pit on the north side of the property.

The County will treat the runoff created by any development with the park site.

The County will treat runoff from Rt. 775 before entering Oyster Creek.

The County will participate in a water-monitoring program of the Oyster Creek.

The Cedar Point Park addition, Phase II directly complies with all the statements above.

All stormwater facilities for the adjacent 50-acre active recreation out parcel will be designed in a manner that will not impact the San Casa addition project site.

g. Commitment to coordinate with SWFWMD on the design and implementation of the stormwater management plan for the Project Site.

Charlotte County hereby commits to coordinate with SWFWMD on the design and implementation of the stormwater management plan for the Project Site.

h. Provisions to periodically monitor the site to insure the continued viability of vegetative communities, plant species and animal species found on the site and to control invasive exotic vegetation:

Charlotte County staff will monitor the plants and wildlife located on Oyster Creek Environmental Park, the San Casa addition, and the Cedar Point Park addition, Phase II. Standard survey methodologies, approved by GFC, will be determined and utilized by County staff. Fifty foot vegetative transects will be installed and monitored bi-annually to properly manage the representative vegetative communities on the project site. The monitoring activities will begin within a year from management plan approval by FCT. Data will be provided in annual stewardship reports sent to Florida Communities Trust on the anniversary of the project plan approval date.

i. Procedure for forwarding survey information on the occurrence of listed plant and animals to the Natural Areas Inventory:

Charlotte County will forward the surveys of listed plants and animals to the Florida Natural Areas Inventory (FNAI) on an annual basis**.** Results and future findings will be reported to FNAI and forwarded on the appropriate forms
A copy of the forms are provided as exhibit S

j. Provide specific details on how proposed alterations and development activities will be coordinated with the protection of plant communities and listed plant and wildlife species:

Development of the parks will be minimal and will be designed to minimize impacts on the vegetation communities and species that occur in the park. Development will be concentrated in areas that have already been negatively impacted (borrow pit and areas covered with non-indigenous species).

k. Coordinating the drafting of a prescribed Burn Plan with the Division of Forestry and developing an outreach program to inform residents of the area of the benefits of prescribed burns:

The County will develop and implement a fire fuel management program for the project sites. The plan will include field locating and construction of perimeter fire breaks around property boundaries. In areas of intense urban interface, a mechanical fuel reduction program will be implemented to reduce fuel loads while keeping urbanized smoke issues from becoming a problem. In other areas a fire fuel

management plan will be implemented and will include the delineation of fire units, construction of interior fire lines, fuel assessments and modeling, and coordination with local and neighboring agencies. All burns will have a prescribed plan with a certification number approved by the State Division of Forestry. Coordination with neighboring agencies is essential for the success of a burn program. Charlotte County will establish relationships and utilize resources from the following agencies, Division of Forestry, Englewood Fire District, Boca Grande Fire District, Nokomis Fire District, Sarasota County, and the Charlotte Harbor Aquatic and State Buffer Preserve.

The Cedar Point Park addition, Phase II and Phase III fire fuel management plan will filter into and become a part of the Cedar Point Park fire fuel management plan. Cedar Point Park is located in an area of heavy urban interface where mechanical fuel reduction would prove to be the best strategy to achieve safe vegetative fuel loads. When implementing any fire fuel management program, whether mechanical management or fire fuel management, public outreach and awareness is essential. The Cedar Point Park Environmental Center will be used to conduct public outreach sessions to education the community on the concepts and benefits of fire fuel management.

B. Provide time frames for initiating and completing the various surveys and protection and enhancement plans in a month and year format:

Month/Year	Activity
June 2000	Formal vegetation, wildlife and wetland survey.
December 2000	Develop prescribed fire management plan
March 2001	Develop Conceptual Site Plan.
April 2001	Develop exotic wildlife management & removal plan.
August 2001	Initiate invasive exotic vegetation eradication and native revegetation program.

Most of these activities are presently taking place regarding the Cedar Point Park addition Phase II + Phase III. Except:

Month/Year	Activity
October 2005	Develop Conceptual Site Plan

2. Resource Restoration and Enhancement

Primary components of the project site enhancement and restoration efforts are:

- **Conduct a restoration and enhancement analysis** (updated, baseline environmental survey) of the property to ascertain the location and quantities of invasive, exotic plant species to be removed.

- **Develop exotic vegetation eradication plan** that outlines the, materials and scope and sequence of work needed to eradicate all exotics on site.

- **Eradication of invasive non-indigenous plant species** per initial removal and follow-up treatments.

- **Maintenance of native habitat**: Prescribed Fire or mechanical methods will be used to restore the pine flatwoods.

- **Enhancement and maintenance of borrow pit.** There is no existing data about the water quality of the borrow pit. Our assessment will be made as part of the Park Analysis and Design Study. The County will improve the water quality and function of the borrow pit by removing invasive exotics, reducing the slope of the shoreline, creating a littoral shelf, creating pools along the shoreline, shallowing the borrow pit and replanting the shoreline with submerged and emergent native vegetation.

A. Restoration of vegetation communities:

After the invasive, non-indigenous plant species have been eradicated, the resultant open areas will be re-vegetated with indigenous species appropriate to the surrounding habitat. No more than 10% of surrounding ground cover will be used to re-vegetate an area.

B. Removal of invasive exotic vegetation

Invasive and exotic species that occur on the sites will be eradicated through implementation of a long term control program. Planning will begin in the first year after acquisition. County staff will reference the Exotic Pest Plant Council's List of Florida's Most Invasive Species to assist in identifying invasive exotics on site. Techniques for controlling invasive and exotic species will include selective pruning, herbicide, and mechanical treatment. Treated areas will be replanted with appropriate native vegetation, monitored on an annual basis and retreated as necessary.
Exotic Pest Plant Council's List of Florida's Most Invasive Species is provided as exhibit R.

Oyster Creek Park and the Cedar Point Park addition, Phase II inherit low densities of scattered exotic vegetation while the San Casa addition has approximately 20 acres of Brazilian pepper infested lands. Brazilian pepper is scattered through the freshwater wetland and is densely located on a remnant spoil berm along the Oyster Creek shoreline. There are mature stands of Brazilian pepper located in a relic floodplain that serve the tributary leading to Oyster Creek. Techniques used will include mechanical treatments such as cut-stump method and basal bark treatments. The particular technique depends on the species, the species size, and species density. Chemicals that will be used include Garlon 4 and necessary adjuvants. Staff will monitor and maintain the exotic removal sites on a three to six month basis and retreat as necessary. Treatment of exotic vegetation including the 20 acres of Brazilian pepper will be start in the fiscal year 2003 and end in the fiscal year 2005. Re-treatments will be ongoing and will be initiated periodically throughout the future of the property.

C. Hydrology changes and stormwater runoff:

No changes in the natural hydrology or stormwater runoff are anticipated due to development of Oyster Creek Environmental Park, the San Casa addition, or the Cedar Point Park addition, Phase II.

D. Feral Animals:

Feral animals will be removed as needed. Feral animals (cats, dogs, hogs, Muscovy ducks) will be trapped and taken to the County Animal Shelter for adoption or euthanasia.

E. Monitoring programs to insure success of the resource and enhancement activities:

Charlotte County will monitor the success of the removal of non-indigenous species of plants and restoration of native vegetation communities on an annual basis to insure success of these resource and enhancement activities.

F. Time frame for initiating and completing the various restoration and enhancement activities in a month and year format:

Oyster Creek

Year	**Activity**
1999 - Fall	Purchase closing
2000 - Summer	Baseline environmental survey
2002 - Fall	Fire break installation
2003- 2005	Removal of invasive exotic vegetation

San Casa Addition

Year	Activity
2001 - Spring	Purchase closing
2004 - Summer	Baseline environmental survey
2003 - Winter	Fire Break Installation
2004 – 2006	Removal of invasive exotic vegetation

Cedar Point Park addition, Phase II

Year	Activity
2003 - Fall	Develop fire fuel management plan
2004 - Fall	Removal of invasive exotic vegetation
2005 - Winter	Implement fire fuel management plan
2006 - Fall	Shoreline restoration along Oyster Creek

All activities will be provided in the appropriate annual stewardship report for the specific project site.

3. Archaeological and Historical Resource Protection

The Oyster Creek Park has not been surveyed for archaeological resources, but it has been identified as an area which is likely to have significant historical and archaeological resources (FEI, 1998) Historical and archeological surveys will be conducted prior to construction. If evidence is found to suggest an archeological or historic resource, the County will notify the Division of Historical Resources and take the appropriate measures to protect the identified resources.

The San Casa addition to Oyster Creek Park has not been surveyed for archaeological resources. Historical and archaeological surveys will be conducted prior to construction. If evidence is observed to suggest an archaeological or historical resource, then the county will notify the Division of Historical Resources and take appropriate action to protect the identified resource.

The Cedar Point Park addition, Phase II contains an archaeological site CH00064 according to the Division of Historical Resources Master Site File. The surrounding Cedar Point Park contains several other sites that are being carefully managed. Sites identified in the future may include interpretation in addition to protection. Interpretation will be minimal due to the size of the project site. Interpretive signage will be coordinated to complement the surrounding area signage. The structures will be educational, identifying and explaining the importance of the surrounding historical and archeological resources. Important sites will be kept quiet and all recreation activities will be directed away from these areas for protection of the site integrity. Wherever possible, poor quality or disturbed sites may be interpreted for educational purposes. The collection of

artifacts or the disturbance of archaeological and historic sites on the project site will be prohibited unless prior authorization has been obtained from the Department of State, Division of Historical Resources. The management of the archaeological and historic resources will comply with the provisions of Chapter 267, Florida Statutes specifically Sections 267.061.

A copy of the master site file regarding the archaeological site is provided as exhibit V.

A copy of An Archaeological Assessment of the Cedar Point Tract, Charlotte County, Florida by George M. Luer is provided as exhibit U.

4. Environmental Education Program

For all practical purposes, the Oyster Creek Park property, the San Casa addition, the Cedar Point Park addition phase II, and the Cedar Point Park addition, Phase III represent a physical expansion of the adjacent Lemon Bay High School property and the County's Cedar Point Environmental Park across the street. As stated in the FCT Application, both facilities plan to utilize the Oyster Creek Park site and the Cedar Point Park addition, Phase II and Phase III to expand their regularly scheduled and ongoing environmental education programs. The Parks, Recreation, & Cultural Resources Department, through the Environmental Specialist and their contract with CHEC, are committed to providing the following scheduled educational programs to promote the protection of the natural resources at Oyster Creek.

During the tourist season from October 15 through April 1 the concentration will be on a guest speaker program and following up with guided nature walks. This will be complemented with Special Events such as a moonlight hike or late night paddle. During the summer, the Parks, Recreation, & Cultural Resources Department will use this sight as an environmental field trip site for youth camps throughout the area. These camps will be offered to children ages 6 – 14 in the Sarasota and Charlotte County area. Several of the camps are designed for children that are at risk. The environmental educational program will be flexible enough so that it will compliment any school curriculum at Lemon Bay High School. The high school could use these sites for biology and environmental science classes, art and literature classes and extracurricular activities such as the Environmental Club. The project site is obligated to provide at least 24 regularly scheduled programs annually. The scheduled program activities will be forwarded to FCT in the Annual Stewardship Report. The information will include the types of programs, population served, frequency of event and who will lead the event.

5. Greenway Management

Charlotte County is committed to developing and implementing a strategy for protecting and managing publicly owned lands along Oyster Creek. The County has developed a greenway resolution and map, as Oyster Creek is integral to the greenway system. Oyster Creek Environmental Park will connect to the Cedar Point Park with a trail connection adjacent to the Oyster Creek waterway under the C.R. 775 bridge and a formal crosswalk and sidewalk at Lemon Bay High School. Oyster Creek Park will connect to the proposed San Casa addition site across the creek. As well, through the linear connection, there is the ability to link this site with the Amberjack Slough, the State owned Don Pedro Park site, the Boca Grande State Park and the Cape Haze Pioneer Trail. The Parks, Recreation, & Cultural Resources Department is currently working on coordination and management of these lands with the State Park system, County M.P.O., Natural Resources, Public Works, Tourism Bureau, Parks and Recreation Advisory Board. Assistance has been requested from of the National Park system as well as state permitting agencies (DEP, SWFWMD). As we approach resource management, a county-wide management plan will be essential to maintain the uniqueness of each individual site. The Parks, Recreation, & Cultural Resources Department is responsible for managing and maintaining the County‘s environmental lands and ensuring that outdoor recreational opportunities are available to the public.

Parks and Recreation staff recently applied for a grant funded by The Department of Environmental Protection, Department of Greenways and Trails. It is called the Recreational Trails Program or Rails to Trails grant. The grant dollars will be used to construct the waterfront trail that will connect Oyster Creek Park and Cedar Point Park.

6. Coordination with Agencies and Neighbors

Management activities for the park will be closely coordinated with the state resource protection agencies. The Charlotte County Parks, Recreation, & Cultural Resources Department is developing good working relationships with the Department of Forestry and Department of Environmental Protection. Charlotte County will monitor adjacent off site activities through its regulatory and permitting programs to ensure that such activities do not adversely impact park resources.

The land management plan will be forwarded to the Division of Forestry, Environmental Services Office of the Game and Fresh Water Fish Commission, and the Charlotte Harbor Preserve within the first year after acquisition. Charlotte County will request that they review the management

plan, comment on the proposed development plan for the site, and assist in the development of strategies to protect the resources on the Project Site.

Further, management activities for the site will be closely coordinated with adjacent residential development, landowners, and residents. Volunteers will play an essential role at this site and are involved in nearly every aspect of management from guided trail walks to removal of exotic species. For adjacent landowners and residents not involved as volunteers, staff will provide environmental education with the goal of fostering awareness and stewardship of the parks and all of Charlotte County's natural resources. If local residents are aware of and understand the park's natural resources and ecological processes, they may be more inclined to protect them.

7. Maintenance

Charlotte County will be responsible for providing the maintenance at the Oyster Creek Environmental Park, the San Casa addition, and the Cedar Point Park addition, Phase II. This will be done through the Parks, Recreation, & Cultural Resources Department. The following is a list of maintenance tasks that will be provided:

- Litter removal
- Restroom clean up
- Sign maintenance
- Roadway and parking lot maintenance
- Vandalism repair
- Trimming
- Edging /mowing
- Maintenance of worn facilities
- Safety inspections

8. Security

The Parks and Recreation staff is often the first line of defense against vandalism. This is done by being visible and informing the public of the ordinances governing the appropriate behavior of this type of park. Second, the Charlotte County Sheriffs Department is responsible for providing regular police patrols. There is also the opportunity to tap into the schools resource officer. This extra set of eyes will provide additional security, as well as be tuned into any immediate local problems.

Due to the size and location of the Cedar Point Park addition, Phase II, fencing and signage will not be necessary in order to provide security measures.

9. Staffing

Charlotte County Parks & Recreation will provide staffing for the Project sites. The following support staff will be working to operate and maintain the park:

Landscape Architect/Project Manager
- park design and development

Environmental Specialist
- land management, stormwater and environmental programming

Maintenance Foreman and Grounds workers
- equipment, grounds and building maintenance

Recreation Coordinator
- outdoor recreational programming

In addition there will be support staff provided by the Natural Resources Division and the Facilities Management Department. Foreman will contract out large projects that require expertise that cannot be provided internally and will oversee the contracted work.

V. COST ESTIMATES/FUNDING SOURCE

A. Oyster Creek, San Casa Addition, & Cedar Point Park addition, Phase II Cost Estimates and Funding Source:

The funding source for this project will be the 1% sales tax and ad valorem taxes that are assigned to the Charlotte County Parks, Recreation, & Cultural Resources Department.

Oyster Creek

Year 1 – 2000	***Cost***
Archeological Study	3000
Plant and Animal Survey	4500
Public Meetings	1000
Design /Permitting	45000
Hardline Cut In	6000
Signage	8000
Water Monitoring	2000
Total	**$66,800**

Year 2 – 2001	
Maintenance	18000
Boundary Fence	8000
Water Monitoring	2000
Public Meetings	1000
Burn / Mechanical Removal	4000

Permanent Transects and Photo Points	1200
Plant and Animal Survey	4000
Educational Programs	3000
Special Events	1000
Exotic Plant Removal	3000
Feral Animal Removal	1000
Stewardship Report/Management Update	1500
Total	**$61,200**

Year – 2002

Maintenance	18000
Water Monitoring	2000
Trails	15000
Burn/Mechanical Removal	4000
Permanent Transects and Photo Points	1200
Shoreline Overlooks	15000
Parking Lot	10000
Educational Programs	3000
Camping	3000
Special Events	1000
Exotic Plant Removal	3000
Restroom	50000
Feral Animal Removal	1000
Stewardship Report /Management Update	1500
Total	**$127,700**

GRAND TOTAL $255,700

San Casa Addition

Year 1 – 2001	***Cost***
Archeological Study	3000
Plant and Animal Survey	4500
Public Meetings	1000
Design /Permitting	45000
Hardline Cut In	6000
Trails	15000
Signage	8000
Water Monitoring	2000
Exotic Plant Removal	5000
Total	**$89,500**

Year 2 – 2002

Maintenance	18000
Water Monitoring	2000
Burn / Mechanical Removal	4000
Permanent Transects and Photo Points	1200
Plant and Animal Survey	4000
Educational Programs	3000
Special Events	1000

Exotic Plant Removal	3000
Feral Animal Removal	1000
Restrooms	2000
Stewardship Report/Management Update	1500
Total	**$40,700**

Year 3 – 2003

Maintenance	18000
Water Monitoring	2000
Burn/Mechanical Removal	4000
Permanent Transects and Photo Points	1200
Educational Programs	3000
Special Events	1000
Exotic Plant Removal	3000
Feral Animal Removal	1000
Stewardship Report /Management Update	1500
Parking Lot & Roadway	10,000
Boundary Fence	10,000
Shoreline Overlook	15,000
Total	**$69,700**

Grand Total: $199,900

Cedar Point Park addition, Phase II

Year 1 – 2004	***Cost***
Archeological Study	6,000
Biological Survey	2,500
Public Meetings	500
Design/Permitting	10,000
Water Monitoring	2,000
Vegetation Monitoring	2,000
Stewardship Report /Management Update	1,500
Total	**$24,500**

Year 2 – 2005	***Cost***
Maintenance	5,000
Trail Construction	5,000
Exotic Plant Removal	5,000
Signage	1,000
Water Monitoring	2,000
Vegetation Monitoring	2,000
Mechanical Removal	4,000
Stewardship Report /Management Update	1,500

Total	**$25,500**

Year 3 – 2006	***Cost***
Maintenance	5,000
Wildlife Observation Platform	10,000
Water Monitoring	2,000
Vegetation Monitoring	2,000
Re-treatment Exotic Plant Removal	1,000
Mechanical Removal	4,000
Educational Programs	3,000
Special Events	1,000
Stewardship Report /Management Update	1,500
Total	**$29,000**

Grand Total: $79,000

Cedar Point Park addition, Phase III

Year 1 – 2004	***Cost***
Mechanical Fuel Reduction	2,000
Total	**$2,000**

Year 2 – 2005	***Cost***
Maintenance	3,000
Trail Construction	1,000
Exotic Plant Removal	2,000
Interpretive Kiosk	1,200
Stewardship Report /Management Update	1,500
Total	**$8,500**

Year 3 – 2006	***Cost***
Maintenance	3,000
Picnic Shelter	3,000
Re-treatment Exotic Plant Removal	1,000
Educational Programs	3,000
Special Events	1,000
Stewardship Report /Management Update	1,500
Total	**$12,500**

Grand Total: $23,000

VI. SCHEDULE

Oyster Creek Priority Schedule

Year One – 2000 -2001

The following project site activities will begin in year one:

- Prepare fire management plan – Winter
- Install Permanent interior and exterior fire hard lines – Fall
- Conduct annual species survey – Fall
- Develop conceptual park plan – Fall

Year Two – 2001 - 2002

The following project activities will begin in year two:

- Conduct Open Public Meetings – Spring
- Begin implementation of fire fuel management – Spring
- Continue annual species survey – Summer
- Develop feral animal removal program – Fall
- Write stewardship report – Summer
- Begin water monitoring – Summer
- Ongoing maintenance

Year Three – 2002 - 2003

The following project activities will begin in year three:

- Continue implementation of fire fuel management – Fall
- Continue annual species surveys – Summer
- Continue water monitoring - Ongoing
- Begin feral animal removal program – Spring
- Develop environmental education and volunteer program – Fall
- Write stewardship report – Summer
- Ongoing maintenance

Year Four – 2003 – 2004

The following project activities will begin in year four:

- Continue fire fuel management – Fall
- Begin invasive exotic species removal – Summer
- Continue water monitoring - Ongoing
- Continue annual species survey – Spring
- Continue feral animal removal program – Ongoing
- Install perimeter fencing – Winter
- Start construction of phase I park components – Fall
- Write stewardship report – Summer
- Ongoing maintenance

Year Five – 2004 – 2005

The following project activities will begin in year five:

Continue fire fuel management – Fall
Re-treatment invasive exotic plants – Summer
Continue water monitoring - ongoing
Continue annual species survey – Spring
Maintain park components and amenities – Fall
Begin environmental education program – Summer
Continue feral animal removal program – Ongoing
Finish construction of phase I park components – Spring
Write Stewardship report - Summer

San Casa Addition Priority Schedule

Year One 2002 – 2003

The following project activities will begin in year one:

Conduct an archeological study – Fall
Conduct open public meetings – Fall
Start preparing fire fuel management program – Winter
Conduct vegetative survey – Summer
Develop exotic removal plan – Summer
Develop feral animal removal plan – Fall
Develop conceptual park plan – Fall

Year Two 2003 – 2004

The following project activities will begin in year two:

Implement fire fuel management/Install fire break – Winter
Begin exotic removal and treatment - Spring
Conduct vegetative survey – Summer
Begin feral animal removal program - Fall
Write stewardship report – Winter

Year Three 2004 - 2005

The following project activities will begin in year three:

Continue fire fuel management plan – Spring
Conduct vegetative survey – Summer
Continue feral animal removal plan – Ongoing
Continue exotic removal and treatment – Spring
Begin construction of Hiking trail system – Fall
Roadway and parking – Winter
Perimeter fencing – Winter
Signage and kiosk - Winter
Write stewardship report – Winter
Maintenance - Ongoing

Year Four 2005 – 2006

The following site activities will begin in year four:

Continue fire fuel management program – Spring
Conduct vegetative survey – Summer
Complete exotic removal and treatment – Fall
Continue feral animal removal plan – Ongoing
Picnic pavilions – Winter
Bike racks – Winter
Paved in-line skating trail – Winter
Construct restroom facilities – Winter
Write stewardship report – Winter
Maintenance – Ongoing

Year Five 2005 – 2006

The following site activities will begin in year five:

Continue fire fuel management program – Spring
Conduct vegetative survey – Summer
Continue feral animal removal plan – Ongoing
Annual maintenance + re-treatments of exotic vegetation-ongoing
Scenic overlook and fishing dock – Spring
Canoe/kayak landing – Summer
Boardwalk and Scenic Overlook – Winter
Footbridge – Winter
Write stewardship report – Winter
Maintenance – Ongoing

Cedar Point Park addition, Phase II + Phase III Priority Schedule

Year One 2004 – 2005

The following project activities will begin in year one:

Conduct open public meetings – Fall
Develop fire fuel management program – Winter
Conduct vegetative survey – Summer
Conduct Archeological survey – Fall
Develop exotic removal plan – Summer
Develop feral animal removal plan – Fall
Develop conceptual park plan – Fall
Design/Permitting – Year Round

Year Two 2005 – 2006

The following project activities will begin in year two:

Begin fire fuel management plan – Spring
Amend land use and zoning designations – Summer
Construct Interpretive Kiosk (Phase III) - Fall
Conduct vegetative survey – Summer

Removal of invasive/exotic species – Summer
Begin water quality monitoring – Ongoing
Begin feral animal removal program – Ongoing
Begin construction of trail system – Fall
Develop Interpretive Signage - Summer
Write stewardship report – Winter

Year Three 2006 - 2007

The following project activities will begin in year three:

Continue implementation of fire fuel management plan – Spring
Conduct vegetative survey – Summer
Continue feral animal removal plan – Ongoing
Construct Picnic Shelter (Phase III) – Spring
Re-treatment of invasive exotic species – Summer
Continue water quality monitoring – Ongoing
Finish construction of trail system – Fall
Install Interpretive Signage - Fall
Construct observation platform - Winter
Write stewardship report – Winter
Maintenance - Ongoing

Year Four 2007 – 2008

The following site activities will begin in year four:

Continue fire fuel management program – Spring
Conduct vegetative survey – Summer
Continue feral animal removal plan – Ongoing
Re-treatment of invasive exotic species – Summer
Continue water quality monitoring – Ongoing
Develop education programs – Ongoing
Write stewardship report – Winter
Maintenance – Ongoing

Year Five 2008 – 2009

The following site activities will begin in year five:

Continue fire fuel management program – Spring
Conduct vegetative survey – Summer
Continue feral animal removal plan – Ongoing
Re-treatment of invasive exotic species – Summer
Continue water quality monitoring – Ongoing
Implement education programs – Ongoing
Write stewardship report – Winter

VII. MONITORING

An annual stewardship report will be prepared for FCT by Charlotte County due on January 30th of each year. The stewardship report will detail all management activities that were implemented or completed, and will assess progress in achieving the management objectives set forth in the Management Plan. Objectives not accomplished will be rescheduled in an amended timeline. Revisions to the Management Plan would be reviewed and approved by FCT.

Any proposed modification of the Management Plan and/or undertaking any site alterations or physical improvements that are not addressed in the approved Management Plan requires prior FCT review and approval.

VIII. EXHIBITS

A. Conditions particular to the Oyster Creek project site that must be addressed in the Management Plan

B. Conditions particular to the San Casa project site that must be addressed in the management plan

C. Conditions particular to the San Casa project site that must be addressed in the management plan

D. Oyster Creek Park Conceptual Approval Agreement

E. San Casa Addition Conceptual Approval Agreement

F. Cedar Point Park addition, Phase II Conceptual Approval Agreement

G. Oyster Creek Park Location and Boundary Maps

H. San Casa Addition Location and Boundary Maps

I. Cedar Point Park addition, Phase II Location and Boundary Maps

J. Oyster Creek Park – Conceptual Site Plan

K. San Casa Addition – Conceptual Site Plan

L. Cedar Point Park addition, Phase II + Phase III – Conceptual Site Plan

M. 100-Year Flood Plain Map

Mc. FLUCCS Map – Oyster Creek

N. FLUCCS Map – San Casa Addition

O. FLUCCS Map – Cedar Point Park addition, Phase II

P. Site Plan for Grant Linking Cedar Point Park and Oyster Creek Park

Q. Greenway Resolution and map

R. Exotic Pest Plan Council's List of Florida's Most Invasive Species

S. F.N.A.I. Notification Form

T. Connectivity and Surrounding Structures

U. Archaeological Assessment

V. Master Site File

W. Brazilian Pepper Stands

X. Recorded Deed & Grant Award Agreement – Oyster Creek

Y. Recorded Deed & Grant Award Agreement – San Casa Addition

Z. Recorded Deed & Grant Award Agreement – Cedar Point Park addition, Phase II

Tippecanoe Environmental Park
Land Management Plan

FCT Project No. 92-012-P2A

Prepared for

Florida Communities Trust
Florida Fish and Wildlife Conservation Commission

August 2011

Prepared By
Charlotte County Community Services
Parks and Natural Resources Division

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Appendices

1.0 INTRODUCTION

Tippecanoe Environmental Park is a 354 acre environmental park located in north central Charlotte County, directly south of the Charlotte Sports Park (Figure 1). The park is bordered by the Charlotte Sport's Park and SR 776 to the North, by the Charlotte Harbor Preserve State Park to the west and southeast and by Tippecanoe II Mitigation Area to the east. Tippecanoe is in Township 40 South, Range 21 East, Sections 13, 14, 22, and 23 of USGS Quadrangle El Jobean.

Tippecanoe Environmental Park is comprised of several different vegetation communities (habitat types). Periodic fires, both prescribed burns and wildfires, have helped to maintain the conditions of the habitats onsite for a variety of species, including listed species (endangered or threatened species). The majority of the site is dominated by pine flatwoods, scrub, scrubby flatwoods and tidal marsh. Listed species such as the Florida scrub-jay (*Aphelocoma coerulescens*), eastern indigo snake (*Drymarchon corais*), gopher tortoise (*Gopherus polyphemus*), gopher frog (*Rana capito*), and Florida mouse (*Podomys floridanus*), have been observed within the park. Other listed species such as the southeastern American kestrel (*Falco sparverius paulus*), Sherman's short-tailed shrew (*Blarina carolonensis shermani*) and Florida pine snake (*Pituophis melanoleucus mugitus*), have the potential to be present.

The park is located adjacent to and contains waters that are part of the Gasparilla Sound-Charlotte Harbor Aquatic Preserve. Tippecanoe is surrounded on 3 sides by publicly owned property (Figure 6). The west and southeast portions of the site are boarded by the Charlotte Harbor Preserve State Park. To the east, separated by a canal, is Tippecanoe II Mitigation Area (FCT project # 01-063-FF1), a 182 acre scrub-jay mitigation preserve. Along the north boundary is SR 776 and the Charlotte Sport's Park, which is home to the Tampa Bay Rays spring training. There is limited but undeveloped urban interface along the northeast boundary of the park. The land use activities in the surrounding areas and land use adjacent to the park associated with the Tampa Bay Rays spring training should not inhibit management of the site. Planning and provisions are made during prescribed burning to avoid directing smoke toward the sports park and the road.

Tippecanoe Environmental Park was acquired with grant funding from Florida Communities Trust. Charlotte County provided a 50% match from ad valorum funds; there are no additional restrictions that these funds have on the use of the property. Literature and advertising identify that Tippecanoe was acquired with funds from the Florida Communities Trust. This Management Plan outlines the management activities for the park and was developed to ensure that Tippecanoe will be developed and managed in accordance with the Grant Award Agreement (Appendix A). Key management strategies include prescribed burns and exotic/invasive species removal. Tippecanoe is open to the public. Trails facilitate public enjoyment of this site; regularly scheduled tours are available for the public. Only passive use recreation (e.g. hiking, bird watching, etc.) are allowed within the park.

2.0 PURPOSE

This property was acquired in 1995 to protect, preserve and manage one of the larger tracts of undisturbed scrub and tidal creek wetlands in Charlotte County. Tippecanoe Environmental Park will be managed by Charlotte County for the conservation,

protection, and enhancement of its natural resources and for compatible public recreation.

It is the goal of Charlotte County to continue to restore and manage the park for the optimal health of each habitat and to maximize the diversity of both flora and fauna within the communities and habitats onsite. Priority management objectives include:

- Focus on managing for the Florida scrub-jay as an umbrella species where appropriate.
- Increase suitable habitat for the Florida scrub-jay to aid in the overall expansion of the species in Charlotte County.
- Protect water resources of Tippecanoe Bay.
- Increase habitat suitability for other known or potential listed species.
- Manage for appropriate species diversity.

These objectives do not allow for the displacement of any natural habitat or environmental community by another by management design: i.e. it is not acceptable to manage mesic flatwoods for scrub-jay habitat.

The future land use and zoning designations were changed between 2002-2006. The final future land use designation for Tippecanoe is Resource Conservation. The zoning designation for Tippecanoe is Environmentally Sensitive.

Objectives of Recreation and Open Space Element, of the Charlotte County, Smart Charlotte 2050 Plan that would be furthered by managing the Mitigation Area include:

- **REC Objective 1.2 Park and Recreation Maintenance and Management**

  To protect and maintain existing parks and assets to preserve physical, environmental, functional, recreational and aesthetic values.

- **REC Policy 1.2.1 Public Awareness**

  The County shall protect, restore, and manage natural resources in parks and provide interpretive information regarding environmental resources, conservation easements and ecosystems within parks. The County shall consider the proper long-term ecological functions and recreational value of the land and will work to increase public awareness and understanding of ecological systems.

- **REC Policy 1.2.2 Park Management and Maintenance Guidelines**

  The County shall develop and implement guidelines for all park assets and improvements that will serve to provide a uniform basis for establishing management and maintenance practices and criteria which consider periodic, short and long-term needs.

- **REC Policy 1.2.3 Invasive Species Removal**

  The County shall develop and pursue invasive, exotic plant and animal eradication programs for parks and open space by 2012.

Objectives of Natural Resources Element, of the Charlotte County, Smart Charlotte 2050 Plan that would be furthered by managing the Mitigation Area include:

- **ENV Policy 2.2.7 Environmental Acquisition and Management**

  The County shall acquire and manage environmental lands using all available opportunities including, but not be limited to: levying an ad valorem tax; obtaining State, Federal and non-profit grant funding; land swaps; public/private partnerships; public/public partnerships (such as Florida Communities Trust); community land trusts; and conservation easements. All lands acquired by the County for preservation shall be managed to retain their environmental value.

- **ENV Policy 2.2.11 Land Management**

  The County, or duly authorized management agencies, shall develop and implement long range management plans for preservation or conservation lands consistent with the natural resources found on these properties.

- **ENV Policy 2.2.12 Public Awareness of Environmental Lands**

  In cooperation with other government agencies and non-profit groups, the County shall work to increase public awareness, appreciation, and (consistent with the resources found at each site) access to the publicly owned preserves and environmental parks within the County's borders.

- **ENV Policy 2.3.6 Exotic Plant Removal**

  The County shall continue to enforce the removal of invasive exotic plants. The County shall also prohibit the planting of species listed as noxious weeds by 5B-57.007, Florida Administrative Code, and listed as invasive species on the Florida Exotic Pest Plant Council Invasive Plant Lists.

- **ENV Policy 2.3.8 Environmental Education**

  The County shall support efforts to increase the public's understanding and stewardship of wildlife, natural communities, and other natural resources through partnerships with non-profit organizations such as the Florida Master Naturalist Program, the Florida Yards and Neighborhoods Program, and the University of Florida Food and Agricultural Sciences program.

Management of the environmental park will also further the acquisition and management goals of the Florida Department of Environmental Protection (DEP) by adding conservation and recreational lands adjacent to Charlotte Harbor Buffer Preserve; and to the Charlotte County Community Services Department by adding conservation and recreation lands next to the Tippecanoe II Mitigation Area (Tippecanoe FCT # 01-063-FF1).

3.0 NATURAL AND CULTURAL RESOURCES

Tippecanoe has a diverse assemblage of natural communities within the property, including Xeric Hammock, Upland Hardwood Forest, Scrub, Scrubby Flatwoods, Mesic Pine Flatwoods, Wet Flatwoods, Maritime Hammock, Alluvial Forest, Salt Marsh, and Coastal Dune Lake. The natural communities are delineated in Figure 4. The natural communities are described in detail below. Staff continually monitors the site on a regular basis throughout the year. When occurrences of previously unknown protected and special plant and animal species are observed onsite these observations will be reported to FNAI utilizing the FNAI Field Report Forms or on the FNAI web site at: http://www.fnai.org/FNAI_data/RareSpeciesDataForm.cfm.

3.1 Natural Communities

Xeric Hammock

A small patch of approximately 5 acres of xeric hammock is found along SR 776 in the northern portion of the park. Due to the characteristics of the community and the close proximity of a major road (SR 776) to portions of the xeric hammock it is uncertain if it would be burned. Additional xeric hammock occurs across the northern parts of the Park for a total of about 16 acres. This xeric hammock is an advanced successional stage of the neighboring oak scrub (FNAI 2010). FNAI characterizes xeric hammocks as a denser low-canopy forests with little or open understory with shrubs characteristic of scrub. Typical plants in a xeric hammock include live oak (*Quercus virginiana*), sand live oak, saw palmetto, sparkleberry (*Vaccinium arboreum*), pignut hickory (*Carya glabra*), redbay (*Persea borbonia*), American holly (*Ilex opaca*), wild olive (*Osmanthus americanus*), and beautyberry (*Callicarpa americana*). Typically, xeric hammocks develop when fire has been excluded for 30 or more years. When fire occurs, typically every 30 to 50 years, it may be devastating and change the community.

Mesic Hammock

Tippecanoe contains approximately 11 acres of mesic hammock. FNAI characterizes upland hardwood forest as a well-developed evergreen hardwood and/or palm forest on soils that are rarely inundated. The canopy is typically closed and dominated by live oak (Quercus virginiana), with cabbage palm (Sabal palmetto) generally common in the canopy and subcanopy. In the central and southern peninsula, abundant epiphytes on live oaks and cabbage palms are a characteristic feature of mesic hammocks. The shrubby understory may be dense or open, tall or short, and is typically composed of a mix of saw palmetto (Serenoa repens), American beautyberry (Callicarpa americana), American holly (Ilex opaca), gallberry (I. glabra), sparkleberry (Vaccinium arboreum), hog plum (Ximenia americana), common persimmon (Diospyros virginiana), highbush blueberry (Vaccinium corymbosum), and/or wax myrtle (Myrica cerifera). Tropical shrubs such as Simpson's stopper (Myrcianthes fragrans) and wild coffee (Psychotria nervosa) are common in more southern mesic hammock. The herb layer is often sparse or patchy. Mesic hammock may occur as "islands" on high ground within basin or floodplain wetlands, as patches of oak/palm forest in dry prairie or flatwoods communities, on river levees, or in ecotones between wetlands and upland communities. The mesic hammock onsite runs parallel to the Flamingo Waterway canal, along the levee like bank between the canal and firebreak, where fire is commonly excluded with a large patch extending into the interior along part of the original creek bed.

Scrub

The park contains approximately 42 acres of scrub habitat. The FNAI ranks scrub habitat as imperiled both in-state (S2) and globally (G2) (FNAI 2010). Florida scrub communities are unique to the state, although several neighboring states have similar habitats. FNAI characterizes scrub to be dominated by evergreen shrubs with or without a canopy of pines. Scrub is found on white sandy infertile soils, groundcover, if any, consists of lichens and herbs. Common vegetation includes sand pine, sand live oak, myrtle oak, Chapman's oak, scrub oak (*Quercus inopina*), saw palmetto, rosemary (*Ceratiola ericoides*), rusty lyonia (*Lyonia ferruginea*), scrub hickory (*Carya floridana*), scrub palmetto (*Sabal etonia*), hog plum (*Ximenia Americana*), silkbay (*Persea humilis*), beak rush (*Rhyncospora* spp.), milk peas (*Galactica* spp.), and staggerbush (*Lyonia* spp.) (FNAI 2010). The condition of scrub habitat within the park varies widely from good condition to badly overgrown due to fire suppression. Both mechanical vegetation reduction and prescribed fire will be utilized to restore and maintain this community.

Scrubby Flatwoods

Tippecanoe contains approximately 71 acres of scrubby flatwoods. Like scrub, scrubby flatwoods are mostly limited to Florida; FNAI ranks scrub habitat as imperiled both in-state (S2) and globally (G2) (FNAI 2010). FNAI characterizes scrubby flatwoods by an overstory of widely spaced pines and a short, shrubby understory of saw palmetto (*Serenoa repens*), scrub oaks, wiregrass (*Aristida* spp.), rusty lyonia, lichens, and tarflower (*Bejaria racemosa*) (FNAI 2010). The scrubby flatwoods communities' onsite are not disturbed and in fairly good condition; some areas, however, are overgrown to varying degrees due to fire suppression. Both mechanical vegetation reduction and prescribed fire will be utilized to maintain this community.

Dry Prairie

The recognized expanses of dry prairie are not found in Charlotte County, the Myakka Dry Prairie in Sarasota County being the closest. Smaller patches, 5 – 20 acres, of open treeless mesic and scrubby flatwoods are commonly found, however, that meet the description of dry prairie in terms of vegetation structure and species composition. These patches are often too small to be parsed out from flatwoods communities in large scale mapping, yet may make up a significant portion of a given preserve, presenting obvious differences at the scale experienced by a person on the ground. Unlike large swaths of true dry prairie, which is thought to be treeless due to topography and hydrology, these smaller patches may also be treeless due to other factors, such as intense fire or previous land management practices.

Tippecanoe has treeless areas that have, at various times, been mapped as dry prairie but are currently included with mesic or scrubby flatwoods or even scrub.

Mesic Pine Flatwoods

The park contains approximately 134 acres of mesic pine flatwoods habitat. The Florida Natural Areas Inventory (FNAI) indicates mesic flatwoods occur throughout Florida and the lower southeastern coastal plain (FNAI 2010). FNAI characterizes mesic pine

flatwoods by an open canopy of tall pines with a low ground layer of shrubs and grasses, with little to no mid-story vegetation. Common ground vegetation includes saw palmetto, gallberry (*Ilex glabra*), runner oak (*Quercus minimia*), shiny blueberry (*Vaccinium myrsinites*), wiregrass (*Aristida ssp.*), and broomsedge (*Andropogon* spp.) (FNAI 2010). The mesic pine flatwoods within the park is in fairly good condition, there is some overgrowth, especially with respect to saw palmetto, due to fire suppression. Both mechanical vegetation reduction and prescribed fire will be utilized to maintain this community.

Wet Flatwoods

The park contains approximately 23 acres of wet flatwoods. The FNAI states that wet flatwoods are common throughout Florida and the southeast outer coastal plain (FNAI 2010). FNAI characterizes wet flatwoods as pine forests with little to no mid-story and a ground cover of hydrophytic shrubs and grasses. Wet flatwoods are typically found in ecotonal areas between pine flatwoods habitats and forested or non-forested wetlands. Common vegetation includes South Florida slash pine (*Pinus elliottii*), large gallberry (*Ilex coriacea*), fetterbush (*Lyonia lucida*), and wax myrtle (*Myrica cerifera*.) (FNAI 2010). The wet flatwoods within the park is found in the southern area between the mesic pine flatwoods and the salt mashes. Prescribed fire will be the primary management tool utilized to maintain this community.

Maritime Hammock

Tippecanoe contains approximately 6 acres of maritime hammock. The Florida Natural Areas Inventory (FNAI) ranks maritime hammock as imperiled in-state (S2) and somewhat rare or uncommon and restricted globally (G3) (FNAI 2010). FNAI characterizes maritime hammock as an evergreen hardwood forest on a coastal dune. Within the hammock there is a well developed sub-canopy and a sparse herbaceous layer. Maritime hammocks typically contain cabbage palm (*Sabal palmetto*), live oak (*Quercus virginiana*), red cedar (*Juniperus virginiana*), southern magnolia (*Magnolia grandiflora*), and wax myrtle (*Morella cerifera*) (FNAI 2010).

Bottomland Forrest

Tippecanoe contains approximately 10 acres of bottomland forest. Situations where bottomland forest occurs include several distinct ecological settings in Florida: along rivers and tributaries, on higher terraces and levees in floodplains, and in somewhat isolated depressions that do not flood frequently. Bottomland forests along smaller streams are prone to periodic flooding attributable to localized rainfall that increases seepage and runoff from surrounding uplands. Typical vegetation includes sweetgum (*Liquidambar styraciflua*), sweetbay (*Magnolia virginiana*), water oak (*Q. nigra*), live oak (*Q. virginiana*), swamp dogwood (*Cornus foemina*), possumhaw (*Ilex decidua*), swamp bay (*Persea palustris*), and wax myrtle (*Myrica cerifera*). More flood tolerant species that are often present include American elm (*Ulmus americana*) and red maple (*Acer rubrum*) (FNAI 2010). The bottomland forests within Tippecanoe can be found along the summation of many of the creeks and flow ways throughout the park.

Tidal Marsh

The park contains approximately 29 acres of tidal marsh. Another 44 acres of tidal marsh occurs along the west edge of the park and is managed as part of the park though it is technically part of the State's Charlotte Harbor Buffer Preserve. Tidal marsh communities occur throughout the state in coastal areas where there is no high energy wave action (FNAI 2010). FNAI characterizes tidal marsh as a largely herbaceous community that is affected by tides. There may be zones of vegetation based on the tidal influence in that area. Common vegetation includes saltmarsh cordgrass (*Spartina alterniflora*) needle rush (*Juncus roemerianus*), and sawgrass (*Cladium jamaicense)* (FNAI 2010). The condition of the tidal marsh is excellent; fire has run through on an occasional basis. Occasional prescribed fire will be the primary management tool utilized to maintain this community.

Rudural (Mount Tippecanoe)

Mount Tippecanoe is located at the southeast tip of the project site. During development of the surrounding areas, including SR 776 and the straightening of the Flamingo Waterway – formally Flop Buck Creek), a mound of fill was created by various deposits. Since that time the mound has become naturally vegetated with native species. The high elevation of the mound offers the opportunity for visitors to look over Tippecanoe Bay and all the way out to Charlotte Harbor. Management of Mount Tippecanoe involves monitoring and treating the area for exotic vegetation as necessary.

Listed Plant Species

Two species of federally or state-listed plant species have been observed within Tippecanoe Environmental Park; Beautiful pawpaw (*Deeringothamnus pulchellus*) (Federally and state- endangered) and Golden leather fern *(Acrostichum aureum)* (state threatened). In addition, the Florida bonamia (*Bonamia grandiflora*) (federally threatened) and the many-flowered grasspink (*Calopogon multiflorus*) (state endangered) have the potential to exist within scrub and flatwoods communities in Charlotte County (Chaffin, 2000 and Florida Department of Agriculture & Consumer Services Division of Forestry (DOF), 2007a). Staff utilizes appropriate management techniques as outlined by the State and Federal guidelines.

3.2 Wildlife – Listed Species

Charlotte County maintains a list of species observed within the Tippecanoe Environmental Park by County staff. This list includes birds, mammals, amphibians, reptiles. As additional species are observed throughout the changing of seasons, via wildlife surveys or during management efforts, the list shall be updated.

Species found on the Federal and/or State endangered and threatened species lists are referred to as "listed species." For management purposes, Charlotte County Parks and Natural Resources also refers to the biological status as reported by FNAI.

Listed animal species that have been observed in the five most prominent vegetation communities include:

- **Mesic Pine Flatwoods** – gopher tortoise (*Gopherus polyphemus*), bald eagle (*Haliaeetus leucocephalus*)
- **Scrub** – Florida scrub-jay (*Aphelocoma coerulescens*), Florida mouse (*Podomys floridanus*), gopher tortoise (*Gopherus polyphemus*)
- **Scrubby Flatwoods** – Florida scrub-jay (*Aphelocoma coerulescens*), Florida mouse (*Podomys floridanus*), gopher frog (*Rana capito*), gopher tortoise (*Gopherus polyphemus*)
- **Tidal Marsh** – little blue heron (*Egretta caerulea*), white ibis (*Eudocimus albus*)
- **Xeric Hammock** – gopher tortoise (*Gopherus polyphemus*)

Additionally, a little blue heron rookery and a bald eagle nest are both present in the park.

Listed Species of Tippecanoe Environmental Park

Endangered (E), Threatened (T), Species of Special Concern (SSC)

Common Name	Genus	Species	State	Fed
Bald Eagle	*Haliaeetus*	*leucocephalus*	Delisted: Protected	
Brown Pelican	*Pelecanus*	*occidentalis*	SSC	
Florida Scrub-jay	*Aphelocoma*	*coerulescens*	T	T
Little Blue Heron	*Egretta*	*caerulea*	SSC	
Florida Sandhill Crane	*Grus*	*canadensis pratensis*	T	
Snowy Egret	*Egretta*	*thula*	SSC	
Tricolored Heron	*Egretta*	*tricolor*	SSC	
White Ibis	*Eudocimus*	*albus*	SSC	
Wood Stork	*Mycteria*	*americana*	E	E
American alligator	*Alligator*	*mississippiensis*	SSC	T
Gopher Tortoise	*Gopherus*	*polyphemus*	SSC	
Florida Mouse	*Podomys*	*floridanus*	SSC	

Charlotte County is committed to managing the various ecological communities at Tippecanoe to increase the diversity of flora and fauna, including both listed and common species. A key part of such management is ongoing monitoring. Monitoring takes place in the form of incidental observations, semi-formal surveys associated with monthly site inspections, and formal surveys for certain species and species diversity. Specific species surveys that are conducted include those for Florida scrub-jay and gopher tortoise. All native wildlife species are protected in the park.

3.3 Soils

The soils at Tippecanoe are dominated by Wabasso sand, Limestone substratum and Oldsmar sand, other soils present include EauGallie sand, Felda fine sand, puckish mucky fine sand, and Pineda fine sand (Figure 5). Both Wabasso sand, limestone substratum and Oldsmar sand are typically associated with low broad flatwoods, along with EauGallie sand inclusions, this soil has a high water table (NRCS, 2007 and Soil Conservation Service, 1981).

The other soils within the park, Felda fine sand, puckish mucky fine sand, and Pineda fine sand are typically associated with wetlands such as sloughs and board tidal swamp areas. There are no mineral resources on the property.

3.4 Invasive/Exotic and Feral Species Management

Exotic/Invasive Plants

Exotic nonnative invasive plant species reduce the quantity and quality of habitat available for native wildlife. Tippecanoe Environmental Park is surrounded primarily by other conservation lands, making it slightly less susceptible to invasive nuisance species; however, dispersal by birds and other wildlife (e.g., feral hogs) as well as by wind does occur.

Exotic invasive species that have been observed within the park include Brazilian pepper, melaleuca (*Melaleuca quinquenervia*), Japanese climbing fern (*Lygodium japonicum*), and cogongrass (*Imperata cylindrica*). These species are ranked as Category I according the 2005 List of Invasive Species from the Florida Exotic Pest Plant Council (FLEPPC). Despite all of the opportunities, nuisance exotic encroachment is somewhat sparse; all exotic invasive species are at manageable levels. Staff has treated larger infestations in the past and attempts to eradicate nuisance exotics upon discovery. Due to the small size of current exotic invasive plant infestations there are no plans for re-vegetating treatment areas. Staff will continue to review on a case by case basis if re-vegetation is needed at the time of treatment.

Prevention is the most effective method of control; staff continually monitors the sites for early detection and control of populations. Currently, efforts to eradicate these Category I species closely parallel the exotic species control plans recommended by FLEPPC. Application of the most recent treatment recommendations by species are available via the FLEPPC web site (http://www.fleppc.org/).

Exotic/Feral Animals

Tippecanoe Environmental Park does have a population of feral pigs (*Sus scrofa*). County staff implemented a trapping program for pigs in 2002. The trapping program involves ongoing trapping with an independent trapper, as well as breaks in trapping to prevent the pigs from becoming “trap shy”. Although, the trapping program has been very successful, the pig population is continually regenerated from the state lands on both sides of the park.

Monitoring

The site is monitored on a regular basis, to exclusively assess the presence of invasive/exotic plant and animal species.

3.5 Prescribed Burning and Restoration

Prescribed burning has taken place on Tippecanoe since its purchase for both ecosystem restoration and maintenance. Each of the major vegetation communities found on the park, mesic flatwoods, scrubby flatwoods, and scrub, are fire adapted and the use of prescribed fire is considered to be the best way for staff to manage a healthy ecosystem.

Burn priorities and rotations schedules are revisited throughout each year as both management resources and growing conditions change. All management units have perimeter fire-lines which are maintained throughout the year. Burning is coordinated with the DOF. Charlotte County's outreach program to inform residents of the area of the benefits of prescribed burns includes presentations, direct mailings and additional coordination with DOF.

3.6 Gopher Tortoise Recipient Site Requirements

The focus of land management activities in Management Unit 4 is for the optimal habitat for gopher tortoises as a Long Term Recipient Site, permitted through the Florida Fish and Wildlife Conservation Commission. This unit will be managed in perpetuity for gopher tortoise conservation. A separate management plan (Appendix C) outlines the goals and objectives to enhance and preserve gopher tortoises within Unit 4, these goals, objectives, management considerations and monitoring requirements are outlined below:

- Management Objectives
    - Focus on managing for the Gopher Tortoise as a keystone species.
    - Increase suitable habitat for the Gopher Tortoise on Tippecanoe utilizing the guiding principles outlined in the Florida Fish and Wildlife Conservation Commission's (FWC) Gopher Tortoise Management Plan (September 2007).
        - Habitat management guidelines for gopher tortoises recommend maintaining the pine and hardwood canopy cover at 60% or less.
        - Habitat management guidelines for gopher tortoises recommend maintaining herbaceous groundcover at 30-50% or greater.
    - Increase habitat suitability for other known or potential listed species and Gopher Tortoise commensals.

- Management Needs and Restoration
    - <u>Invasive Exotic Proposed Management</u>
        - Spot treatments to occur when exotic invasive vegetation is observed onsite.
        - Due to the small nature of exotic invasive plant infestations there are no plans for re-vegetating treatment areas. Staff will review on a case by case basis if re-vegetation is needed at the time of treatment.
    - <u>Tree Canopy Management</u>
        - Current canopy conditions in the proposed gopher tortoise recipient site area are approximately 20% coverage.
        - To maintain the current canopy coverage of less than 60% in staff proposes to utilize an approximate 2-3 year burn cycle for potential pine dominated habitats and a slightly longer cycle in the scrub dominated habitats; however the over-riding determination of the burn cycle will be dictated by site conditions.
    - <u>Ground Cover Management</u>
        - Current herbaceous groundcover conditions in the proposed gopher tortoise recipient site area are approximately 30% groundcover.

  - Maintaining herbaceous groundcover of 30-50% or more is directly tied to maintaining an open canopy, as described above.
  - In addition to maintaining an open canopy, staff will strive for early growing season burn, when weather conditions permit; this will hopefully produce a more pronounced vegetative response compared to dormant season burns.

- Monitoring
  - Habitat assessments will be performed every three years and submitted to FWC. The report will summarize the habitat management conducted and the results of habitat monitoring.
  - Tortoise population monitoring will be conducted every three years and submitted to FWC. The report will summarize the tortoise density surveys and monitoring.

3.7 Greenways and Trails

Charlotte County Resolution No. 980440A0 pledged to develop an integrated system of trails, greenways, corridors, preserves, and waterways, in order to provide a foundation for the eco-tourism industry, provide wildlife corridors, and enhance public access to and appreciation of the County's natural resources. Tippecanoe Environmental Park enhances Charlotte County's integrated network of greenways by creating publicly-owned, passive-use open space adjacent to and in the general vicinity of this integrated network. A map of publicly-owned land within the vicinity of the Park is provided in Figure 6.

Tippecanoe Environmental Park has approximately seven miles of walking trails, which connect to the Charlotte Harbor Buffer Preserve State Park on the East side of the property. DEP does not maintain trails for hiking on this portion of the state park, but foot access is allowed to the public.

The canoe/kayak launch provides a public access point to the Flamingo Waterway, which is part of the DEP's Office of Greenways and Trails approved Charlotte County Blueway Trail (Figure 12).

3.8 Archeological, Cultural, and Historical Resources

Charlotte County had an archeological survey conducted at Tippecanoe Environmental Park in 1997 (Appendix D). The area in and around Tippecanoe has a variety of recorded sites of middens and mounds. There are two recorded sites listed in the Florida Master Site File maintained by the Department of State, Division of Historical Resources for Tippecanoe. Around 1981, "No Name Creek Midden" Master Site File #8CH73, was discovered straddling both sides on an unnamed tidal creek. Collections from this midden included pottery shards, mollusks shells, and bone fragments; however nothing was found to indicate a single time period, it was hypothesized that the time ranged from B.C. 300 – A.D. 1500. Additionally, in 2008 another midden was discovered by County staff, no collections were taken from this midden.

The resources onsite will be part of the educational materials developed for the site; however due to the sensitive nature of the midden, the midden itself will not be identified

by any signage. This will help to prevent the collection of artifacts or the disturbance of the archaeological and historic sites. Due to the preservation of the Tippecanoe Environmental site, the middens will remain protected from any development pressures. If additional evidence is found to suggest more archaeological or historic resources at the project site the Division of Historical Resources will be notified immediately. Charlotte County will manage the archaeological and historic resources in compliance with the provisions of Chapter 267, Florida Statues specifically Sections 267.061 2(a)and (b).

4.0 SITE DEVELOPMENT

4.1 Existing Physical Improvements

Existing physical structures within the Park include fences and gates, walking trails, parking areas, and a canoe/kayak launch. These improvements are designed to improve the ability of the general public to enjoy the natural resources of the Park while protecting these resources. All of Charlotte County's environmental parks and preserves are "pack in, pack out" facilities, trash cans are not provided.

- **Entrance Signage** – An entrance sign, bearing the Charlotte County logo and park name has been installed at the entrance area at Tea St., and an archway sign at the main trailhead. Included with these signs is an additional acknowledgement sign identifying the Park as being purchased with funds from "Florida Communities Trust."

- **Trail Signage** – Directional trail signs have been installed at all trail intersections.

- **Fencing** – Four strand smooth wire fencing is installed along the north boundary of the park and delineates the boundaries. Gates with pedestrian walk-throughs are strategically placed to allow pedestrian access.

- **Walking Trails** – Seven miles of walking trails exist throughout the park. Most trails are native surface and serve as fire breaks for prescribed burning. A crushed shell surface trail makes a loop through mesic flatwoods and scrub and along a tidal creek, providing an ADA accessible experience.

- **Foot Bridges/Boardwalks** – The trail system includes six foot bridges of various types. Two of the bridges are low boardwalk style, affording safe passage over seasonally wet areas. The other four provide access across small creeks.

- **Parking Areas** – Parking is available at the main trailhead. The parking and trailhead is located at the rear of the stadium parking for the Tampa Bay Rays and becomes unavailable during spring training baseball games unless visitors pay for access to the stadium parking. The Stadium entrance parking is comprised of compacted grass and shell parking; over 200 parking spaces are provided. Access to park by vehicle is prohibited by bollards and gates. Parking is also available at the Tea St. entrance with no daytime restrictions and provides access to the canoe/kayak launch. The Tea St. entrance parking is comprised of compacted grass and shell parking; a minimum of 10 parking spaces are provided. Access to park by vehicle is prohibited by a gate.

- **Canoe/Kayak Launch** – A canoe/kayak launch is available at the Tea St. entrance.

- **Toilet** – A self composting toilet is located near the main trailhead.

- **Kiosk** – A kiosk at the main trailhead has been installed.

- **Benches** – Benches are provided at two locations along trails.

- **Interpretive Signs and Kiosks** – A two-paneled kiosk at the main trailhead will include educational panels and a large park map will be featured.

- **Sidewalks/Bike Lanes** – Sidewalks and bike lanes were added to SR 776 when the road was expanded providing for alternative transportation methods to the park.

- **Bike Racks** – Bike racks are provided at the Stadium entrance.

4.2 Proposed Physical Improvements

Proposed physical improvements will provide for appropriate public access, while meeting the management goal of conservation, protection, and enhancement of the Park's natural resources. Charlotte County will request written approval from FCT before undertaking any alterations or physical improvements that are not addressed in the MP.

Surveys will identify any protected vegetation or wildlife inhabiting the site. Site plans will be adjusted accordingly to protect any such species. Relocation of listed species may be considered as an alternative. Any relocation efforts will adhere to all permits as may be required by FWC and USFWS. The development of nature trails, interpretive signs and displays, observation areas, and permanent fire breaks will utilize existing roads, trails, disturbed areas, and fire breaks to the greatest extent possible in order to minimize disturbance of native vegetation and reduce fragmentation.

The following improvements are being proposed:

- **Wildlife Observation Area Enhancement** – A wildlife observation area is planned, it will replace one that was destroyed in a wildfire; however it will be moved to a more appropriate location.
- **Benches** – Benches may be provided at the wildlife observation area.

Additionally, the following improvements are under consideration and may be included, pending resources and local interest:

- **Observation Foot Bridge (ADA)** – An additional foot bridge allowing handicapped access through the scrub and a view of the creek and tidal marsh may be considered as a future improvement.

- Wildlife houses – Bird houses, such as blue bird, kestrel, and screech owl boxes may be put up in strategic locations for the enhancement of nesting habitat, wildlife viewing and environmental education.

4.3 Easements, Concessions and Leases

No easements or leases are found on Tippecanoe Environmental Park. No concessions have been granted to date. In addition to private parties, commercial kayak tours and rentals utilize the canoe/kayak launch and a concession may be considered in the future. Also various individuals and groups advertise walking nature tours at Tippecanoe, which may also be considered for potential concessions.

Any revenue generated on the site will be placed into a separate account to be used solely for the management of Tippecanoe. Charlotte County will provide FCT 60 days prior written notice and information regarding any lease, management contract, or concession agreement proposed for the site and will seek FCT approval before granting any such revenue generating contract.

5.0 MANAGEMENT NEEDS

5.1 Coordinated Management

The Parks and Natural Resources staff is committed to working with all interested parties in accomplishing the management goals. As appropriate, DOF and DEP are contacted for coordination of activities, including cooperative ventures where we receive and/or provide assistance in mechanical vegetation reduction and prescribed burning. Coordination also takes place with DOF, DEP, and FWC concerning wildlife management. The Charlotte County Sherriff's Office, FWC law enforcement, and DEP each coordinate in security aspects of the property.

The Stadium entrance along SR 776 is access through the Charlotte Sport's Park. The parking area for this entrance of the park is part of the Charlotte Sport's Park; the parking area is unavailable only during spring training baseball games unless visitors pay for access to the stadium parking. The Tea St. entrance has no limitations.

5.2 Public Education and Outreach

The County is committed to providing appropriate passive outdoor recreational opportunities by allowing public access to the Park. Additional educational programming opportunities designed to facilitate a greater understanding and appreciation of the natural resources may be provided as appropriate and as the need and public interest develops. The environmental education program may include:

- **Organized excursions into the Park**. Organized programs will meet FCT requirements. Currently a non-profit organization is contracted to lead educational nature walks throughout the year. Additional organized programming may be developed by staff or by non-profit organizations at the direction of the Division.
- **Self-guided excursions into the Park.** Trail signs and educational kiosks (including a large site map) will be installed at the Park. Trail maps and a wildlife checklist will be posted on the County's website; because of printing costs, the County does not plan to provide printed copies at the Park.

Organized program descriptions will be included in the annual stewardship report, including types of programs and the number of participants.

5.3 Maintenance

The Division has the responsibility for managing and maintaining the Park. The maintenance objectives for the Park are visitor and employee health, safety, and welfare, maintenance of aesthetic qualities, and protection of natural resource values. Structures, such as bridges and fences, are inspected during monthly site inspections for maintenance and repair needs. Exotic vegetation treatment needs are met with both habitat management and trail maintenance activities. The site will have dedicated staff to perform routine maintenance tasks, including

- Mowing and pruning of vegetation around the entrance, parking areas, trails, and fire breaks
- Upkeep and cleaning of the facilities (including parking areas, fencing, kiosks, and signage)
- Garbage and debris removal
- Land Management (including removal of exotic species and prescribed burning)

The Division may utilize contracted and/or volunteer services as needed to assist in maintenance tasks.

5.4 Security

Charlotte County is concerned about both the safety of visitors and the protection of natural resources. The Parks and Natural Resources Division ultimately has the responsibility for site security, including prevention of vandalism, property damage, unauthorized vehicle access, and trespassing. A three-tiered approach to site security is employed:

- **Signage and Fencing** – Signs and fencing shall be installed to restrict vehicle access and warn against other restricted or prohibited activities.
- **Staff** – Division staff shall monitor the integrity of the fences, repair damage by vandalism, monitor the site for evidence of ATV use, and take measures to clarify restricted areas and activities to citizens with signage
- **Sheriff, Fire/EMS, and DOF** – Shall respond to emergency calls from citizens

Activities that that are not compatible with passive natural resource based activities are prohibited. Such prohibited activities include alcoholic consumption, social gatherings except for nature hikes, personal acts considered indecent or not appropriate for all ages and all groups within the general public, disturbance of the peace, hunting except for the contracted removal of exotic and/or nuisance animals, harassing of wildlife, harvesting, destruction and/or removal of vegetation, any other activity that may have a negative impact on visitors, wildlife and/or the ecosystem.

All wildlife species are protected, including venomous snakes and other dangerous animals, and shall not be killed, harmed or harassed by visitors or staff unless they present an immediate, clear and unavoidable threat, or are part of an exotic species removal program to be carried out by authorized personnel only. Safety against wildlife species is not considered a viable reason to carry a lethal weapon. Except when carrying a concealed weapon for personal safety, accompanied by a license to do so by

the state, possessing a firearm, bow, crossbow, trap or other hunting device is considered the intent to hunt or take wildlife and is prohibited.

5.5 Staffing

The Division will provide staffing, management, and maintenance for the Park. A full time Environmental Specialist will be directly responsible for all land management activities. Assistance from other Environmental Specialists and additional Department staff will be available as needed and the support of the Division Manager and other administrative positions will be available. Additional staffing may be obtained through volunteers, non-profit organizations, and/or contracted services as needed.

5.0 COST ESTIMATE AND FUNDING SOURCES

A portion of this Park was acquired using funds from FCT. The remainder was funded by Charlotte County Local Option Sales Tax. The Park will be managed using ad valorem County taxes.

The cost estimate was broken into seven major categories:

- **Structures and Improvements**
  - Wildlife Observation Area - $8,000 (Shelter and bench materials and labor)
  - Educational signs and kiosk - $3,400
- **Natural Resource Protection**
  - Exotic vegetation treatment - $12,000
  - Exotic/Feral animal removal - $2,900
  - Habitat photo-monitoring – $100
  - Remote camera wildlife monitoring and security - $850
  - Feral animal/Exotic plant monitoring – in house
  - Listed species survey – in house or volunteer
- **Resource Enhancement**
  - Controlled burning – $5,600 (One rotation of all management units, approximately 350 burnable acres at approximately $16 per acre, in house cost)
  - Mechanical thinning - $63,000 (One rotation of management units, approximately 100 acres at $630 per acre)
- **Archeological and Historical Resource Protection**
- **Educational Program**
  - Contracted Services (Nature Walks) - $600
- **Maintenance**
  - Mowing and pruning of vegetation around the entrance, fence, parking area, trails, and fire breaks - $6,000 annually at $1,500 per event
  - Upkeep of facilities (parking area, fencing, kiosk, signage) - $300 annually ($300 per fence repair, estimate 1 repairs per year)
  - Periodic Exotic Species Treatment -$2,400 per event
- **Staffing** – See Section 5.5

7.0 PRIORITY SCHEDULE

A priority schedule that details a timeline for major events is included in Appendix B. This priority schedule covers 2011-2020.

8.0 MONITORING AND REPORTING

8.1 Stewardship Report

It is the Division's responsibility to provide an Annual Stewardship Report each year on or before October 30th, as required by Rule 9K-7.013 F.A.C. which evaluates the implementation of the Management Plan.

Any proposed modification of the Management Plan and/or undertaking any site alternations or physical improvements that are not addressed in the FCT-approved Management Plan requires FCT review and approval.

8.2 Habitat Assessment Monitoring

The goals of habitat assessment monitoring are to evaluate management efforts to ensure they are meeting ideal habitat requirements that are required for the associated plant and animal species to thrive. Evaluations from these monitoring efforts will be included in the Annual Stewardship Report.

Monitoring efforts have been described in Sections 3.1, 3.4, and 3.5. Those monitoring efforts are summarized as:

- Ongoing inspection for feral pig (or other invasive species) damage.
- Listed Plant Survey
- Habitat photo monitoring
- Bird surveys
- Scrub-jay surveys
- Gopher tortoise surveys as needed
- General surveys/site inspections.

9.0 REFERENCES

Arny, N. 2006. *Common oaks of Florida*. FOR51. University of Florida, IFAS Extension.

Ashton, R. and P. Ashton. 2007. *The natural history and management of the gopher tortoise (Gopherus polyphemus* Daudin). Ashton Biodiversity Research & Preservation Institute.

Behm, A. and M. Duryea. 2003. *Fire in the wildland-urban interface: considering fire in Florida's ecosystems*. University of Florida Institute of Food and Agricultural Services.

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

FLEPPC. 2005. *List of Florida's Invasive Species*. Florida Exotic Pest Plant Council. Internet: http://www.fleppc.org/list/05list.htm

Florida Natural Areas Inventory Web Site: http://www.fnai.org/

Florida Natural Areas Inventory and Florida Department of Natural Resources. 1990. *Guide to the natural communities of Florida*.

Hipes, D., D. Jackson, K. NeSmith, D. Printiss, and K. Brandt. 2001. *Field guide to the rare animals of Florida*. Florida Natural Areas Inventory.

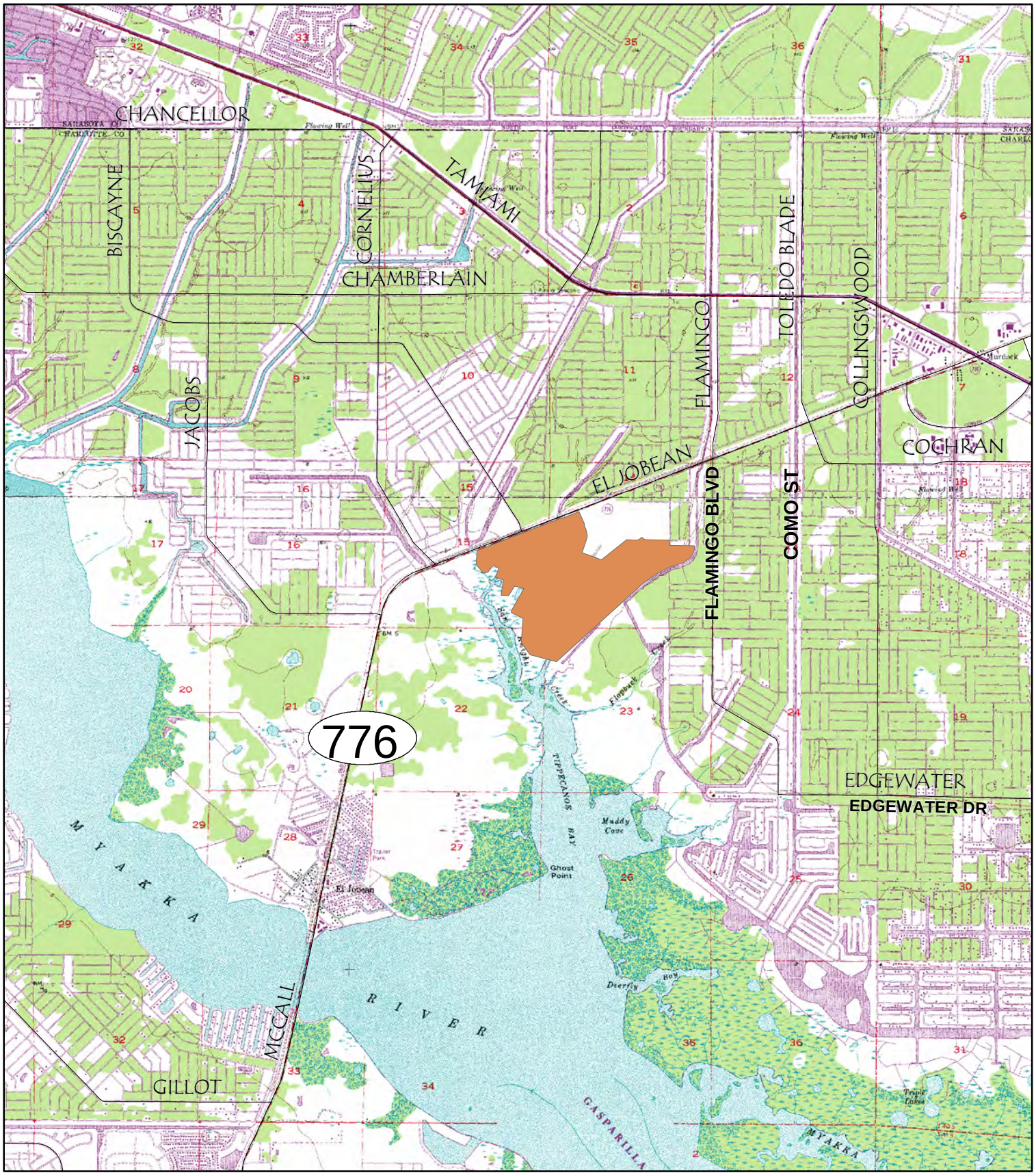
Luer, G.M. 2002. *Archaeology and faunal analysis at Tippecanoe Bay*. Florida Anthropological Society. Publication No. 15, Archaeology of Upper Charlotte Harbor, Florida. September, pages 49-71.

Myers, R. and J. Ewel. 1992. *Ecosystems of Florida*. University of Central Florida Press.

Soil Conservation Service. 1981. *Soil survey of Charlotte County*. United States Department of Agriculture.

Wunderlin, R. P., and B. F. Hansen. 2008. Atlas of Florida Vascular Plants (http://www.plantatlas.usf.edu/).[S. M. Landry and K. N. Campbell (application development), Florida Center for Community Design and Research.] Institute for Systematic Botany, University of South Florida, Tampa.

Figure 1: Location Map



Tippecanoe Environmental Park

N W E S

0 0.5 1 2 Miles

Boundary

Figure 2: Aerial Overview

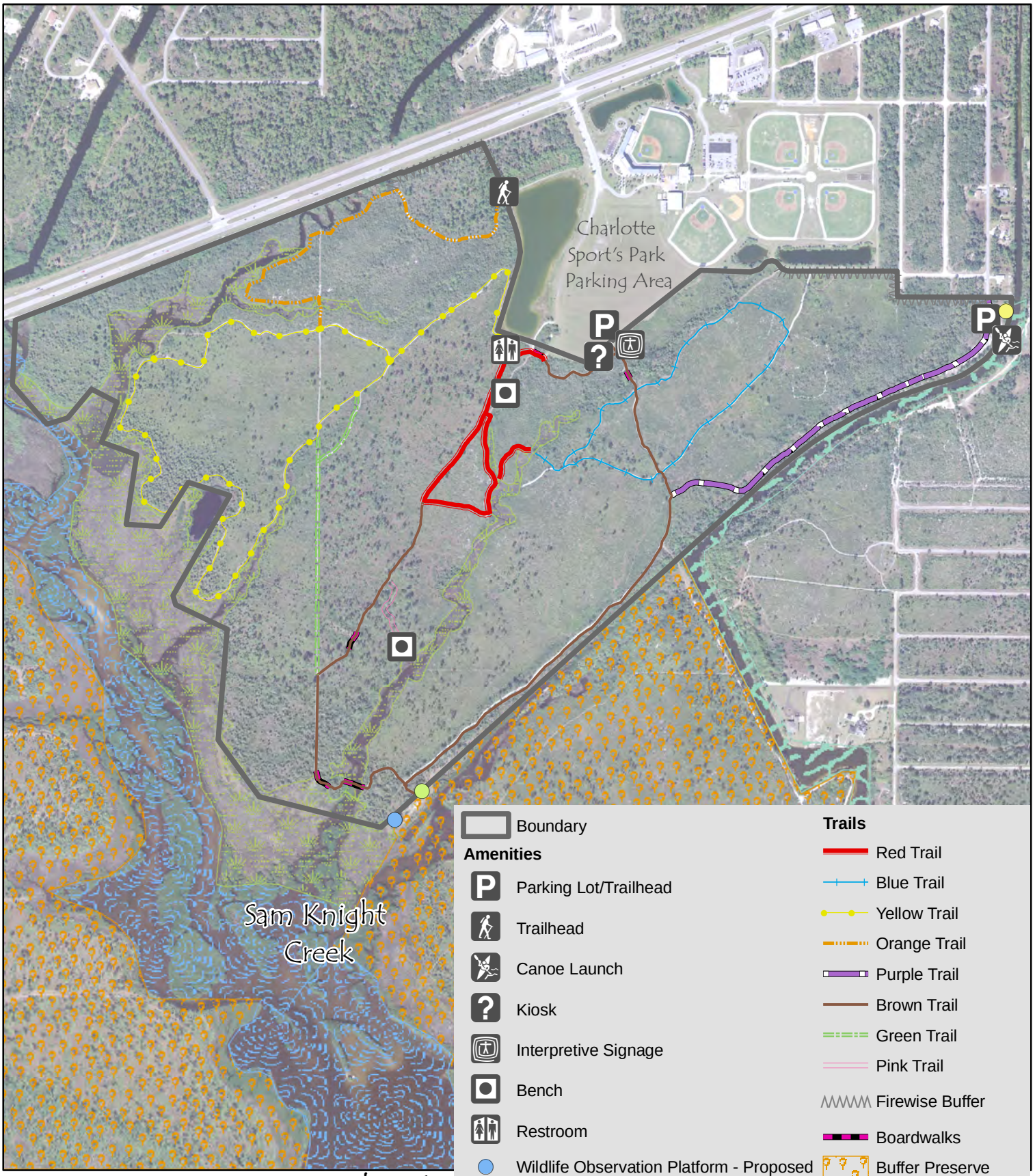
Tippecanoe Environmental Park

N
W E
S

0 600 1,200 2,400 Feet

Boundary

Figure 3: Master Site Plan



Boundary

Amenities

- Parking Lot/Trailhead
- Trailhead
- Canoe Launch
- Kiosk
- Interpretive Signage
- Bench
- Restroom
- Wildlife Observation Platform - Proposed
- Picnic Shelter - Proposed
- Kiosk - Proposed

Trails

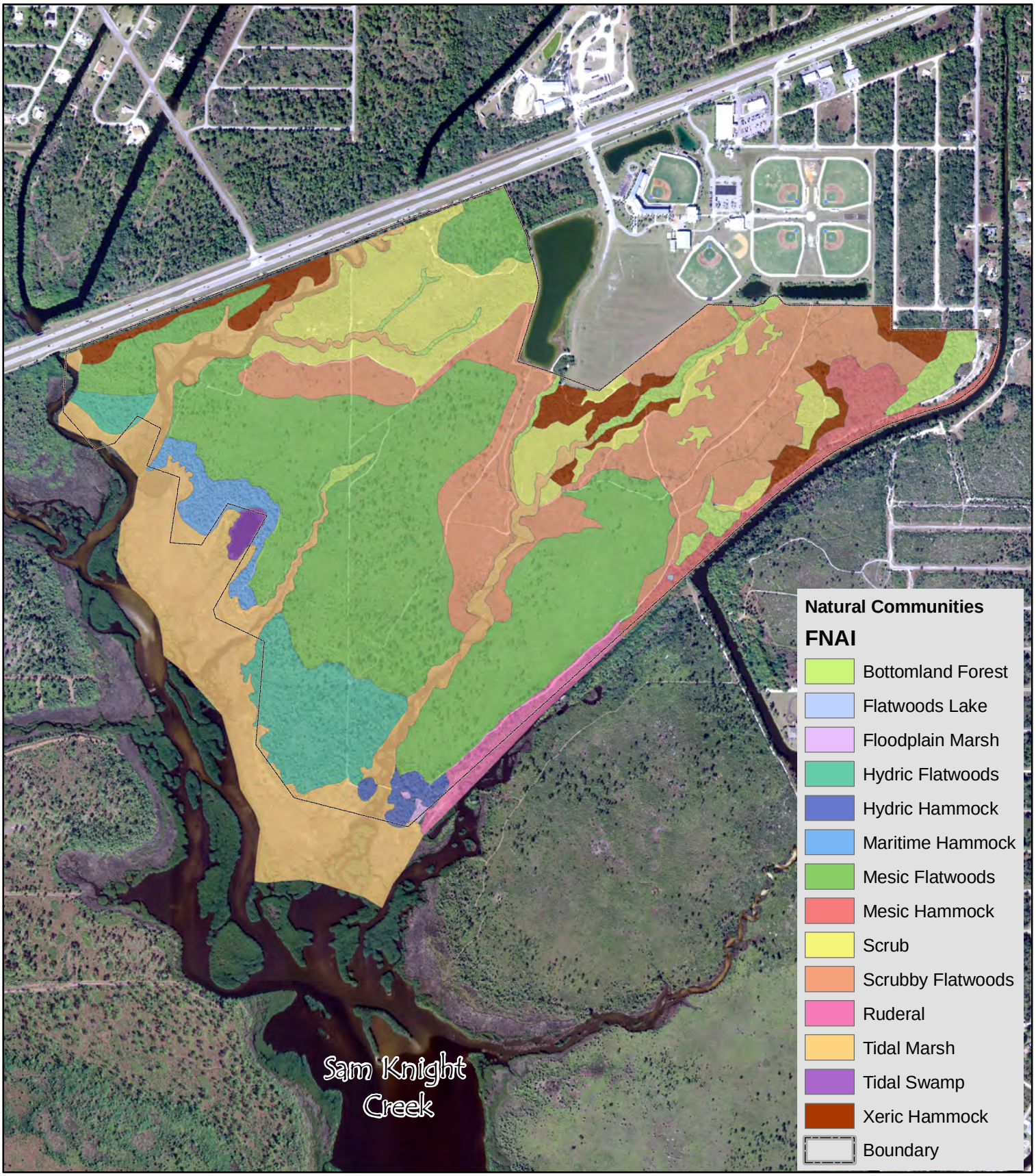
- Red Trail
- Blue Trail
- Yellow Trail
- Orange Trail
- Purple Trail
- Brown Trail
- Green Trail
- Pink Trail
- Firewise Buffer
- Boardwalks
- Buffer Preserve
- Flamingo Waterway
- Sam Knight Creek
- Tidal Marsh

Tippecanoe Environmental Park

N W E S

0 500 1,000 2,000 Feet

Figure 4: Natural Communities

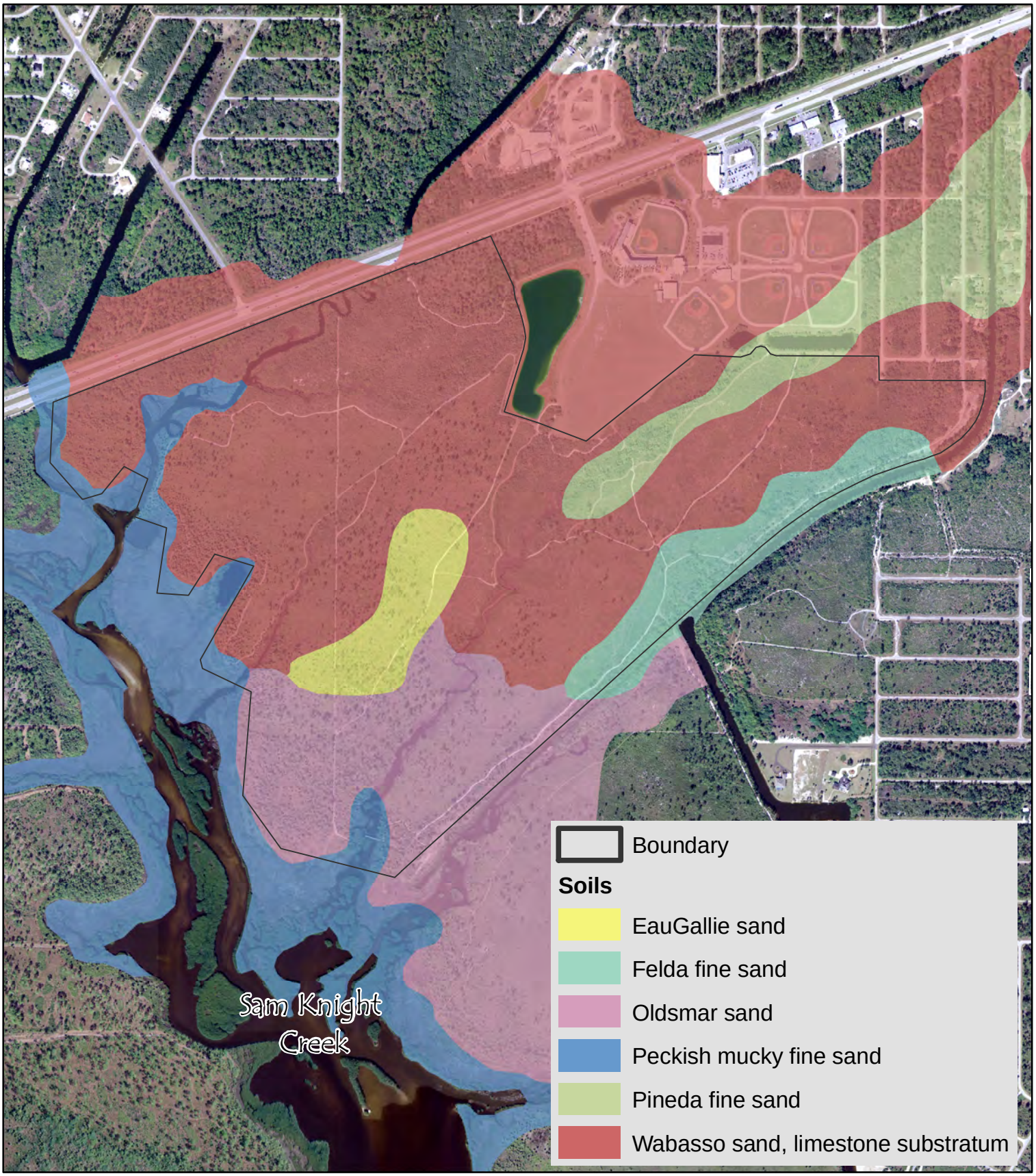


Tippecanoe Environmental Park

N W E S

0 850 1,700 3,400 Feet

Figure 5: Soils

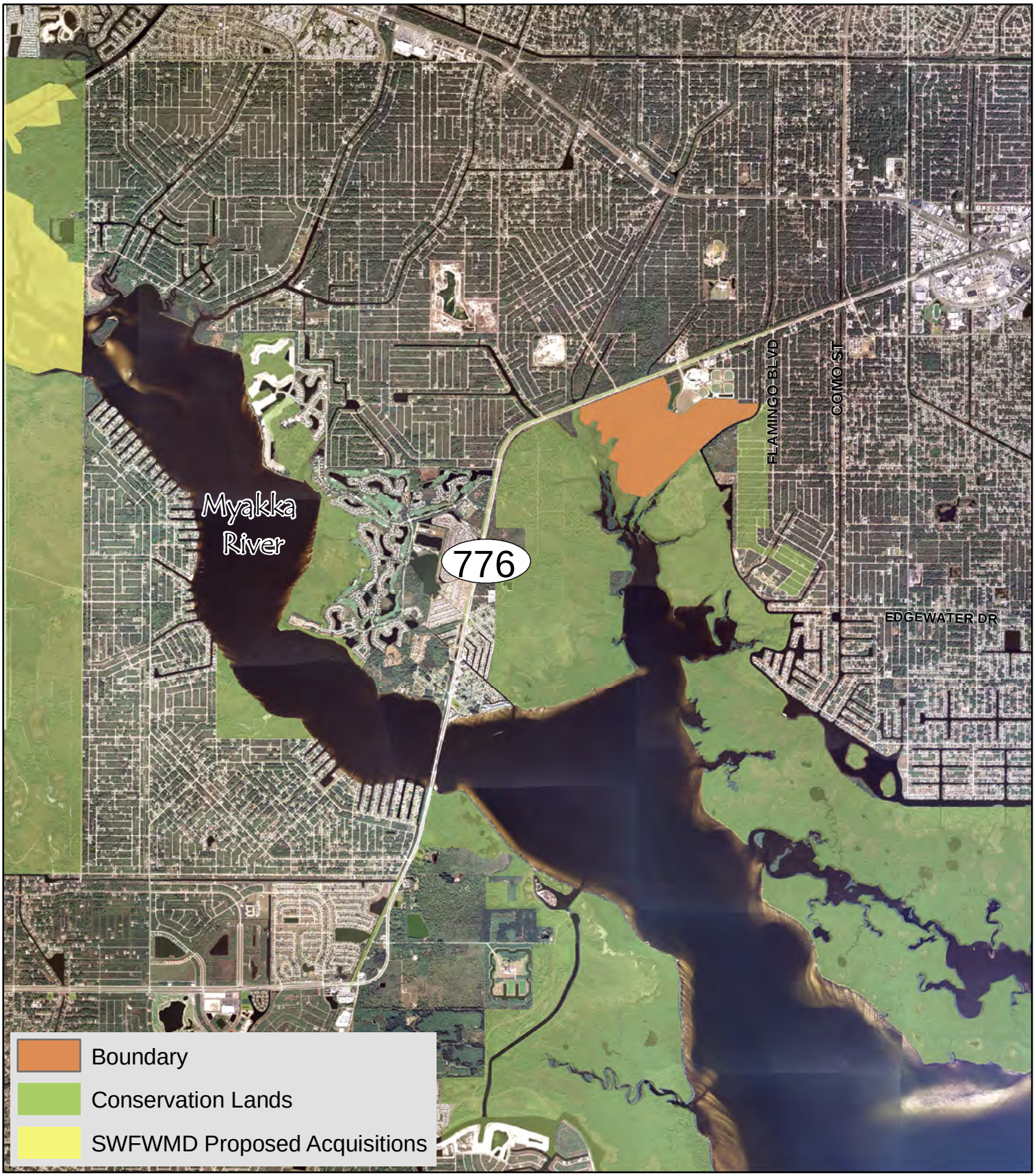


Tippecanoe Environmental Park

N W E S

0 850 1,700 3,400 Feet

Figure 6: Public Conservation Lands



Tippecanoe Environmental Park

N W E S

0 4,300 8,600 17,200 Feet

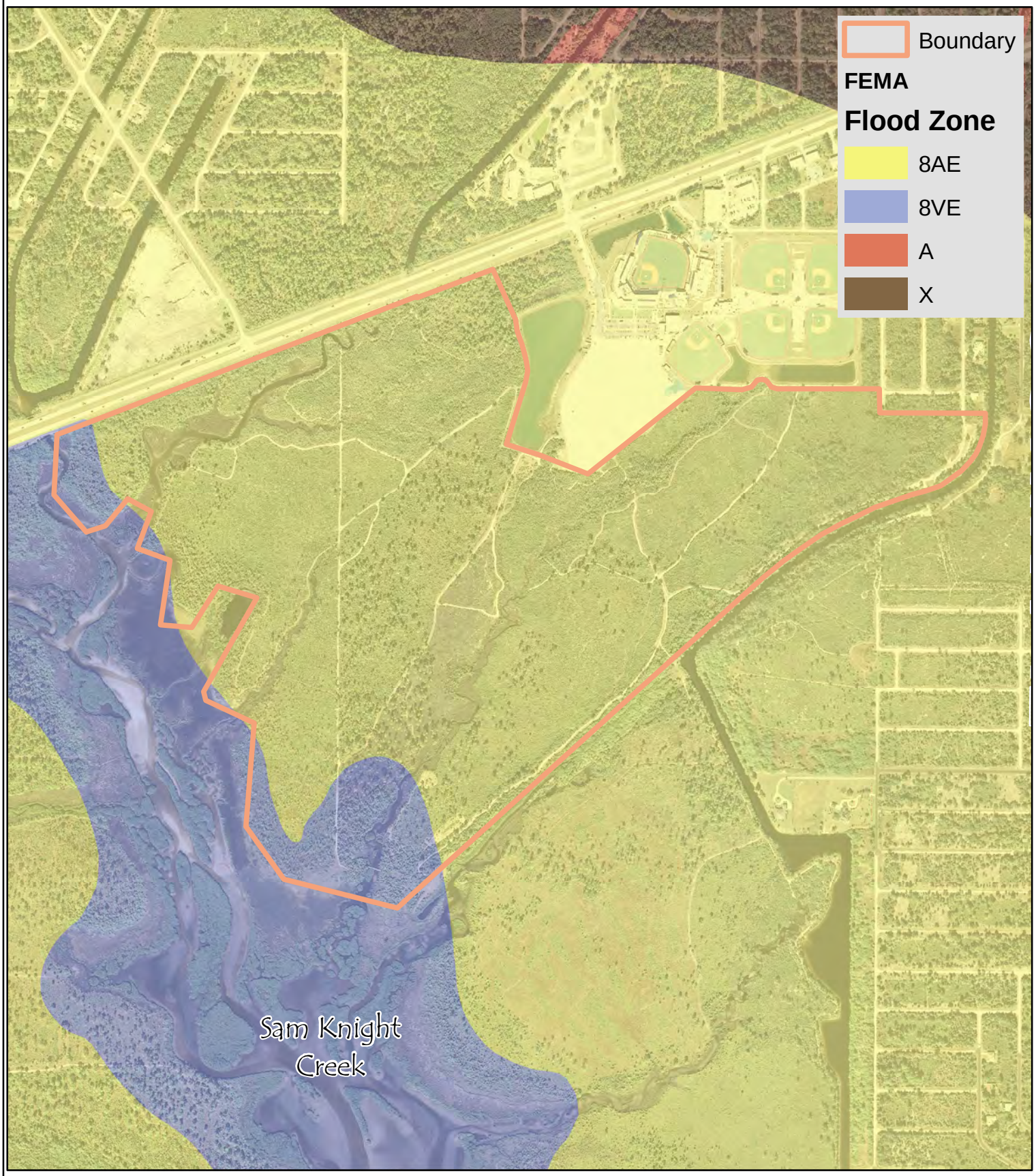
Figure 7: Management Units

Tippecanoe Environmental Park

N W E S

0 800 1,600 3,200 Feet

Figure 8: FEMA

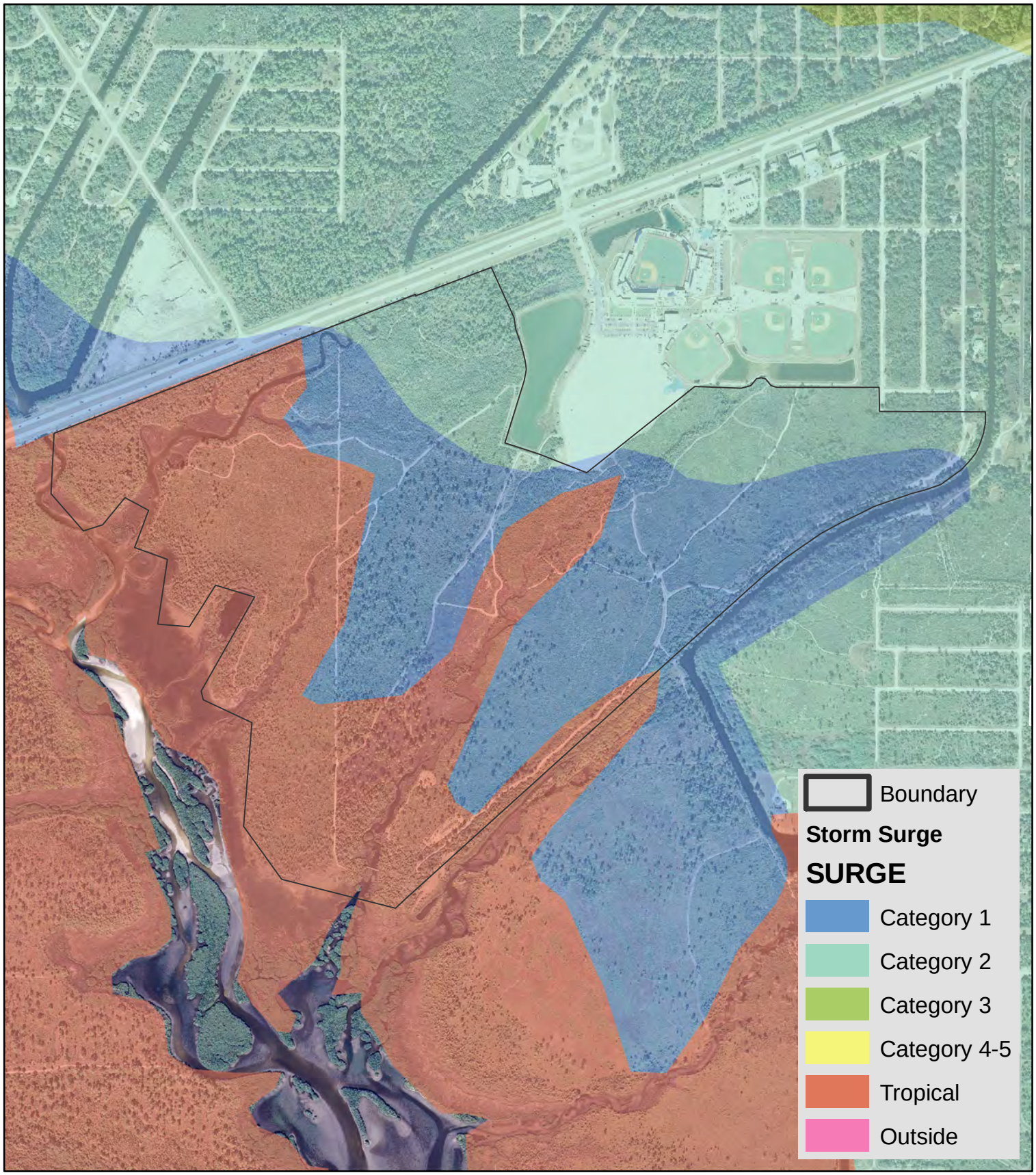


Tippecanoe Environmental Park

N
W E
S

0 875 1,750 3,500 Feet

Figure 9: Storm Surge

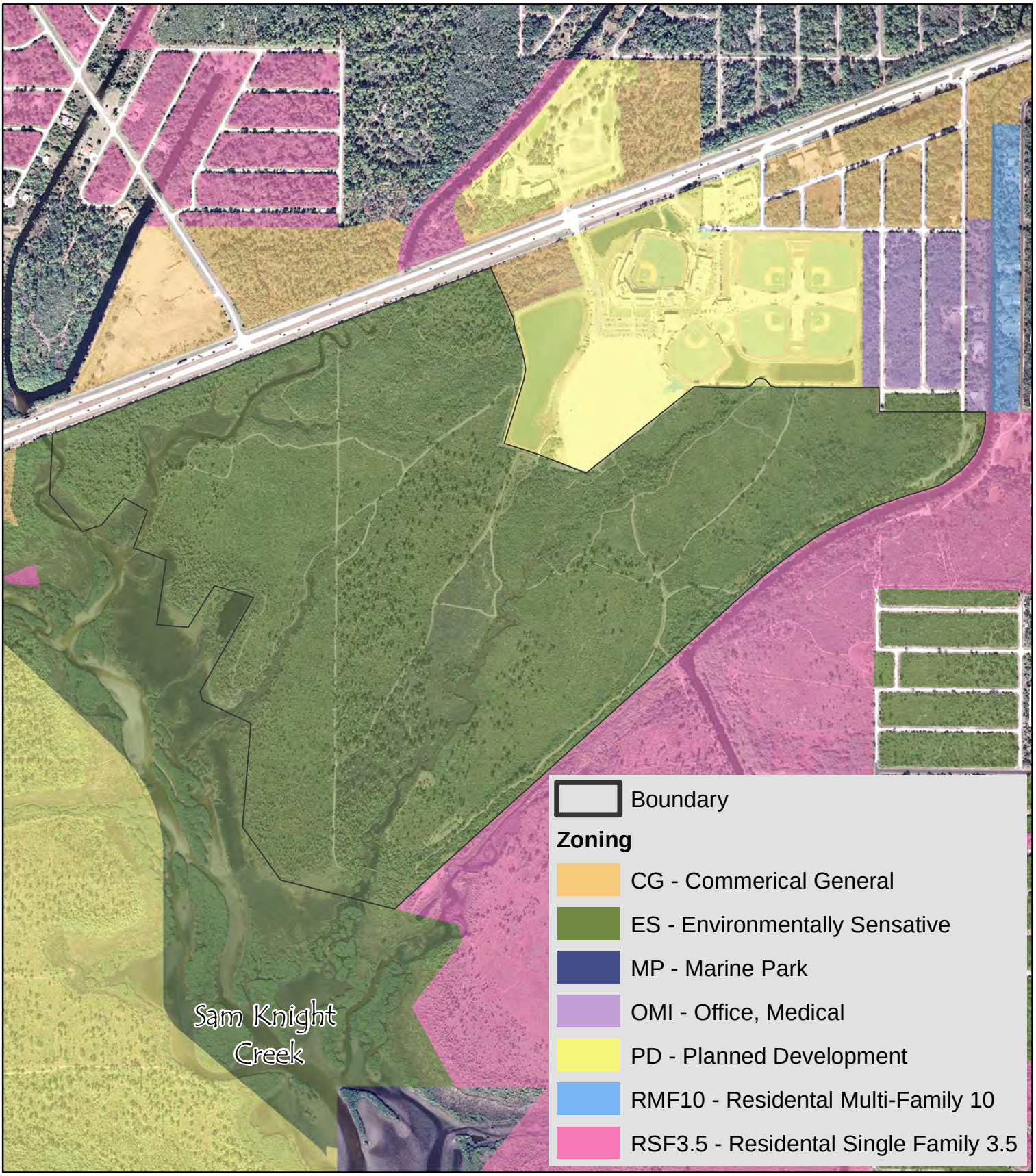


Tippecanoe Environmental Park

N W E S

0 850 1,700 3,400 Feet

Figure 10: Zoning

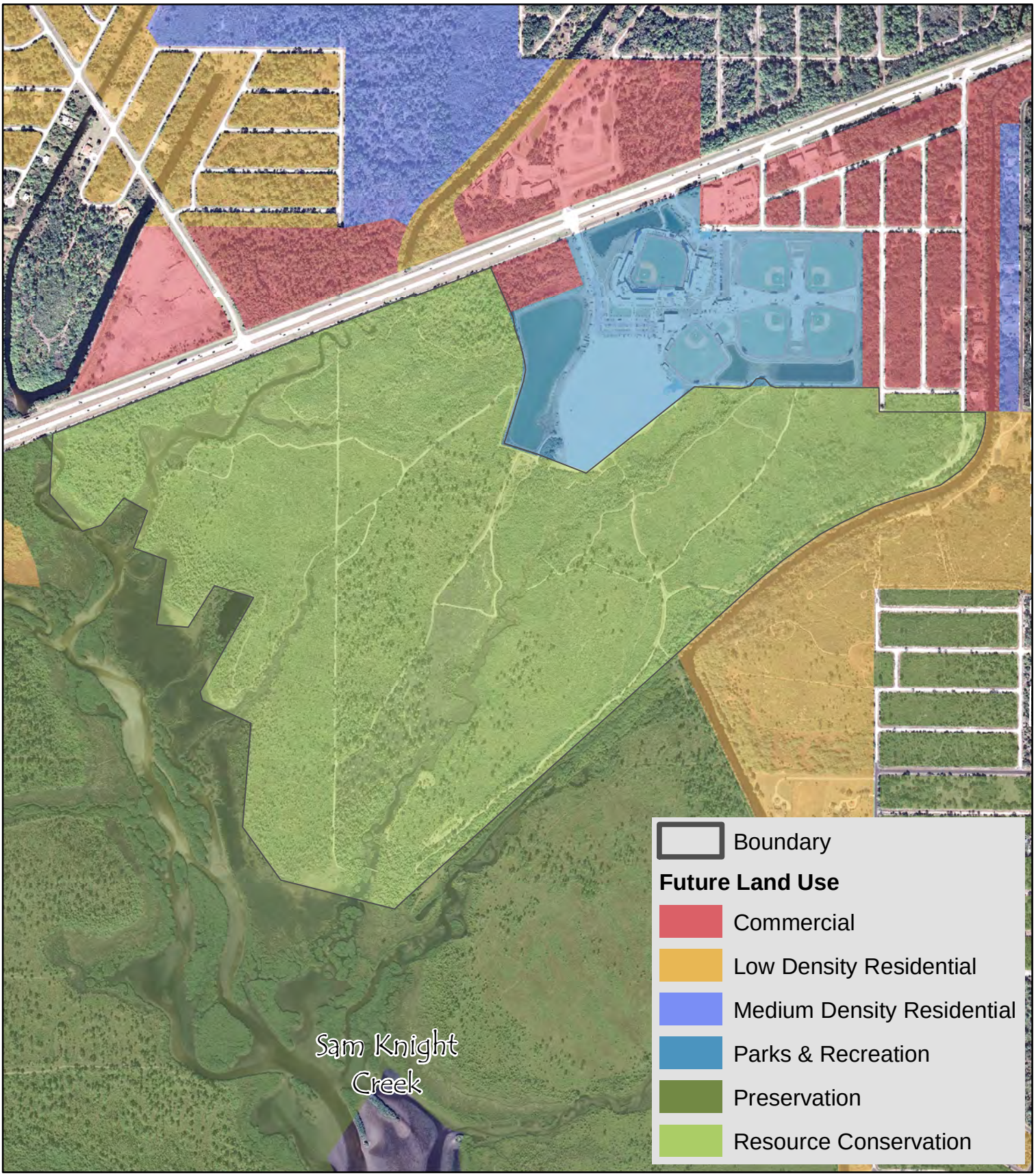


Tippecanoe Environmental Park

N W E S

0 850 1,700 3,400 Feet

Figure 11: Future Land Use



Tippecanoe Environmental Park

N
W E
S

0 850 1,700 3,400 Feet

Figure 12: Charlotte County Blueways

Tippecanoe Environmental Park

N W E S

0 1,250 2,500 5,000 Feet

This document prepared by:
Ann J. Wild
Florida Communities Trust
Department of Community Affairs
2740 Centerview Drive
Tallahassee, FL 32399

FLORIDA COMMUNITIES TRUST
P2A AWARD# 92-012-P2A
FCT Contract#96-CT-35-92-2A-J1-012

GRANT AWARD AGREEMENT

THIS AGREEMENT is entered into this 27 day of October, 1995, by and between the FLORIDA COMMUNITIES TRUST ("FCT"), a nonregulatory agency within the State of Florida Department of Community Affairs, and CHARLOTTE COUNTY, a political subdivision of the State of Florida ("FCT Recipient"), in order to impose terms, conditions, and restrictions on the use of the proceeds of certain bonds, hereinafter described, and the lands acquired with such proceeds and as described in Exhibit "A" attached hereto and made a part hereof ("Project Site"), as shall be necessary to ensure compliance with applicable Florida Law and federal income tax law and to otherwise implement provisions of Chapters 253, 259, and 380, Florida Statutes.

WHEREAS, Part III Chapter 380, Florida Statutes, the Florida Communities Trust Act, creates a nonregulatory agency within the Department of Community Affairs, which will assist local governments in bringing into compliance and implementing the conservation, recreation and open space, and coastal elements of their comprehensive plans and in otherwise conserving natural resources and resolving land use conflicts by providing financial assistance to local governments to carry out projects and activities authorized by the Florida Communities Trust Act;

WHEREAS, Section 1 of the Florida Preservation 2000 Act provides for the distribution of ten percent (10%) of the net Preservation 2000 Revenue Bond proceeds to the Department of Community Affairs to provide land acquisition grants and loans to local governments through the FCT;

WHEREAS, the Governor and Cabinet authorized the sale and issuance of State of Florida Department of Natural Resources Preservation 2000 Revenue Bonds ("Bonds");

WHEREAS, the Bonds were issued as tax-exempt bonds, meaning that the interest on the Bonds is excluded from the gross income of Bondholders for federal income tax purposes;

EXHIBIT "B"

WHEREAS, Rule 9K-4.010(2)(f), F.A.C., authorizes FCT to impose conditions for funding on those FCT applicants whose projects have been selected for funding in accordance with Rule Chapter 9K-4, F.A.C.;

WHEREAS, the FCT has approved the terms under which the Project Site is acquired and the deed whereby the FCT Recipient acquires title to the Project Site shall contain such covenants and restrictions as are sufficient to ensure that the use of the Project Site at all times complies with Section 375.051, Florida Statutes and Section 9, Article XII of the State Constitution and shall contain clauses providing for the conveyance of title to the Project Site to the Board of Trustees of the Internal Improvement Trust Fund upon the failure of the FCT Recipient to use the Project Site acquired thereby for such purposes; and

WHEREAS, such covenants and restrictions shall be imposed by an agreement which shall describe with particularity the real property which is subject to the agreement and shall be recorded in the county in which the real property is located; and

WHEREAS, the purpose of this Agreement is to set forth the covenants and restrictions that are imposed on the Project Site subsequent to its acquisition with the FCT Preservation 2000 Bond award.

NOW THEREFORE, in consideration of the mutual covenants and undertakings set forth herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, FCT and FCT Recipient do hereby contract and agree as follows:

I. GENERAL CONDITIONS.

1. Upon execution and delivery by the parties hereto, the FCT Recipient shall cause this Agreement to be recorded and filed in the official public records of Charlotte County, Florida, as Exhibit "B" of the warranty deed vesting fee simple title to the Project Site in the FCT Recipient, and in such manner and in such other places as FCT may reasonably request, and shall pay all fees and charges incurred in connection therewith.

2. The FCT Recipient and FCT agree that the State of Florida Department of Environmental Protection will forward this Agreement to Department of Environmental Protection Bond Counsel for review. In the event Bond Counsel opines that an amendment is required to this Agreement so that the tax exempt status of the Preservation 2000 Bonds is not jeopardized, FCT and FCT Recipient shall amend the Agreement accordingly.

3. This Agreement may be amended at any time. Any

amendment must be set forth in a written instrument and agreed to by both the FCT Recipient and FCT.

4. This Agreement and the covenants and restrictions contained herein shall run with the Property herein described and shall bind, and the benefits shall inure to, respectively, the FCT and the FCT Recipient and their respective successors and assigns.

5. This Agreement shall be governed by and construed in accordance with the laws of the State of Florida, with respect to both substantive rights and with respect to procedures and remedies.

6. Any notice required to be given hereunder shall be given by personal delivery, by registered mail or by registered expedited service at the addresses specified below or at such other addresses as may be specified in writing by the parties hereto, and any such notice shall be deemed received on the date of delivery if by personal delivery or expedited delivery service, or upon actual receipt if sent by registered mail.

FCT:
Florida Communities Trust
Department of Community Affairs
2740 Centerview Drive
Tallahassee, FL 32399-2100
ATTN: Executive Director

FCT Recipient:
Charlotte County
18500 Murdock Circle
Port Charlotte, FL 33948-1094
ATTN: _____

7. If any provision of the Agreement shall be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired.

II. PROJECT SITE REQUIREMENTS IMPOSED BY CHAPTER 259, CHAPTER 375, AND CHAPTER 380, PART III, FLORIDA STATUTES.

1. If any essential term or condition of this grant agreement is violated by the FCT Recipient or by some third party with the knowledge of the FCT Recipient and the FCT Recipient does not correct the violation within 30 days of notice of the violation, fee simple title to all interest in the Project Site shall be conveyed to the Board of Trustees of the Internal Improvement Trust Fund. The FCT shall treat such property in accordance with Section 380.508(4)(e), Florida Statutes.

2. Any transfer of the Project Site shall be subject to the approval of FCT and FCT shall enter into a new agreement with the transferee, containing such covenants, clauses, or other restrictions as are sufficient to protect the interest of the people of Florida.

3. The interest, if any, acquired by the FCT Recipient in the Project Site will not serve as security for any debt of the FCT Recipient unless FCT approves the transaction.

4. If the existence of the FCT Recipient terminates for any reason, title to all interest in real property it has acquired with the FCT award shall be conveyed to the Board of Trustees of the Internal Improvement Trust Fund, unless FCT negotiates an agreement with another local government or nonprofit organization which agrees to accept title to all interest in and to manage the Project Site.

5. In the event that the Project Site is damaged or destroyed or title to the Project Site, or any part thereof, is taken by any governmental body through the exercise or the threat of the exercise of the power of eminent domain, the FCT Recipient shall deposit with the FCT any insurance proceeds or any condemnation award, and shall promptly commence to rebuild, replace, repair or restore the Project Site in such manner as is consistent with the Agreement. The FCT shall make any such insurance proceeds or condemnation award moneys available to provide funds for such restoration work. In the event that the FCT Recipient fails to commence or to complete the rebuilding, repair, replacement or restoration of the Project Site after notice from the FCT, the FCT shall have the right, in addition to any other remedies at law or in equity, to repair, restore, rebuild or replace the Project Site so as to prevent the occurrence of a default hereunder.

Notwithstanding any of the foregoing, FCT will have the right to seek specific performance of any of the covenants and restrictions of this Agreement concerning the construction and operation of the Project Site.

III. PROJECT SITE OBLIGATIONS IMPOSED BY FCT ON THE FCT RECIPIENT.

1. The Project Site shall be managed only for the conservation, protection and enhancement of natural and historical resources and for passive, natural resource-based public outdoor recreation which is compatible with the conservation, protection and enhancement of the Project Site, along with other related uses necessary for the accomplishment of this purpose. The proposed uses for the Project Site are specifically designated in the Project Plan as approved by FCT.

2. The FCT Recipient shall prepare and submit to FCT an annual report as required by Rule 9K-4.013, F.A.C.

3. The FCT Recipient shall ensure that the future land use designation assigned to the Project Site is for a category dedicated to open space, conservation, or outdoor recreation uses as appropriate. If an amendment to the FCT Recipient's comprehensive plan is required to comply with this paragraph, the amendment shall be proposed at the next comprehensive plan amendment cycle available to the FCT Recipient.

4. FCT Recipient shall ensure, and provide evidence thereof to FCT, that all activities under this Agreement comply with all applicable local, state, regional and federal laws and regulations, including zoning ordinances and the adopted and approved comprehensive plan for the jurisdiction as applicable. Evidence shall be provided to FCT that all required licenses and permits have been obtained prior to the commencement of any construction.

5. The FCT Recipient shall, through its agents and employees, prevent the unauthorized use of the Project Site or any use thereof not in conformity with the FCT approved project plan.

6. FCT staff or its duly authorized representatives shall have the right at any time to inspect the Project Site and the operations of the FCT Recipient at the Project Site.

7. All buildings, structures, improvements, and signs shall require the prior written approval of FCT as to purpose. Further, tree removal, other than non-native species, and/or major land alterations shall require the written approval of FCT. The approvals required from FCT shall not be unreasonably withheld by FCT upon sufficient demonstration that the proposed structures, buildings, improvements, signs, vegetation removal or land alterations will not adversely impact the natural resources of the Project Site. The approval by FCT of the FCT Recipient's management plan addressing the items mentioned herein shall be considered written approval from FCT.

8. If archaeological and historic sites are located on the Project Site, the FCT Recipient shall comply with Chapter 267, Florida Statutes. The collection of artifacts from the Project Site or the disturbance of archaeological and historic sites on the Project Site will be prohibited unless prior written authorization has been obtained from the Department of State, Division of Historical Resources.

9. The FCT Recipient shall ensure that the Project Site is identified as being publicly owned and operated as a natural

resource-based public outdoor recreational site in all signs, literature and advertising regarding the Project Site. The FCT Recipient shall erect a sign(s) identifying the Project Site as being open to the public and as having been purchased with funds from FCT and FCT Recipient.

IV. OBLIGATIONS INCURRED BY FCT RECIPIENT AS A RESULT OF BOND PROCEEDS BEING UTILIZED TO PURCHASE THE PROJECT SITE.

1. If the Project Site is to remain subject, after its acquisition by the State and the FCT Recipient, to any of the below listed activities or interests, the FCT Recipient shall provide at least 60 days written notice of any such activity or interest to FCT prior to the activity taking place, and shall provide to FCT such information with respect thereto as FCT reasonably requests in order to evaluate the legal and tax consequences of such activity or interest:

a. any lease of any interest in the Project Site to a non-governmental person or organization;

b. the operation of any concession on the Project Site to a non-governmental person or organization;

c. any sales contract or option to buy things attached to the Project Site to be severed from the Project Site, with a non-governmental person or organization;

d. any use of the Project Site by non-governmental persons other than in such person's capacity as a member of the general public;

e. a management contract of the Project Site with a non-governmental person or organization; and

f. such other activity or interest as may be specified from time to time in writing by FCT to the FCT Recipient.

2. FCT Recipient agrees and acknowledges that the following transaction, events, and circumstances may not be permitted on the Project Site as they may have negative legal and tax consequences under Florida law and federal income tax law:

a. a sale of the Project Site or a lease of the Project Site to a non-governmental person or organization;

b. the operation of a concession on the Project Site by a non-governmental person or organization;

c. a sale of things attached to the Project Site to be severed from the Project Site to a non-governmental person or organization;

d. any change in the character or use of the Project Site from that use expected at the date of the issuance of any series of bonds from which the disbursement is to be made;

e. any use of the Project Site by non-governmental persons other than in such person's capacity as a member of the general public;

f. a management contract of the Project Site with a non-governmental person or organization; and

g. such other activity or interest as may be specified from time to time in writing by FCT to the FCT Recipient.

DELEGATIONS AND CONTRACTUAL ARRANGEMENTS BETWEEN THE FCT RECIPIENT AND OTHER GOVERNMENTAL BODIES, NOT FOR PROFIT ENTITIES, OR NON GOVERNMENTAL PERSONS FOR USE OR MANAGEMENT OF THE PROJECT SITE WILL IN NO WAY RELIEVE THE FCT RECIPIENT OF THE RESPONSIBILITY TO ENSURE THAT THE CONDITIONS IMPOSED HEREIN ON THE PROJECT SITE AS A RESULT OF UTILIZING BOND PROCEEDS TO ACQUIRE THE PROJECT SITE ARE FULLY COMPLIED WITH BY THE CONTRACTING PARTY.

V. CONDITIONS THAT ARE PARTICULAR TO THE PROJECT SITE AS A RESULT OF THE FCT APPROVED MANAGEMENT PLAN.

1. Outdoor recreational facilities including nature trails, boardwalks, and an observation platform shall be provided on the Project Site. The facilities shall be developed in a manner that allows the public reasonable access for observation and appreciation of the natural resources on the Project Site without causing harm to those resources.

2. The timing and extent of a vegetative survey of vegetative communities and plant species on the Project Site shall be specified in the management plan. The FCT Recipient shall detail how the survey shall be used during development of the site to insure the protection, restoration, and preservation of the natural resources on the Project Site.

3. The pine flatwood, xeric oak, saltwater marsh, and seagrass communities that occur on the Project Site shall be preserved and appropriately managed to ensure the long-term viability of these vegetative communities.

4. The Project Site shall be managed in a manner that will optimize habitat conditions for the listed wildlife species that utilize or could potentially utilize the Project Site, particularly gopher tortoises and scrub jays. The FCT Recipient shall coordinate with the Game and Fresh Water Fish Commission on the management of the Project Site for the protection of listed species and listed species habitat. The FCT Recipient shall conduct periodic surveys of listed species using the Project Site.

5. The water quality of Tippecanoe Creek shall be protected and the natural hydrology of the Project Site shall be preserved and restored to a more natural hydrological regime and shall include the restoration of the areas adjacent to the drainage canals. The FCT Recipient shall coordinate with the Southwest Florida Water Management District on the restoration and management of hydrological regime on the Project Site.

6. The FCT Recipient shall initiate a monitoring plan for the stormwater holding ponds and other stormwater runoff from the baseball complex to insure that these adjacent activities have no detrimental impact to the resources on the Project Site.

7. A vegetation analysis of the Project Site shall be performed to determine which areas of the Project Site need a prescribed burning regime implemented to maintain natural fire-dependent vegetative communities. The FCT Recipient shall coordinate with Division of Forestry and Game and Fresh Water Fish Commission on the development of a prescribed burn plan for the Project Site.

8. Invasive exotic vegetation that occurs on the Project Site shall be eradicated and shall be replaced with native species.

9. The FCT Recipient shall develop and implement a feral animal removal program for the Project Site.

10. The FCT Recipient shall restore approximately 27 acres of upland in terms of biological composition and ecological function. The FCT Recipient shall restore the degraded wetland communities along the shoreline of the canal in terms of biological composition and ecological function. The restoration effort shall include the elimination of the spoil berms along Huckaby Creek.

11. The FCT Recipient shall coordinate with the Charlotte Harbor Aquatic Preserve and Charlotte Harbor Reserve on the management of the Project Site.

12. The FCT Recipient shall coordinate with the Department

of Environmental Protection in the preparation of the management plan and shall require that any proposed canoe launch facility be limited to allowing the launching of only non-motorized canoes and kayaks due to manatees using the creek and bay in the project area. The FCT Recipient shall coordinate with the Department of Environmental Protection in developing informational signs relating to protection of manatees and their habitat and shall be required to post signs stating that motorized boats are prohibited within the Project Site.

13. The FCT Recipient shall perform an archaeological survey of the Project Site prior to the commencement of any proposed development activities. All planned activities involving known archaeological sites or identified site areas shall be closely coordinated with the Department of State, Division of Historic Resources in order to prevent the disturbance of significant sites.

THIS GRANT AWARD AGREEMENT embodies the entire Agreement between the parties.

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement.

Witness:

Brenda Cesario
Print Name:

Beverly A. Bowman
Print Name:

CHARLOTTE COUNTY, a political subdivision of the State of Florida

BY: Matthew D. DeBoer
Its: Matthew D. DeBoer, Chairman

Date: 10/25/95

Barbara T. Scott, Clerk of Circuit Court and Ex-officio Clerk to the Board of County Commissioners

Attest: Barbara T. Scott
Clerk

Accepted as to Legal Form and Sufficiency:

Renee Francis Lee

Date: 10/16/95

Renee' Francis Lee, County Attorney

OR BOOK 1430 PAGE 0918

FLORIDA COMMUNITIES TRUST

Janice D. Dughi
Print Name: JANICE D. DUGHI

Linda Meyer
Print Name: Linda Meyer

David Jordan for
James F. Murley, Chair

Date: 10/27/95

Accepted as to Legal Form and Sufficiency:

Ann Wild
Ann J. Wild, Trust Counsel

Date: 10-26-95

STATE OF FLORIDA
COUNTY OF LEON

David Jordan
The foregoing instrument was acknowledged before me this 27th day of October, 1995 by ~~JAMES F. MURLEY~~, as Chair of the Florida Communities Trust. He is personally known to me.

JANICE D. DUGHI
MY COMMISSION # CC 245713 EXPIRES
December 10, 1996
BONDED THRU TROY FAIN INSURANCE, INC.

Janice D. Dughi
Notary Public
Print Name:
Commission No.
My Commission Expires:

STATE OF FLORIDA
COUNTY OF CHARLOTTE

The foregoing instrument was acknowledged before me this 25th day of OCTOBER, 1995, by MATTHEW D. DeBOER, as CHAIRMAN. He\She is personally known to me.

JoAnn M Dillon
Notary Public
Print Name: JOANN M. DILLON
Commission No.
My Commission Expires:

OFFICIAL NOTARY SEAL
JOANN M DILLON
NOTARY PUBLIC STATE OF FLORIDA
COMMISSION NO. CC357195
MY COMMISSION EXP. APR. 19,1998

GAA\92-012-P2A
FIN\9-14-95

EXHIBIT "A"

A tract or parcel of land lying in Sections 14, 15, 22 and 23, Township 40 South, Range 21 East, Charlotte County, Florida being more particularly described as follows:

From the southwest corner of said Section 14 run North 00°26'07" East along the west line of said Section 14 for 3,274.45 feet to an intersection with the southeasterly right-of-way line of State Road Number 771 and the Point of Beginning.

From said Point of Beginning run the following courses along said southeasterly line: North 68°49'14" East for 594.82 feet; South 21°10'46" East for 10.00 feet; North 68°49'14" East for 620.75 feet; thence run the following courses; South 21°14'53" East for 371.22 feet; South 21°14'53" East for 191.67 feet to a point of curvature; thence southerly along an arc of a curve to the right of radius 565.00 feet (chord bearing South 01°52'26" East) (chord 374.86 feet) (delta 38°44'53") for 382.10 feet to a point of tangency; thence run South 17°30'00" West for 450.00 feet; South 72°30'00" East for 669.30 feet; North 52°08'27" East for 1,051.16 feet; South 89°39'02" East for 1,359.61 feet thence run South 00°06'56" West for 175.00 feet to an intersection with the south line of said Port Charlotte Subdivision Section Forty-Six; thence run South 89°39'02" East along said south line for 805.47 feet to an intersection with the northwesterly line of the Flamingo Waterway System as described in Official Records Book 1228, Pages 1727 through 1730, of said public records; thence run the following courses along said northwesterly line; South 00°00'32" West for 5.29 feet to a point of curvature; southwesterly along an arc of a curve to the right of radius 600.00 feet (chord bearing South 37°15'32" West) (chord 726.35 feet) (delta 74°30'00") for 780.16 feet to a point of reverse curvature; southwesterly along an arc of a curve to the left of radius 3,173.36 feet (chord bearing South 61°07'47" West) (chord 1,468.59 feet) (delta 26°45'30") for 1,482.03 feet to a point of tangency, South 47°45'02" West for 791.17 feet, leaving said northwesterly line of the Flamingo Waterway System; thence continue South 47°45'02" West for 2,854.46 feet to an intersection with the northeasterly line of Parcel 15; thence run the following courses along said northeasterly line; North 76°00'00" West for 877.46 feet; North 36°00'00" West for 490.00 feet; North 05°00'00" East for 509.99 feet to an intersection with the south line of said Section 15 and the northeasterly line of Parcel 13 as described in Official Records Book 571, Pages 1799 through 1809 of said public records; thence run the following courses along said northeasterly line; North 05°00'00" East for 270.01 feet; North 65°00'00" West for 405.00 feet; North 21°00'00" West for 75.00 feet; North 30°00'00" East for 810.00 feet; North 73°00'00" West for 310.00 feet; South 32°00'00" West for 365.00 feet; North 86°00'00" West for 242.14 feet; North 09°00'00" East for 496.22 feet; North 72°00'00" West for 265.00 feet; North 21°00'00" East for 300.00 feet; North 60°00'00" West for 200.00 feet; South 39°00'00" West for 270.00 feet; South 74°00'00" West for 150.00 feet; North 42°00'00" West for 370.00 feet; North 03°00'00" East for 454.54 feet to an intersection with the southeasterly right-of-way line of State Road Number 771; thence North 68°49'14" East along said easterly line for 2,298.52 feet to the Point of Beginning.

TITLE EXCEPTIONS

1. The rights, if any, of the public to use as a public beach or recreation area any part of the land lying between the body of water abutting the subject property and the natural line of vegetation, bluff, extreme high water line or other apparent boundary line separating the publicly used area from the upland private area.

2. Riparian rights or accretion or littoral rights, if any to the subject property are not insured.

3. If the premises herein described include artificially filled land in what was formerly navigable water, it is subject to any and all rights of the United State Government's control over navigable waters in the interest of navigation and commerce and the inalienable rights of the State of Florida in lands and/or water of such character.

4. Rights of the United State of America and/or the State of Florida to any portion of said land which lies beneath navigable waters.

5. Subject to any and all residual royalty rights of Coastal Petroleum Company, or its assigns, resulting from any agreements with the Trustees of the Internal Improvement Fund of Florida, which excludes the right of entry for purpose of exploration, mining or drilling.

6. Any adverse ownership claim by the State of Florida by right of sovereignty to any portion of the lands insured hereunder, including submerged, filled, and artificially exposed lands and lands accreted to such lands.

7. Easements to Southwest Florida Water Management District recorded in O.R. Book 696, Page 301, of the Public Records of Charlotte County, Florida.

8. Easement to Florida Power & Light Company recorded in O.R. Book 112, Page 451, of the public Records of Charlotte County, Florida.

9. Grant of Perpetual Pedestrian and Vehicular Access Easement executed by Atlantic Gulf Communities Corporation, as Grantors, in favor of Southwest Florida Water Management District and the Board of Trustees of the Internal Improvement Fund of the State of Florida, dated October 13, 1995 and recorded in O.R. Book 1427, Page 1815, of the Public Records of Charlotte County, Florida.

10. Matters depicted on Johnson Engineering, Inc. survey sketch dated October 26, 1995 under Project #20365.

EXHIBIT "C"

Priority Management Schedule for Tippecanoe Environmental Park

Project Number:
Project Name: Tippecanoe Environmental Park
Grant Recipient: Charlotte County Board of County Commissioners

Activity	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Land Management Plan Revision										Nov
Interagency coordination	Continuing and ongoing									
Structures and Improvements										
Wildlife Observation Area		Mar								
Interpretive Signs and Kiosk		Nov								
Key Management Activities										
Habitat Assessment		Nov							Nov	
Prescribed Burning	Ongoing									
Vegetation Monitoring:										
Baseline inventory update		May							May	
Post-burning monitoring	Ongoing									
Post-mechanical monitoring	Ongoing									
Wildlife Monitoring:										
Baseline inventory update			Oct							
Florida scrub jay survey	Feb-Mar	Feb-Mar	Feb-Mar	Feb-Mar	Feb-Mar	Feb-Mar	Feb-Mar	Feb-Mar	Feb-Mar	Feb-Mar
Gopher tortoise survey	Coordinated with prescibed burns, mechnaical treatment and other projects									
Exotic Species Management:										
Exotic vegetation treatment	Ongoing									
Feral animal removal	Ongoing									
Infrastructure Maintenance	Ongoing									
Programming:										
Guided nature walks	Ongoing									
Annual Stewardship Report	Oct	Oct	Oct	Oct	Oct	Oct	Oct	Oct	Oct	Oct

TIPPECANOE ENVIRONMENTAL PARK EAST
[Unit 4]
GOPHER TORTOISE RECIPENT SITE MANAGEMENT PLAN

August 2011

Prepared by:

Charlotte County Community Services
Parks & Natural Resources Division
2050 Forrest Nelson Blvd.
Port Charlotte, FL 33952

Table of Contents

FIGURES

APPENDICES

1.0 INTRODUCTION AND GOALS

Tippecanoe Environmental Park is a 354 acre environmental park located in north central Charlotte County, directly south of the Charlotte Sports Park (Figure 1). Tippecanoe is in Township 40 South, Range 21 East, Sections 13, 14, 22, and 23 of USGS Quadrangle El Jobean. Tippecanoe Environmental Park contains one of the largest continuous tracts of scrub habitat in central Charlotte County. The majority of the site is dominated by pine flatwoods, scrub scrubby flatwoods and tidal marsh. Listed species such as the Florida scrub-jay (*Aphelocoma coerulescens*), the gopher tortoise (*Gopherus polyphemus*), southeastern American Kestrel (*Falco sparverius*), and the osprey (*Pandion haliaetus*) have been observed within the park, other listed species have the potential to be present.

1.1 Land Use Compatibility

Charlotte County acquired Tippecanoe Environmental Park for preservation and outdoor passive recreation in 1995. Tippecanoe Environmental Park is managed for conservation, protection, and enhancement of its natural communities found onsite. The future land use and zoning designations were changed between 2002-2006. The final future land use designation for Tippecanoe is Resource Conservation. The final zoning designation for Tippecanoe is Environmentally Sensitive. Tippecanoe is surrounded on 3 sides by publicly owned property. The west and southeast portions of the site are boarded by the Charlotte Harbor Preserve State Park. To the east separated by a canal is Tippecanoe II Mitigation Area, a 182 acre scrub-jay mitigation preserve. To the north is SR 776 and the Charlotte Sport's Park, which is home to the Tampa Bay Rays spring training; there is no urban interface with Tippecanoe Environmental Park. There are no conflicting land uses adjacent to the project that would inhibit management of the site.

Preservation and outdoor passive recreation are the only land uses proposed for this site, therefore there would be no adverse affects from land use for the ability of gopher tortoises to excavate and maintain their burrows or to otherwise inhabit and utilize the site. The County's commitment to maintain and manage the property for the ongoing health and restoration of the natural communities found onsite will foster the open canopy and herbaceous ground cover needed by gopher tortoises.

1.2 Future Management Goals

Tippecanoe Environmental Park will be managed by Charlotte County for the conservation, protection, and enhancement of its natural resources and for compatible public recreation. It is the overall goal of Charlotte County to continue to restore and manage the park for the optimal health of each habitat and to maximize the diversity of both flora and fauna within the habitats onsite. Priority management objectives for the gopher tortoise recipient area include:

- Focus on managing for the Gopher Tortoise as a keystone species.
- Increase suitable habitat for the Gopher Tortoise on Tippecanoe utilizing the guiding principles outlined in the Florida Fish and Wildlife Conservation Commission's (FWC) Gopher Tortoise Management Plan (September 2007).
- Increase habitat suitability for other known or potential listed species and Gopher Tortoise commensals.

1.3 Florida Communities Trust

Tippecanoe Environmental Park was acquired with grant funding from Florida Communities Trust (FCT). Charlotte County provided a 50% match from ad valorum funds, there no restrictions these funds have on the use of the property. A Management Plan (Appendix A) was written for the property in 1995 as a requirement of the FCT grant and outlines the general management activities for the park. The management plan was developed to ensure that Tippecanoe will be developed and managed in accordance with the Grant Award Agreement. An updated management plan for Tippecanoe Environmental Park is currently being drafted by County staff. Key management strategies include prescribed burns and exotic/invasive species removal. Tippecanoe is open to the public; only passive use recreation (e.g. hiking, bird watching, etc.) are allowed within the park.

2.0 SITE CONDITIONS AND NATURAL RESOURCES

An aerial map is provided as Figure 2 that delineates the property boundaries, as well as the designated management units throughout Tippecanoe. Figure 3 shows the boundary of the gopher tortoise recipient site area and delineates the management units within the recipient site.

2.1 Natural Community Types and Current Conditions

Natural communities within Tippecanoe including Xeric Hammock, Upland Hardwood Forest, Scrub, Scrubby Flatwoods, Mesic Pine Flatwoods, Wet Flatwoods, Maritime Hammock, Bottomland Forest, Salt Marsh, and Flatwoods Lake. The habitat types located within the boundaries of the gopher tortoise recipient site area are discussed below (Figure 4).

Scrubby Flatwoods

Tippecanoe contains approximately 5.32 acres of scrubby flatwoods. Like scrub, scrubby flatwoods are mostly limited to Florida; FNAI ranks scrub habitat as imperiled both in-state (S2) and globally (G2) (FNAI 2010). This ecosystem is nearly endemic to Florida, but does appear in bordering states. FNAI characterizes scrubby flatwoods by an overstory of widely spaced pines and a short, shrubby understory of saw palmetto (*Serenoa repens*), scrub oaks, wiregrass (*Aristida* spp.), rusty lyonia, lichens, and tarflower (*Bejaria racemosa*) (FNAI 2010).

The scrubby flatwoods habitat within the boundary of the gopher tortoise recipient site area is not disturbed and in fairly good condition, the unit was burned via prescribed fire to stimulate new growth and additional diversity in the herbaceous layer. Both mechanical vegetation reduction and prescribed fire will continue to be utilized to maintain this community as needed.

Mesic Pine Flatwoods

The project area contains approximately 35.38 acres of mesic pine flatwoods habitat. The Florida Natural Areas Inventory (FNAI) indicates mesic flatwoods occur throughout Florida and the lower southeastern coastal plain (FNAI 2010). FNAI characterizes mesic pine flatwoods by an open canopy of tall pines with a low ground layer of shrubs and grasses, with little to no mid-story vegetation. Scrub is found on white sandy infertile soils, groundcover, if any, consists of lichens and herbs. Common ground vegetation includes saw palmetto, gallberry (*Ilex glabra*), runner oak (*Quercus minimia*), shiny blueberry (*Vaccinium myrsinites*), wiregrass (*Aristida ssp.*), and broomsedge (*Andropogon* spp.) (FNAI 2010).

The mesic pine flatwoods within the boundary of the gopher tortoise recipient site area is in good condition. There was some overgrowth in especially with respect to saw palmetto due to long fire intervals, but a recent prescribed fire in the winter 2010 has improved habitat conditions. Both mechanical reduction and prescribed fire will continue to be utilized to maintain this community.

2.2 Soils

The soils at Tippecanoe are dominated by Wabasso sand, Limestone substratum and Oldsmar sand, other soils present include EauGallie sand, Felda fine sand, puckish mucky fine sand, and Pineda fine sand. Both Wabasso sand, limestone substratum and Oldsmar sand is typically associated with low broad flatwoods, along with EauGallie sand inclusions, this soil has a high water table (NRCS, 2007 and Soil Conservation Service, 1981).

The soils within the boundaries of the gopher tortoise recipient site area (Figure 5) are dominated by Wabasso sand, Limestone substratum and Oldsmar sand; these are considered neither desirable nor acceptable under the FWC's criteria for recipient sites. In addition, although the soils on the site have a higher water table that what is desirable, there has been ample documentation of tortoises utilizing the areas proposed for the recipient site.

2.3 Invasive Exotic Current Conditions

Tippecanoe Environmental Park is surrounded primarily by other conservation lands, making it slightly less susceptible to invasive nuisance species; however, dispersal by birds and other wildlife (e.g., feral hogs) as well as invasive not treated on adjacent of nearby lands can by dispersed by wind or water.

Exotic invasive species that have been observed within the overall park include Brazilian pepper, melaleuca (*Melaleuca quinquenervia*), Cesar weed, and cogongrass (*Imperata cylindrica*). These species are ranked as a Category I according the 2005 List of Invasive Species from the Florida Exotic Pest Plant Council (FLEPPC). Despite all of the opportunities, nuisance exotic encroachment within the boundary of the gopher tortoise recipient site area is sparse. The only exotics in the recipient area are along the east line running parallel to the firebreaks.

3.0 GOPHER TORTOISE BASELINE

3.1 Tortoise Population

In 2004, Charlotte County contracted with a local non-profit agency to conduct a baseline survey for gopher tortoise at Tippecanoe Environmental Park. The survey covered between 32-100% of the best quality habitat and 32-72% of the less suitable habitat and was conducted utilizing methods from Cox (et al. 1987) and Alford (1980). Excerpts from the report pertaining to the proposed gopher tortoise recipient site area are summarized below.

There are likely two distinct gopher tortoise populations on the property. One of these potentially viable populations is located in the scrub and scrubby flatwoods of management units 1, 2, 3, and 5. Together, this area contains approximately 65 acres of suitable habitat and a population of around 32 tortoises. The demographics of this site and the proportion of abandoned (47) to active plus inactive burrows indicate that this population may be on decline and not effectively reproducing (Table 2). While unit 1 has a density of 1.17 tortoises per acre, the other three units all have densities less than 1 tortoise per acre. There are virtually no smaller tortoises represented within this population. Restoration, with mechanical thinning and prescribed burning, may result in more herbaceous regeneration and facilitate the reproduction of this population.

Table 1. Tippecanoe Environmental Park. Gopher Tortoise Survey 2004.
Population Density Estimates.

Unit	Area, ac	Surveyed ac	Suitable Habitat Surveyed, %	Total Active	Total Inactive	Population/ Unit	Density/ac Suitable Habitat	Abandoned
2	19.15	19.15	100	9	19	17.19	0.898	17
3	8	6.8	85	1	3	2.46	0.425	12
4	59.43	23.89	54.93	2	4	3.68	0.281	7
5	43.57	23.23	71.63	1	7	4.91	0.295	7
Total	**353.65**	**150.9**	**55.91**	**32**	**63**	**58.33**	**0.691**	**85**

Notes:

Population/Unit = 0.614 X (Total Active + Total Inactive Burrows), where 0.614 = Auffenberg/Franz conversion factor

Density/ac = Number tortoises per acres suitable habitat = Population/Unit / (Surveyed ac X % Suitable Habitat Surveyed)

3.2 Baseline Survey Transects and Density Values

Initial baseline surveys were conducted within the gopher tortoise recipient site area on April 13, 2011 and May 12, 2010. A map depicting transects and burrow locations is attached as Figure 6. A summary of the data by unit follows:

	Unit 4
Total Acres	40.7
Acres Surveyed	28.4
No. Active/Inactive Burrows	52
No. Abandoned Burrows	13
% Habitat Surveyed	69%
Estimated Population	37

4.0 MANAGEMENT NEEDS AND RESTORATION

4.1 Invasive Exotic Proposed Management

All exotic invasive species are at very manageable levels, spot treatments occur when exotic invasive vegetation is observed onsite. Staff will plan an eradication treatment for the firebreak areas that currently have the mostly density, relatively speaking. Due to the small nature of exotic invasive plant infestations there are no plans for re-vegetating treatment areas. Staff will review on a case by case basis if re-vegetation is needed at the time of treatment.

Prevention is most effective method of control; staff continually monitors the sites for early detection and control of populations. Currently, efforts to eradicate these Category I species closely parallel the exotic species control plans recommended by FLEPPC. Application of the most recent treatment recommendations by species is available via the FLEPPC web site (http://www.fleppc.org/). The site is monitored on a regular basis, to exclusively assess the presence of invasive/exotic species (plant and animal), will be conducted.

4.2 Tree Canopy Management

Habitat management guidelines for gopher tortoises as outline in the Florida Fish and Wildlife Conservation Commission's (FWC) Gopher Tortoise Management Plan (September 2007) recommend maintaining the pine and hardwood canopy cover at 60% or less. Current canopy conditions in the proposed gopher tortoise recipient site area is approximately 20% coverage *Note: this estimate is based on site knowledge, aerial interpretation and limited onsite verification.

To maintain the current canopy coverage of less than 60% in staff proposes to utilize an approximate 2-3 year burn cycle for potential pine dominated habitats and a slightly longer cycle in the scrub dominated habitats; however the over-riding determination of the burn cycle will be dictated by site conditions. As stated in the FWC gopher tortoise management guidelines, the general result of fire on tree and shrubs is to reduce canopy cover. This is directly tied to fostering more open grassy habitat conditions that benefit gopher tortoises.

4.3 Ground Cover Management

Habitat management guidelines for gopher tortoises as outline in the Florida Fish and Wildlife Conservation Commission's (FWC) Gopher Tortoise Management Plan (September 2007) recommend maintaining herbaceous groundcover at 30-50% or greater. Current herbaceous groundcover conditions in the proposed gopher tortoise recipient site area is approximately 30% groundcover.

*Note: these estimates are based on site knowledge, aerial interpretation and limited onsite verification.

Maintaining herbaceous groundcover of 30-50% or more is directly tied to maintaining an open canopy, as described above. In addition to maintaining an open canopy, staff proposes to utilize an approximate 2-3 year burn cycle for potential pine dominated habitats and a slightly longer cycle in the scrub dominated habitats; however the over-riding determination of the burn cycle will be dictated by site conditions. Following a 2-3 year burn cycle in the pine dominated habitats and a slightly longer cycle in the scrub dominated habitats will allow for fire to stimulate the growth and diversity of tortoise foraging. Staff will strive for early growing season burn, when weather conditions permit; this will hopefully produce a more pronounced vegetative response compared to dormant season burns.

4.4 Other Proposed Enhancement and Remedial Actions

At this time, there are no other habitat enhancements proposed. There are no areas appropriate for creating berms or spoil piles. The site is already securely fenced and restoration of the hydrology on the property was completed in 2005. If the above described management activities do not achieve the desired results, staff will re-examine the need for selective canopy thinning to further open up the canopy, re-evaluate burn cycles and burning seasons and evaluate additional forage plantings. County staff will consult with FWC for any new or update recommendations if additional remedial actions are necessary.

5.0 MONITORING

5.1 Habitat Assessment Monitoring

As required, the County will submit a monitoring report to FWC every three years. The report will summarize the habitat management conducted and the results of habitat monitoring. The guidelines regarding survey methods will be provided by FWC.

5.2 Tortoise Population Monitoring

As required, the County will submit a monitoring report to FWC every three years. The report will summarize the tortoise density surveys and monitoring. The guidelines regarding survey methods will be provided by FWC.

6.0 FUNDING SOURCES AND PRIORITY SCHEDULE

6.1 Management Funding Sources

Charlotte County will ensure adequate funding for perpetual management of the proposed gopher tortoise recipient site. Funding will come from general appropriation or allocation (ad valorum funds) approved by the Charlotte County Board of County Commissioners (BOCC) for habitat management. Dedicated ad valorum funding for habitat management from the BOCC is further supported by grant requirements for habitat management from the FCT grant that funded the acquisition of the property.

6.2 Management Cost Estimates

Management cost estimates for management of recipient site unit are broken down to a cost per acre where feasible. Some services are conducted throughout the entire park including the recipient site. County staff intends to utilize an approximate 2-3 year burn cycle; however the over-riding determination of the burn cycle will be dictated by the specific site conditions. Timing of all management activities are subject to appropriate and safe weather conditions.

- **Natural Resource Protection - $2,630**
  - Feral animal/Exotic plant monitoring - $1,100
  - Exotic/Feral animal removal – $330 ($2,900/year for entire park)
  - Periodic Exotic Species Treatment -$1,200 per event

        - Cost estimate shown is based on one treatment every other year
    - Listed species survey – in house staff time

- **Resource Enhancement - $13,640**
    - Controlled burning – $1,040
        - One controlled burn, burn cycle estimated at every 2-4 years based on habitat conditions
        - Approximately 40 burnable acres at approximately $26 per acre (in house cost)
    - Mechanical thinning - $12,600
        - Cost shown is based on one treatment every other year
        - Approximately 40 acres at $630 per acre

- **Maintenance - Total $800**
    - Upkeep of overall park facilities (firebreaks and fencing) - $500 annually
        - $300 per fence repair, estimate 1 repairs per year

- **Staffing –** The Division will provide staffing, management, and maintenance for the Park. A full time Environmental Specialist will be directly responsible for all land management activities. Assistance from other Environmental Specialists and additional Department staff will be available as needed and the support of the Division Manager and other administrative positions will be available. Additional staffing may be obtained through volunteers, non-profit organizations, and/or contracted services as needed.

6.3 Schedule for Management Activities

The most recent prescribed burn was conducted in the winter of 2010. Proposed burn cycles and time frames are weather dependent and may be adjusted as needed.

Priortiy Schedule - Management Activities

	2011				2012				2013			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4
Task												
Canopy Removal											Review if necessary	
Exotic Species Control			Unit 4: as needed				Unit 4: as needed					
Perscribed Burning**												Unit 4
Monitoring			Unit 4				Unit 4					Report due to FWC

	2014				2015				2016			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4
Task												
Canopy Removal						Review if necessary						
Exotic Species Control	Unit 4: as needed					Unit 4: as needed						Unit 4: as needed
Prescribed Burning**										Unit 4		Unit 4 (Alt)
Monitoring	Unit 4					Unit 4				Unit 4		Report due to FWC

**weather permitting

Figure 1

Tippecanoe Environmental Park: 2010 Aerial

Park Boundary

0 850 1,700 3,400 Feet

N

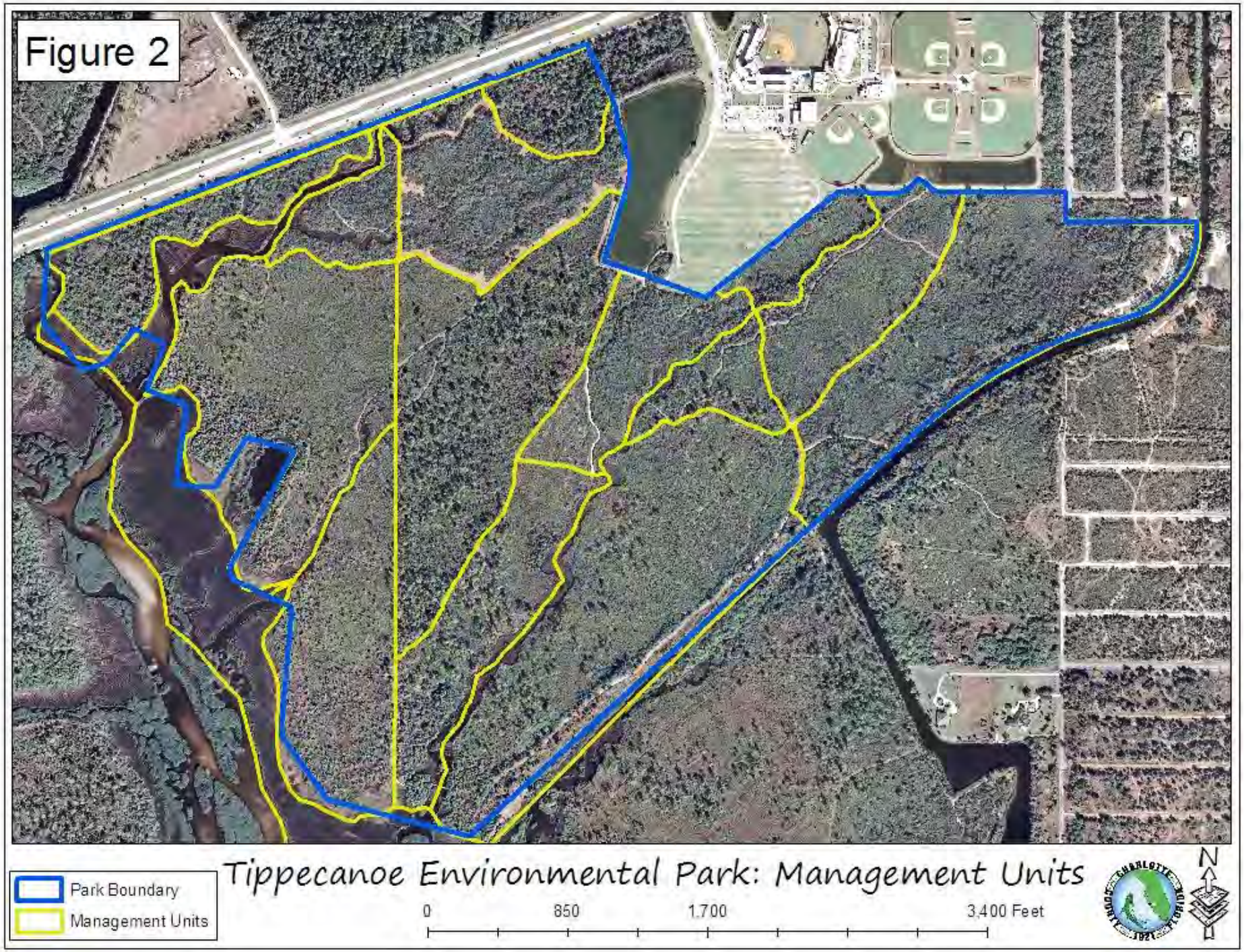


Figure 2
Park Boundary
Management Units
Tippecanoe Environmental Park: Management Units
0
850
1,700
3,400 Feet
N

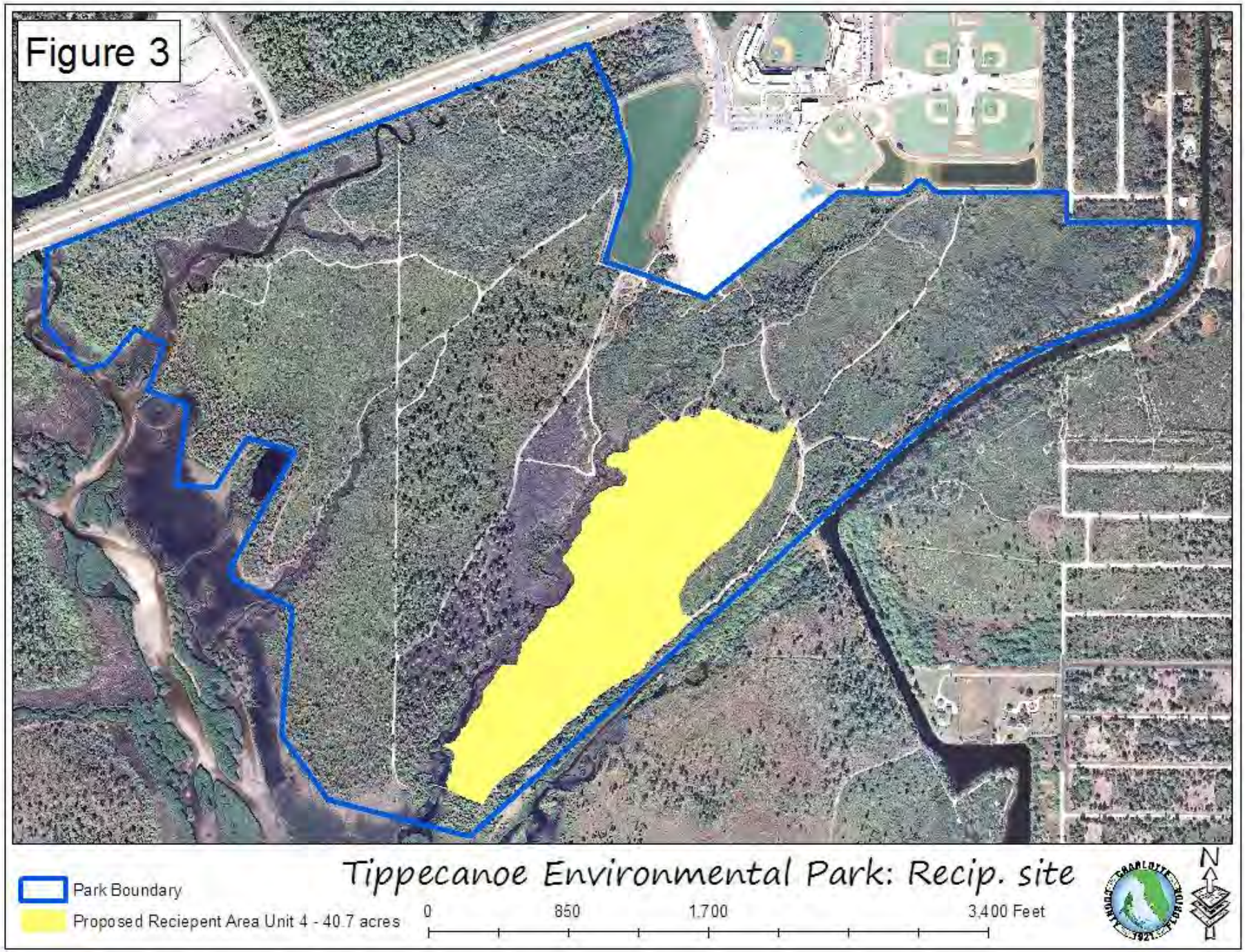


Figure 3
Tippecanoe Environmental Park: Recip. site
Park Boundary
Proposed Reciepent Area Unit 4 - 40.7 acres
0
850
1,700
3,400 Feet
N

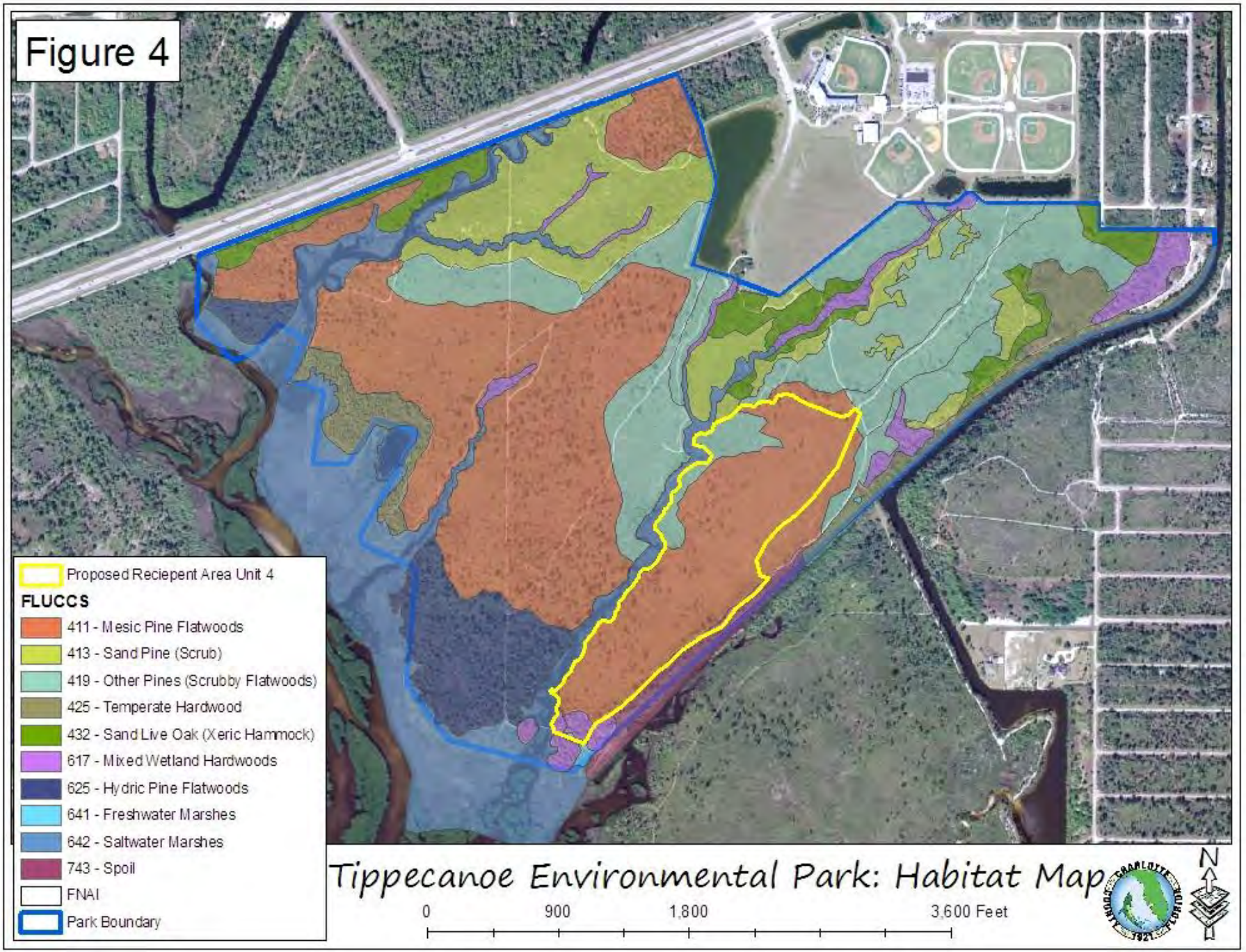


Figure 4
Proposed Reciepent Area Unit 4
FLUCCS
411 - Mesic Pine Flatwoods
413 - Sand Pine (Scrub)
419 - Other Pines (Scrubby Flatwoods)
425 - Temperate Hardwood
432 - Sand Live Oak (Xeric Hammock)
617 - Mixed Wetland Hardwoods
625 - Hydric Pine Flatwoods
641 - Freshwater Marshes
642 - Saltwater Marshes
743 - Spoil
FNAI
Park Boundary
Tippecanoe Environmental Park: Habitat Map
0
900
1,800
3,600 Feet
N

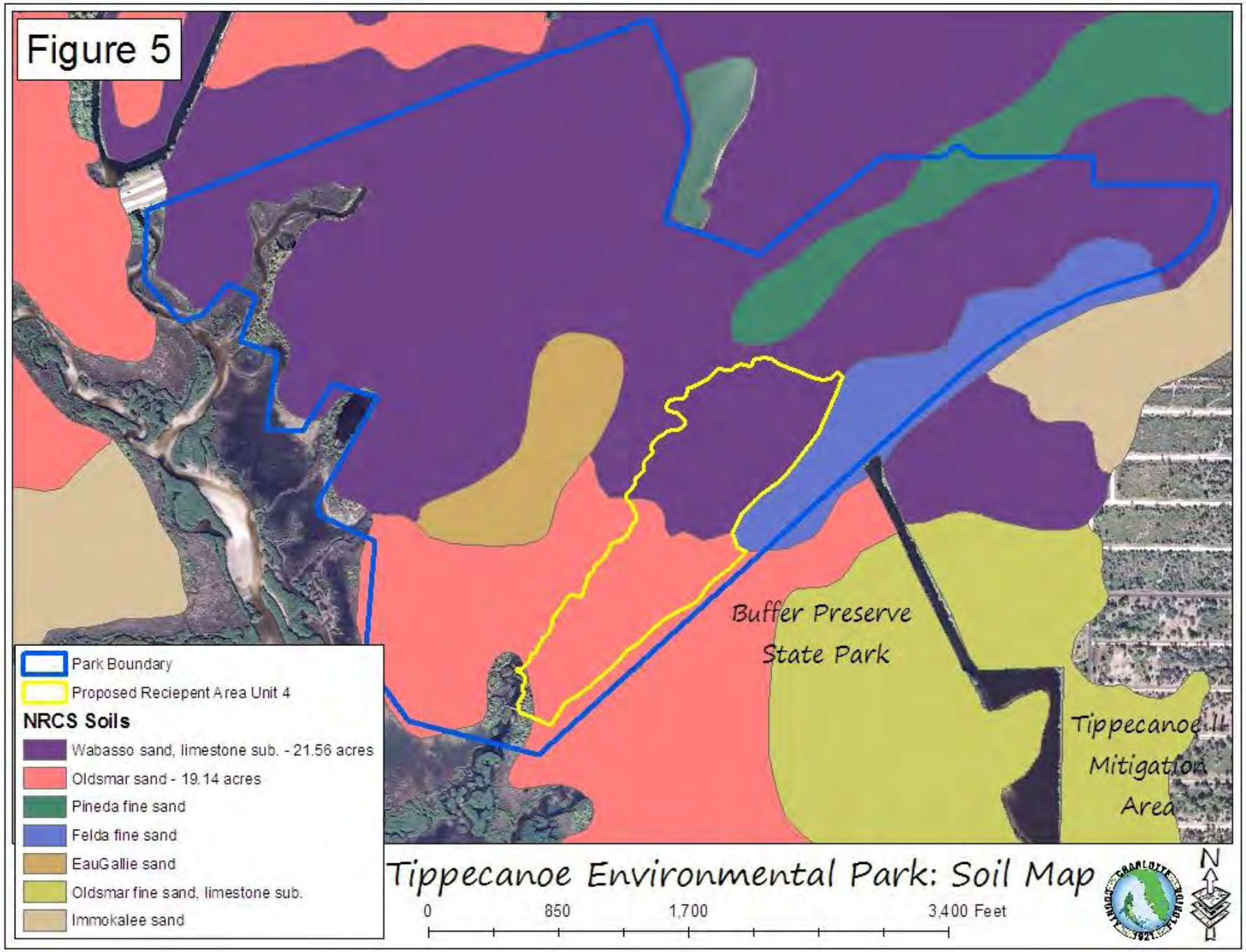


Figure 5
Buffer Preserve
State Park
Tippecanoe II
Mitigation
Area
Park Boundary
Proposed Reciepent Area Unit 4
NRCS Soils
Wabasso sand, limestone sub. - 21.56 acres
Oldsmar sand - 19.14 acres
Pineda fine sand
Felda fine sand
EauGallie sand
Oldsmar fine sand, limestone sub.
Immokalee sand
Tippecanoe Environmental Park: Soil Map
0
850
1,700
3,400 Feet
N

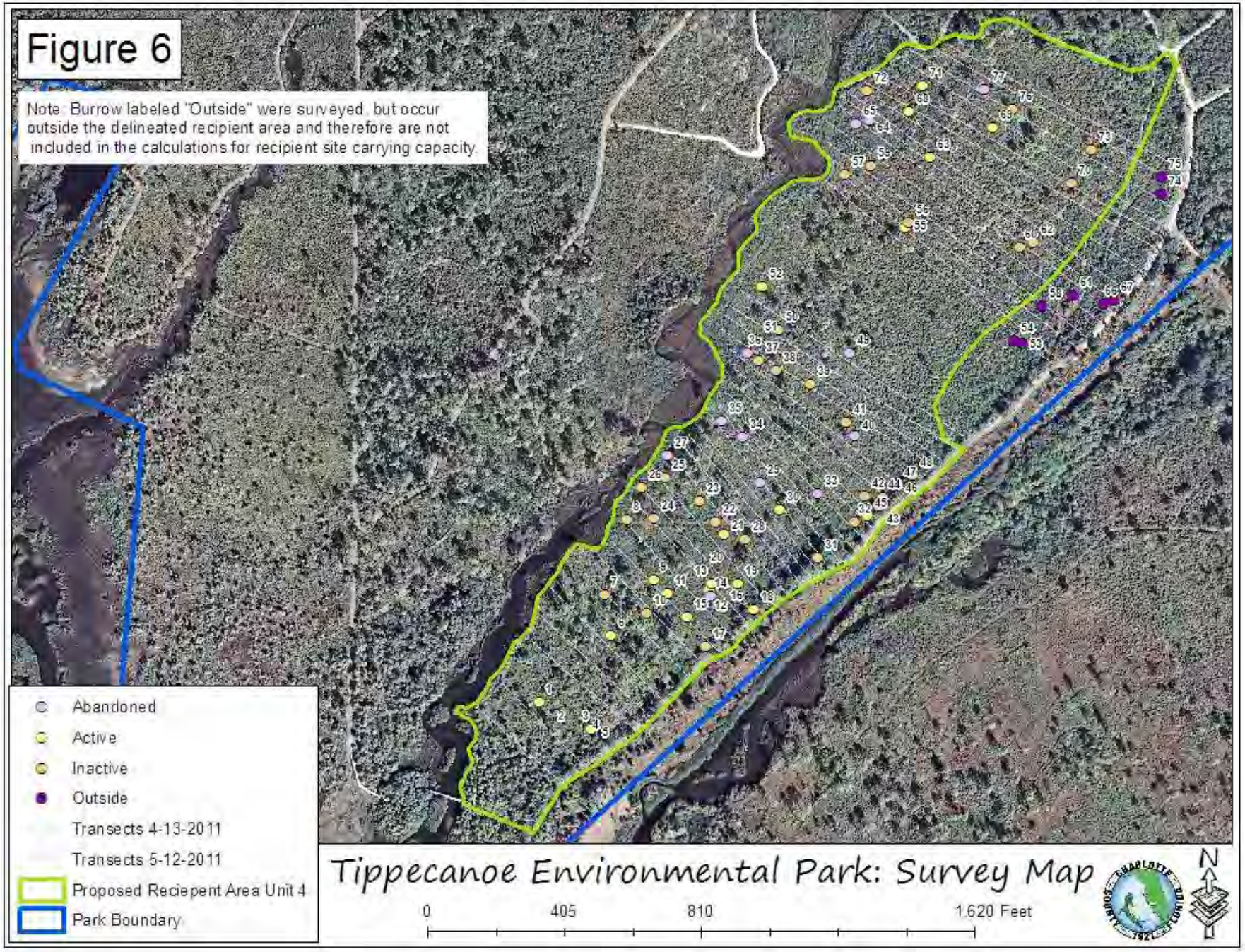


Figure 6
Note: Burrow labeled "Outside" were surveyed, but occur outside the delineated recipient area and therefore are not included in the calculations for recipient site carrying capacity.
Abandoned
Active
Inactive
Outside
Transects 4-13-2011
Transects 5-12-2011
Proposed Reciepent Area Unit 4
Park Boundary
Tippecanoe Environmental Park: Survey Map
0
405
810
1,620 Feet
N

This instrument prepared by:
Derek P. Rooney, Esq.
Assistant Charlotte County Attorney

After recording please return the document to Grantee:
Florida Fish and Wildlife Conservation Commission
ATTN: Rick McCann
620 South Meridian Street, Tallahassee
FL 32399-1600

CONSERVATION EASEMENT

THIS DEED OF CONSERVATION EASEMENT is given this _____ day of _____ 2011 by Charlotte County Board of County Commissioners, a political subdivision of the State of Florida whose mailing address is 18500 Murdock Circle; Port Charlotte, Fl 33948, ("Grantor") to the Florida Fish and Wildlife Conservation Commission, an agency of the State of Florida, with its principal office at 620 South Meridian Street, Tallahassee, FL 32399-1600 ("Grantee").

The parties agree as follows:

WITNESSETH

WHEREAS, the Grantor is the owner of certain lands situated in Charlotte County, Florida, hereinafter referred to as the "Property", more specifically described in Exhibit A attached hereto and incorporated herein by this reference; and

WHEREAS, the property possesses natural, scenic, open space, wildlife preservation and conservation values (collectively, "conservation values") of great importance to Grantor, the people of Charlotte County, and the people of the State of Florida; and

WHEREAS, the specific conservation values of the Property are documented as part of the Habitat Management Plan pertaining to the Property, dated _____ ("Plan"). A copy of the Plan is attached hereto as Exhibit B, and incorporated herein by reference. The Plan contains baseline documentation that is an accurate representation of the Property at the time of this grant and is intended to serve as an objective information baseline for monitoring compliance with the terms of this grant; and

WHEREAS, Grantor intends that the conservation values of the Property be preserved and maintained by the continuation of land use patterns, including, without limitation, those relating to preservation and passive public existing at the time of this grant, that do not significantly impair or interfere with those values; and

WHEREAS, Grantor further intends, as owner of the Property, to convey to Grantee the right to preserve and protect the conservation values of the Property in perpetuity; and

WHEREAS, Grantee is a state public agency, part of whose mission is the conservation, preservation, protection or enhancement of lands such as the Property; and

WHEREAS, the Grantor, in consideration of the issuance by the Grantee of Permit No. _____ issued by the Grantee on _____ ("Permit") in favor of

the Grantor for the incidental take of listed wildlife species, is required to grant and secure the enforcement of a perpetual conservation easement pertaining to the Property.

WHEREAS, Grantor has acquired the property with partial funding from the Florida Communities Trust (FCT), and the Property is subject to certain limitations provided in the FCT Grant Award Agreement a/k/a the Declaration of Restrictive Covenants (as recorded in OR Book 1430, Page 908 in Charlotte County)(the "Agreement,") A copy of the Agreement is attached hereto as Exhibit C and

WHEREAS, as part and condition of the FCT funding, the County provided and FCT approved a Management Plan for the project site, and together with the Agreement, A copy of the Agreement is attached hereto as Exhibit D and

WHEREAS, Grantor intends that the conservation and recreation values of the Property be preserved and enhanced in accordance with the Management Plan, as it may be amended from time to time only after review and approval by FCT; and

WHEREAS, All activities by the Grantor and Grantee shall be consistent with the Agreement and Management Plan.

NOW THEREFORE, consistent with the issuance of the Permit, Grantor hereby grants, creates, and establishes a perpetual conservation easement upon the Property described in Exhibit A, which shall run with the land and be binding upon the Grantor, its heirs, successors and assigns, and remain in full force and effect forever. The recitals set forth above are true and correct and hereby incorporated into and made a part of this Conservation Easement

1. Purpose. The purpose of this Conservation Easement is to ensure that the Property or part thereof as described in this Conservation Easement shall be protected forever and used as conservation areas, consistent with the Habitat Management Plan ("Plan"). The parties intend that this Conservation Easement will confine the use of the Property to such uses as are consistent with the purpose of this Conservation Easement.

2. Rights of Grantee. To accomplish the purpose of this Conservation Easement the following rights are conveyed to Grantee:

a. To preserve and protect the conservation values of the Property as defined in this Conservation Easement;

b. To enter upon the Property at reasonable times and upon reasonable notice to the Grantor in order to engage in activities consistent with this Conservation Easement, to monitor Grantor's compliance with this Conservation Easement, and to otherwise enforce the terms of this Conservation Easement; provided that Grantee shall not unreasonably interfere with Grantor's use and quiet enjoyment of the Property; and

c. To prevent any activity on or use of the Property that is inconsistent with the purpose of this Conservation Easement, and to require the restoration of such areas or features of the Property that may be damaged by any inconsistent activity or use.

3. Grantor's Reserved Rights. Grantor reserves to itself, its heirs, successors or assigns all rights as owner of the Property including the right to engage in all uses of the Property that are not expressly prohibited herein and are not inconsistent with the purpose of this Conservation Easement.

4. Prohibited Uses. Unless expressly authorized in accordance with the Plan (Exhibit B), the following are prohibited activities on the Property:

a. Construction or placing of buildings, roads, signs, billboards or other advertising, utilities or other structures on or above the ground.

b. Dumping or placing of soil or other substance or material as landfill or dumping

of trash, waste, or unsightly or offensive materials.

c. Removal or destruction of trees, shrubs, or other vegetation that is not part of restoration or land management activities.

d. Excavation, dredging, or removal of loam, peat, gravel, soil, rock or other material substance in such manner as to affect the surface.

e. Surface use except for purposes that permit the land or water areas to remain in their existing natural condition.

f. Activities detrimental to drainage, flood control, water conservation, erosion control, soil conservation, or fish and wildlife habitat preservation.

g. Act or uses detrimental to such retention of land or water areas in their existing natural condition.

h. Acts or uses detrimental to the preservation of the structural integrity or physical appearance of sites or properties of historical, architectural, archaeological, or culture significance.

i. Alteration of the Property except in compliance with the Plan.

5. No Public Access. No additional right of access by the general public to any portion of the Property is conveyed by this Conservation Easement. Existing access by the general public to Tippecanoe Environmental Park for the express purposes of passive recreational activities is not affected by this Conservation Easement.

6. Expenses; Taxes. Grantor retains all responsibilities and shall bear all costs and liabilities of any kind related to the ownership, operation, upkeep, and maintenance of the Property, including the maintenance of an adequate self-insurance fund or comprehensive general liability insurance coverage. Such responsibilities and costs shall include those associated with the management activities discussed in the Plan. Grantor shall keep the Property free of any liens arising out of any work performed for, materials furnished to, or obligations incurred by Grantor. Grantor shall pay before delinquency all taxes, assessments, fee, and charges of whatever description levied on or assessed against the Property by competent authority, and shall furnish Grantee with satisfactory evidence of payment upon request.

7. Costs of Enforcement. Any costs incurred by Grantee in enforcing the terms of this easement against Grantor, including, without limitation, costs of suit and attorney's fees, and any costs of restoration necessitated by Grantor's violation of the terms of this Easement, shall be borne by Grantor.

8. Liability. Both Charlotte County and the Florida Fish and Wildlife Conservation Commission, a subdivision of the state and a state agency respectively, agree to be fully responsible to the limits set forth in section 768.28 for their own negligent acts which result in claims or suits against each party and agree to be liable to the limits set forth in section 768.28, for any damages caused by said acts. Nothing herein shall be construed as a waiver of sovereign immunity by Charlotte County or the Florida Fish and Wildlife Conservation Commission.

9. Remedies. If Grantee determines that Grantor or successors are in violation of the terms of this Conservation Easement, it may take any of the following actions, after 30 day written notice to Grantor or successors to correct the violation: 1) Grantee may itself correct the violation, including but not limited to restoration of any portion of the Property affected to the condition that existed prior to the violation, and demand payment from Grantor for all costs associated with such action; 2) Grantee may bring an action at law or in equity in a court of competent jurisdiction to enforce the terms of this Conservation Easement, for specific performance, to temporarily or permanently enjoin the violation, recover damages for violation of

this Conservation Easement, including but not limited to the costs of restoration, and any other damages permitted by law. In any enforcement action Grantee shall not be required to prove either actual damages or the inadequacy of otherwise available remedies. Grantee's remedies shall be cumulative and shall be in addition to all remedies now or hereafter existing at law or in equity. As part of the consideration for this Conservation Easement, the parties hereby waive trail by jury in any action brought by either party pertaining to any matter whatsoever arising out of or in any way connected with this Conservation Easement.

10. Waiver. Grantor intends that enforcement of the terms and provisions of the Conservation Easement and the Plan shall by at the discretion of Grantee and that any forbearance on behalf of Grantee to exercise its rights hereunder in the event of any breach hereof by Grantor, its heirs, successors, personal representatives or assigns shall not be deemed or construed to be a waiver of Grantee's rights hereunder in the event of a subsequent breach. Grantor hereby waives any defense of laches, estoppel, or prescription.

11. Assignment. Grantee agrees that it will hold this Conservation Easement exclusively for conservation purposes and that it will not assign its rights and obligations under this Conservation Easement except to another organization qualified to hold such interests under the applicable state and federal laws and committed to holding this Conservation Easement exclusively for conservation purposes. Not later than thirty (30) days after recordation in the Public records of Charlotte County, Florida of an instrument transferring the title to the property, which is the subject of this easement, Grantor agrees to give written notice to Grantee of such transfer.

12. Severability. If any provision of this Conservation Easement or the application thereof to any person or circumstance is found to be invalid, the remainder of the provisions of this Conservation Easement, and the application of such provision to persons or circumstances other than those as to which it is found to be invalid, shall not be affected thereby.

13. Notices; References. All notices, consents approvals or other communications hereunder shall be in writing and shall be deemed properly given as of the second business day after mailing if sent by United State certified mail, return receipt requested, or by overnight mail service (e.g. FedEx, UPS), addressed to the appropriate party or successor-in-interest, at the address above set forth or such new addresses as either party may in writing deliver to the other. References in this Conservation Easement to the Grantor or Grantee include their successors-in-interest.

14. Venue; Waiver of Jury Trial. This Conservation Easement has been delivered in the State of Florida and shall be construed in accordance with the laws of Florida. As part of the consideration for this Conservation Easement, the parties hereby waive trial by jury in any action or proceeding brought by any party against any other party pertaining to any matter whatsoever arising out of or in any way connected with this Conservation Easement.

15. Amendment. This Conservation Easement may be amended, altered, released or revoked only by written agreement between the parties hereto, their successors or assigns.

16. Subordination of Liens. Grantor agrees that if the Property is subject to a mortgage lien or any other form of lien or security pertaining to the Property, Grantor shall provide recorded or recordable documentation to verify that such lien or security interest is subordinate to this Conservation Easement.

17. Recording. This Easement shall be recorded in the same manner as any other instrument asserting title to real property.

TO HAVE AND TO HOLD unto grantee, its respective successors and assigns forever. The covenants, terms, conditions, restrictions and purposes imposed with this easement shall not only be binding upon Grantor but also its agents, personal representatives, heirs, assigns and all other successors to it in interest and shall continue as a servitude running in perpetuity with the Property.

IN WITNESS WHEREOF Grantor has set its hand on the day and year first above written.

Reviewed and Approved by:

_____
Ken Reecy, Community Program Manager
Florida Community Trust

Signed, sealed and delivered
In our presence as witnesses:

_____
[Corporate name]

_____ By: _____

Name: _____ Name: _____

Title: _____

_____

Name: _____

STATE OF FLORIDA
COUNTY OF CHARLOTTE

The foregoing instrument was acknowledged before me this _____ day of _____, 2011 by _____, the _____ of, a Florida corporation, on behalf of the corporation. The above-named individual is personally known to me or produced _____ as identification.

_____
Notary Public State of Florida

Commission No:
Commission expires:

GRANTEE'S ACCEPTANCE

The Florida Fish and Wildlife Conservation Commission hereby accepts the foregoing Conservation Easement.

FLORIDA FISH AND WILDLIFE
CONSERVATION COMMISSION

By: _____
Title:_____
Date:_____

Approved as to form and legal sufficiency:

_____
FWC Attorney

Ent D (FMSF only) / /

Survey Log Sheet

Florida Master Site File
Version 2.0 9/97

Survey # (FMSF only) 5050

Consult *Guide to the Survey Log Sheet* for detailed instructions.

Identification and Bibliographic Information

Survey Project (Name and project phase) Tippecanoe Scrub Preservation Area

Is this a continuation of a previous project? ☒ No ☐ Yes: Previous survey #(s) [FMSF only]

Report Title (exactly as on title page) Archaeology and Tippecanoe Scrub Preservation Area, Charlotte County, Florida.

Report Author(s) (as on title page— individual or corporate; last names first) Luer, George M.

Publication Date (year) 1997 Total Number of Pages in Report (Count text, figures, tables, not site forms) 30

Publication Information (If relevant, series and no. in series, publisher, and city. For article or chapter, cite page numbers. Use the style of *American Antiquity*: see *Guide to the Survey Log Sheet*.) George M. Luer. Submitted to The Charlotte Harbor Environmental Center, Inc. Port Charlotte, FL

Supervisor(s) of Fieldwork (whether or not the same as author(s); last name first) Luer, George M

Affiliation of Fieldworkers (organization, city) Other - Port Charlotte

Key Words/Phrases (Don't use the county, or common words like *archaeology, structure, survey, architecture*. Put the most important first. Limit each word or phrase to 25 characters.) Tippecanoe, Scrub Preservation, Charlotte Harbor

Survey Sponsors (corporation, government unit, or person who is directly paying for fieldwork)
Name Charlotte Harbor Env. Center, Inc
Address/Phone P.O. Box 2494, Port Charlotte, FL 33949

Recorder of *Log Sheet* Dawn Gilbert Date *Log Sheet* Completed 1/28/98

Mapping

Counties (List each one in which field survey was done - do not abbreviate; use supplement sheet if necessary) CH

USGS 1:24,000 Map(s) : Map Name/Date of Latest Revision (use supplement sheet if necessary): N/A

Description of Survey Area

Dates for Fieldwork: Start 5/15/95 End 9/16/96 Total Area Surveyed (fill in one) — hectares — acres

Number of Distinct Tracts or Areas Surveyed —

If Corridor (fill in one for each): Width — meters — feet Length — kilometers — miles

Types of Survey (check all that apply): ☒ archaeological ☒ architectural ☐ historical/archival ☐ underwater ☐ other:

Survey Log Sheet of the Florida Master Site File

Research and Field Methods

Preliminary Methods (✓ Check as many as apply to the project as a whole. If needed write others at bottom).

- ☐ Florida Archives (Gray Building)
- ☐ Florida Photo Archives (Gray Building)
- ☐ FMSF site property search
- ☐ FMSF survey search
- ☐ other (describe) _____
- ☐ library research- *local public*
- ☐ library-special collection - *nonlocal*
- ☐ Public Lands Survey (maps at DEP)
- ☒ local informant(s)
- ☐ local property or tax records
- ☐ newspaper files
- ☐ literature search
- ☐ Sanborn Insurance maps
- ☐ windshield
- ☐ aerial photography

Archaeological Methods (Describe the proportion of properties at which method was used by **writing in** the corresponding letter. Blanks are interpreted as "None.")

F(-ew: 0-20%), **S**(-ome: 20-50%); **M**(-ost: 50-90%); or **A**(-ll, Nearly all: 90-100%). If needed write others at bottom.

☐ Check here if **NO** archaeological methods were used.

- ☒ surface collection, controlled
- ___ surface collection, uncontrolled
- ___ shovel test-1/4"screen
- ___ shovel test-1/8" screen
- ___ shovel test 1/16"screen
- ___ shovel test-unscreened
- ___ other (describe): _____
- ___ other screen shovel test (size: ____)
- ___ water screen (finest size: ____)
- ___ posthole tests
- ___ auger (size:____)
- ___ coring
- ___ test excavation (at least 1x2 M)
- ___ block excavation (at least 2x2 M)
- ___ soil resistivity
- ___ magnetometer
- ___ side scan sonar
- ___ unknown

Historical/Architectural Methods (Describe the proportion of properties at which method was used by **writing in** the corresponding letter. Blanks are interpreted as "None.")

F(-ew: 0-20%), **S**(-ome: 20-50%); **M**(-ost: 50-90%); or **A**(-ll, Nearly all: 90-100%). If needed write others at bottom.

☒ Check here if **NO** historical/architectural methods were used.

- ___ building permits
- ___ commercial permits
- ___ interior documentation
- ___ other (describe): _____
- ___ demolition permits
- ___ exposed ground inspected
- ___ local property records
- ___ neighbor interview
- ___ occupant interview
- ___ occupation permits
- ___ subdivision maps
- ___ tax records
- ___ unknown

Scope/Intensity/Procedures _____

Survey Results (cultural resources recorded)

Site Significance Evaluated? ☐ Yes ☒ No If *Yes*, circle NR-eligible/significant site numbers below.

Site Counts: Previously Recorded Sites 0 Newly Recorded Sites 0

Previously Recorded Site #'s (List site #'s without "8." Attach supplementary pages if necessary) _____

Newly Recorded Site #'s (Are you sure all are originals and not updates? Identify methods used to check for updates, ie, researched the FMSF records. List site #'s without "8." Attach supplementary pages if necessary.) _____

Site Form Used: ☐ SmartForm ☒ FMSF Paper Form ☐ Approved Custom Form: Attach copies of written approval from FMSF Supervisor.

DO NOT USE SITE FILE USE ONLY DO NOT USE

BAR Related

- ☐ 872
- ☐ 1A32
- ☐ CARL
- ☐ UW

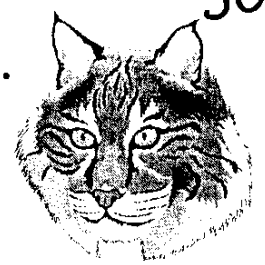
BHP Related

- ☐ State Historic Preservation Grant
- ☐ Compliance Review: CRAT # _____

ATTACH PLOT OF SURVEY AREA ON PHOTOCOPIES OF USGS 1:24,000 MAP(S)

5050

Charlotte Harbor Environmental Center, Inc.



Alligator Creek Site
10941 Burnt Store Road
Punta Gorda, FL 33955
(941)575-4800 FAX (941)575-4044

Administrative Offices
P. O. Box 2494
Port Charlotte, FL 33949
(941)~~255-1120~~ 505-8243 FAX (941)~~255-1674~~ -8249

"Serving Charlotte County with environmental education, recreation & preservation management"

November 12, 1997

Susan Harp
Bureau of Historic Preservation
Division of Historical Resources
500 South Bronough Street
Tallahassee, Florida 32399-0250

Dear Susan Harp:

Enclosed is a copy of *Archaeology and Tippecanoe Scrub Preservation Area, Charlotte County, Florida* by George M. Luer, for inclusion in the Master Site File.

Sincerely,

Robert Hamlin

Robert Hamlin
Natural Resources Manager

ARCHAEOLOGY AND TIPPECANOE SCRUB PRESERVATION AREA, CHARLOTTE COUNTY, FLORIDA

George M. Luer
Archaeologist

for

The Charlotte Harbor Environmental Center, Inc.
P. O. Box 2494
Port Charlotte, FL 33949

February 24, 1997

CONTENTS

List of Figure, Tables, and Appendix

Introduction

This report addresses archaeology and the Tippecanoe Scrub Preservation Area (TSPA) in Charlotte County, southwestern Florida. It presents an assessment survey of the tract's known archaeological resources and discusses how they may be preserved and interpreted in the future.

At the outset, it is important to realize that Tippecanoe Scrub's archaeology and history are linked to the natural environment. This was particularly true for the original Florida Indian people who lived in the area and who made their living by fishing, hunting, and gathering.

Purpose

This report's purposes are:

1) to assemble scattered data that presently exist and pertain to TSPA's archaeological and historical resources,

2) to inspect TSPA for possible unrecorded archaeological sites and to assess potential impacts by proposed construction of an observation tower in TSPA, and

3) to describe known archaeological and historical sites in TSPA in order to help land managers protect and preserve these rare, non-renewable cultural resources.

Tippecanoe Scrub Preservation Area

In 1995, Charlotte County acquired a portion of Tippecanoe Scrub, a natural area near Tippecanoe Bay at the northern end of Charlotte Harbor. This tract is in northwestern Charlotte County near the sprawling suburban municipalities of Port Charlotte and North Port. It is along State Road 776, midway between El Jobean and Murdock.

Charlotte County created TSPA to help protect and preserve its natural habitats. TSPA includes scrubby flatwoods habitat, which today is considered one of Florida's rare and endangered habitats due to its widespread destruction by land development (Florida Natural Areas Inventory 1994). Indeed, Tippecanoe Scrub is one of only five fairly sizeable scrubby areas that still remain on the coast of southwestern Florida (see Luer 1995b:208, Table 1).

Scientific studies have begun that will help land managers preserve and interpret TSPA's natural and cultural resources. This report is one of those studies. The challenge at TSPA is to balance long-term preservation with limited public use for education and enjoyment. This will become a bigger challenge as the area's human population continues to grow.

Background Research

Before beginning an archeological assessment survey of TSPA, background research was conducted of the tract. The following section presents results. First, there are brief reviews of the environmental setting, natural habitats, and historical documents pertinent to TSPA. Then, there are more in-depth reviews of recent environmental history and previous archaeological projects.

Environmental Setting

In the Tippecanoe Bay area, the vegetation is very sensitive to slight changes in topography. The land naturally tends to be rather flat and, in general, poorly-drained. The watertable is often near the surface.

Thus, slight changes in elevation and drainage affect what kinds of plant and animal communities can survive in a given area. In TSPA, rainfall runoff has down-cut several creeks, thus producing variations in topography that are accompanied by differences in plant and animal communities (USDA 1984:Sheet 1).

Tippecanoe Bay itself is very shallow. As a low-salinity estuary rimmed by tidal marshes and creeks, the bay is an important nursery area for aquatic life. Salinity can fluctuate widely in the bay, increasing during droughts and diminishing during the summer rainy season or from hurricanes (Woodburn 1962:11-19).

Natural Habitats

TSPA contains various terrestrial and estuarine habitats. They are important to this study because they were sources of animals and plants used by the American Indians who fished, hunted, and gathered around Tippecanoe Bay.

Here, the area's natural habitats are mentioned briefly. Detailed descriptions of such habitats, and their plants and animals, can be found in Myers and Ewel (1990) and in Beever (1992). These habitats, and their plants and animals, will be mentioned below in descriptions and analyses of archaeological sites.

Within TSPA, terrestrial habitats include pine flatwoods on poorly-drained land, and scrubby flatwoods on well-drained land. Estuarine habitats include high marsh and salt marsh along the western boundary of TSPA. Mangroves and mud flats rim the lower reaches of creeks. Creeks become progressively more fresh as they reach into the flatwoods.

On land, fire is an important agent in maintaining pine flatwoods and scrubby flatwoods. Around the edge of Tippecanoe Bay, the author has observed that winter frosts and freezes limit

mangrove growth, thereby favoring the area's extensive salt marshes.

It is important to realize that TSPA's habitats are remnant portions of similar habitats that, before recent suburbanization, were more extensive. Thus, the American Indians who used the Tippecanoe Bay area would have had access to many more natural areas and resources than only those in present-day TSPA. This was true also for later pioneers, turpentiners, and lumbermen who used the land around Tippecanoe Bay.

History and Tippecanoe Bay

The history of the Tippecanoe Bay area is part of the larger history of Charlotte County and the Gulf coast of Florida. As a rather remote location, Tippecanoe Bay fits primarily in the region's rural history.

Recently, some historians have suggested that, in A.D. 1539, the De Soto expedition might have landed at Tippecanoe Bay (Sheppard 1994:180, Figure 1) or passed just north of it (Williams 1986, 1989). However, no archaeological evidence has been found to support their suggestions. It should be noted that researchers do not agree about De Soto's route, and they have offered widely divergent hypotheses about it. Considering the shallowness of Tippecanoe Bay and its marshy shores, it seems an unlikely place for an army to disembark from a fleet of ships. However, if De Soto had landed farther east as Williams (1986, 1989) suggests, the pinewoods and prairies that originally existed north of Tippecanoe Bay should have been traversable for an advancing army.

Historic documents mention Seminole Indians who were in the Tippecanoe Bay area in the 1840s. According to original U.S. Government field notes, a surveyor encountered Seminole Indians in 1843 at Hog Island just south of the mouth of Tippecanoe Bay. Moreover, in 1844, government surveyors noted a Seminole Indian encampment to the west at the mouth of Trout Creek, near what later would be called Cattle Dock Point (State of Florida 1843; Clausen et al. 1978:14-15, 18).

The land surveys in 1843-1844 and 1849 imposed the government's system of Townships, Ranges, and Sections. They established, for example, the section corners that are still maintained and clearly marked in the southwestern portion of TSPA (the intersection of Sections 14, 15, 22, and 23 in Township 40 South, Range 21 East).

After the Third Seminole War (1855-1858) and the Civil War (1860-1865), American pioneers began to enter the region. In the 1870s, small communities based on cattle and fishing began to appear, including the little town of Charlotte Harbor (Barbour 1882; Peeples 1986:74). Today, the town of Charlotte Harbor still exists, but is surrounded by the suburban sprawl of Port Charlotte

only 13 km (8 miles) east-southeast of Tippecanoe Bay.

Around 1880, a pioneer from Kentucky, named William L. Huckaby, arrived in the area. According to his grandson, Henry "Joe" Huckeby (quoted in Williams and Cleveland 1993:406), William Huckeby bought approximately 40 acres of land near Tippecanoe Bay. He then cleared approximately 10 acres, and obtained orange seedlings from a Cuban trader in Fort Myers. William Huckaby planted the seedlings on his cleared land, near a creek flowing into Tippecanoe Bay. While tending the young trees, he rented a room in the nearby town of Charlotte Harbor. Since he did not own cattle or a producing grove at this time, his grandson believes that he probably smuggled rum to make cash. After a couple of years, William Huckeby made enough money to go back to Kentucky and return with his family and a sawmill. After that, the Huckaby family moved to the growing Punta Gorda area where they operated a sawmill and lived for many more years (Williams and Cleveland 1993:112, 405-408).

Back at Tippecanoe Bay, however, the small orange grove came into production, and helped provide income to the Huckeby family. According to grandson "Joe" Huckeby:

> Oranges from William's grove were transported by row boat down the stream which became known as Huckeby Creek (now Flamingo Waterway). ... At the Myakka River, the oranges were loaded aboard a two-masted schooner for transport to Tampa Bay (in Williams and Cleveland 1993: 405-408).

Such activity at remote Tippecanoe Bay in the 1880s and 1890s is interesting because it could help explain the recovery of a glass demijohn fragment (see below) that may be a relic of illicit rum-running at Tippecanoe Bay during this period.

The Huckeby land near Tippecanoe Bay is mentioned in the 1880s as a state land sale in Tract Book, Volume 18, page 202 (according to Clausen et al. 1978:18, 19). These records note a parcel deeded in 1888 to heirs of John Huckeby (perhaps Joshua Huckeby, one of William's sons, who died in 1888 -- see Williams and Cleveland 1993:406-407). The small parcel was only one-sixteenth of a square mile, or 40 acres (consisting of the northeast quarter-quarter of Section 14, Township 40 South, Range 21 East) (Clausen et al. 1978:18, 19).

Today, this location is northeast of TSPA, just north and east of the Charlotte County baseball stadium. It is cut partially by State Road 776, and has been subdivided into many streets and small lots. Inspection of soil and vegetation maps (CHEC 1995; USDA 1984:sheet 1) reveals a ridge-like tongue of well-drained land extending from Tippecanoe Scrub northeastward into the former Huckeby parcel. Before modern artificial drainage work, such naturally well-drained land would have been essential for growing oranges. Moreover, the location of this land next to Huckeby Creek

favored transport of oranges. Pioneers were acutely aware of these two factors as they selected places for Charlotte County's early orange groves.

In 1905-1907, the Tippecanoe Bay area became more accessible after construction of the Charlotte Harbor and Northern (CH&N) Railroad (Gibson 1982:120-122). The CH&N passed just north of Tippecanoe Bay, and carried phosphate to ships at newly-built Port Boca Grande. As it skirted Tippecanoe Bay, the railroad crossed Huckeby Creek, Tippecanoe Creek, and Sam Knight Creek. Later, State Road 776 was built along the southern side of this stretch of the CH&N. Thus, until it was removed in the early 1980s, the railroad paralleled what would become the northern boundary of present-day TSPA.

By 1908, the CH&N Railroad established a new station and post office a short distance northeast of Tippecanoe Bay. The station was named "Charlotte," but was soon renamed "Murdock" around 1912. This was when John M. Murdock of Chicago arrived and began to develop small farms as part of the Murdock Land Company. A drainage district was created, and steam shovels dug a series of long, straight drainage canals. In 1913, one canal (a forerunner of today's Flamingo Waterway) was dredged along a north-south section line and into the the course of Huckeby Creek, destroying most of the creek before it reached Tippecanoe Bay. High costs and excessive drainage rendered the farming project unsuccessful (Peeples 1986:77, 88; Williams and Cleveland 1993:407, 413-417). However, the project is noteworthy as an early, major drainage effort in this part of Florida, preceding the Sugar Bowl Drainage District that drained Big Slough in nearby Sarasota and Manatee counties in 1916-1920 (Zilles 1976:126-127, 170; Luer et al. 1987).

In the early 1900s, turpentining was an important economic activity in the vast pine forests of then-sparsely populated Charlotte County. Several poorly-documented turpentine camps existed near Tippecanoe Bay, one in the present-day Riverwood subdivision on the Myakka River north of El Jobean, and one at McCall (Estabrook and Ballo 1988; Peeples 1986:72; Williams and Cleveland 1993:352-358, 416). In Charlotte County, turpentining involved Black "convict" laborers who were often from northern Florida. The workers tapped pine trees, collected gum in buckets, and dumped it into barrels that were hauled by mule-drawn wagon through the pinewoods to a turpentine distillery or "still." A still was usually near a railway in order to ship the turpentine and other products (Blount 1993; Bond 1987; Williams and Cleveland 1993:352-358; Zilles 1976:66, 68).

In the 1920s and 1930s, a sawmill operator, A. C. Frizell acquired much land in northern Charlotte County, including around Tippecanoe Bay. He ran a small sawmill, known as "Mars" or the "Frizell Camp," that was along the railroad northeast of Murdock, near the Sarasota County line. He hired men to extract pine

stumps, and shipped the stumps to a Jacksonville company that converted them to paint thinner, gun powder, and pine tar. As stumps were extracted, Frizell also cleared undergrowth, planted grass, and began raising cattle. By the 1940s, he had vast land holdings (Clausen et al. 1978:20; Peeples 1986:139; Williams and Cleveland 1993:359-361; Zilles 1976:54, 170).

In the 1950s, Frizell's land around Tippecanoe Bay was bought by the Florida West Coast Land Co., and then by the General Development Corporation (GDC). The land became part of the vast Port Charlotte housing development that began in the mid-1950s (Clausen 1978:20-21; Peeples 1986:139, 167, 170; Williams and Cleveland 1993:362).

Recent Environmental History

This section of this report traces recent changes in the landscape around TSPA. It is important to see beyond the present-day suburban transformation and to gain a feel for the area's original natural environment. Indeed, the area's original pinelands, wet and dry prairies, sloughs, seasonal ponds, and shallow bays were the setting in which earlier peoples lived, especially American Indians whose shell middens are a focus of this report.

Large-scale environmental change began in the late 1800s with extractive activities. Pioneers set up sawmills and cut timber from the pinewoods. By the early 1900s, there were still enough pine trees to support large turpentining operations, often followed by timber cutting after tapped trees became exhausted. Hunting took its toll on animal life, and cattle grazing altered plant communities. Short-term farming targeted areas of treeless dry prairie. In 1913, an early drainage project around Murdock, immediately east of TSPA, drained a huge area, leading to the spread of young pine trees and the disappearance of prairies. In later decades, further timber cutting, stump extraction, and expansion of cattle pasture affected the landscape.

The groundwork for today's suburban sprawl was laid in the 1950s and 1960s when GDC subdivided much of western Charlotte County into numerous housing developments. In imposing this design, GDC undertook massive earth-moving projects that altered vast areas. This included dredging and filling of pinewoods, freshwater wetlands, and tidal mangroves, creeks, and marshes.

Such plans would have destroyed Tippecanoe Bay by removing natural habitat and degrading water quality. The bay would have been dredged and bulkheaded with seawalls and finger canals. Its shores would have been lined with houses and docks. Its waters would have been fouled by outboard motor boats and by outflow from gigantic drainage ditches, or "waterways." GDC dug many of these, such as Creighton and Flamingo Waterways, which threatened

Tippecanoe Bay with run-off.

Environmental legislation of the late 1960s and early 1970s stopped some of this large-scale destruction, at least around Tippecanoe Bay. In the late 1970s, some damage was lessened by plugging Flamingo Waterway and dredging a large retention lake just east of Tippecanoe Bay (U.S. Army, Corps of Engineers 1978).

These steps to curb rapid and voluminous run-off into Tippecanoe Bay were part of wider efforts to protect the fragile water quality and estuarine life of Charlotte Harbor. Other efforts were directed at preserving a buffer of natural land around Charlotte Harbor. Thus, in the 1970s and 1980s, Tippecanoe Bay and the southern portion of its eastern shore were spared from development as they became part of the Charlotte Harbor State Aquatic Preserve.

Throughout the 1980s, however, the northern portion of Tippecanoe Bay's eastern shore, called the "Bayview Tract," remained threatened by land development. In the mid 1980s, part of the area was destroyed to make a baseball stadium and parking lots. Then, it was recognized that the remaining tract contained scrubby flatwoods, a threatened natural habitat supporting endangered species such as the Florida scrub jay. Clearly, the "scrub" was in need of preservation.

In 1995, a portion of Tippecanoe Scrub became protected when 275 acres were purchased with funds from Charlotte County and the State of Florida's Preservation 2000 Trust Fund. The creation of TSPA is designed to help Charlotte County meet goals, objectives, and policies of three Elements in its Comprehensive Land Management Plan that require preservation of open space and natural habitat. Accompanying stipulations on the use of TSPA by the Florida Communities Trust, in Tallahassee, are intended to help preserve the tract's natural and cultural resources (CHEC 1995).

Previous Archaeological Work

Archaeological research around Tippecanoe Bay began in the late 1970s as concern grew over the need to assess and to preserve Florida's disappearing natural and cultural resources. This section of this report briefly reviews these projects.

Before proceeding, it should be noted that a reference to the Tippecanoe Bay area by archaeologist Gordon R. Willey appears to be in error. Willey (1949:345) cited a collection from "Whidder Creek" in the Museum of the American Indian, Heye Foundation (MAI-HF) in New York City, and he suggested on a map that it came from the Tippecanoe Bay area (Willey 1949:Map 20). However, archival research by author Luer in 1986 at MAI-HF indicates that this material was collected by Charles Turbeyfill of MAI-HF in the 1930s, and that it is associated with another collection from

another locality in Charlotte County. Instead of being from Tippecanoe Bay, the 1930s collection appears to be from Whidden Creek near Cape Haze; it is associated with a second collection from Turtle Bay, which is also near Cape Haze.

The first archaeological work at Tippecanoe Bay was a "cultural resource management (CRM) survey" required by federal environmental law. In this case, the U.S. Army Corps of Engineers ordered GDC to plug Flamingo Waterway to avoid harmful run-off into the bay, and a CRM survey was needed to make sure that no significant archaeological or historical resources were impacted by proposed earth-moving. The resulting CRM survey found no sites in immediate danger of damage by GDC, but did record three archaeological sites with the Florida Site File (FSF) that had been unrecorded previously. One was a small, aboriginal sand mound (8CH70) near Huckeby Creek (south of today's TSPA boundary). The other two sites, both aboriginal shell middens (8CH71 and 8CH72), were to the southeast (Clausen et al. 1978), outside today's TSPA and now in the Charlotte Harbor State Buffer Preserve.

The next archaeological work was another CRM survey designed to locate sites on GDC's Bayview Tract, including the area encompassed by today's TSPA. This survey found one site and recorded it as 8CH73, calling it the "No Name Creek Midden." The site straddled both sides of the mouth of an unnamed tidal creek just north of the mouth of Huckeby Creek. The site file form distinguished three areal components: 8CH73A, which was a sizeable midden on the west side of the creek, and 8CH73B and 8CH73C, which were smaller middens on the east site of the creek (Clausen 1981).

In December 1985 and January 1986, author Luer visited the Tippecanoe Bay area as part of his long-term archaeological research in central and southern Florida. Informants showed 8CH73 to Luer, as well as a very small, unrecorded sand mound near the opposite bank of the creek. Outside TSPA to the southeast, informants also pointed to a small, unrecorded midden, which Luer recorded with the FSF as 8CH87. Luer studied 8CH87, recovering faunal remains and radiocarbon dates (see below).

Luer also inspected artifacts recovered by informants in the Tippecanoe Bay area. They included fragments of decorated, aboriginal pottery (see "No Name Creek Mound," below) and a piece of glass found in 1985 near the mouth of Flopbuck Creek, a short distance outside TSPA to the south. The latter was from a large, 4 to 5 gallon demijohn of dark brownish-green glass, and consisted of a neck, with an applied lip, and portions of the shoulder. Originally, the bottle would have had a stopper and a protective, woven, wicker casing that long ago decayed away. Bottles like this served as bulk decanters from the mid-1800s to early-1900s, and were used in shipping illicit rum from Cuba to Florida (Edic 1992:224; 1996:61; Luer 1990a). Such a demijohn at Tippecanoe Bay may be related to the area's remoteness and to a nearby pioneer

orange grove that had connections to coastal shipping in the late 1800s (see "History and Tippecanoe Bay," above).

In May 1988, several known archeological sites around Tippecanoe Bay were visited as part of an assessment survey of state-owned sites around Charlotte Harbor (Luer and Archibald 1988). This work provided the state land manager and law enforcement officer with information to help them monitor and protect state-owned sites. The report included sketch maps and other data for 8CH72 and 8CH87, and it stated that erosion had destroyed 8CH71. Although 8CH73 (in today's TSPA) was visited, it was not included in the report since it was not state-owned.

Tippecanoe Bay was visited next in July 1989 during a field check that was part of a broader cultural resource survey of Charlotte County (HPA 1989:31-32, Figure 2). The field crew located 8CH73A, but unfortunately believed that it was an unrecorded site, thus recording it with the FSF as "8CH375" (FSF form for 8CH375).

Tippecanoe Bay was visited again, in late 1990 or very early 1991, by archaeologists with the State of Florida Conservation and Recreational Lands (CARL) program. They inspected 8CH73, but again mistook it as an unrecorded site, thus recording its western side as "8CH452" and its eastern side as "8CH453" (FSF forms for 8CH452 and 8CH453). In May 1993, personnel at the FSF in Tallahassee discovered this redundancy, and corrected it in their files and maps.

In the spring of 1995, the author conducted zooarchaeological analysis of a faunal sample he had collected at Tippecanoe Bay in 1985 (Luer 1995a). Results of the analysis are discussed below, especially in terms of their interpretive and educational potential.

In May and September 1996, the author inspected 8CH73 and 8CH87 for this assessment survey of TSPA. In May, anthropologist Robert Edic and the author also followed an informant's report to locate and inspect a previously overlooked and unrecorded aboriginal midden near Muddy Cove, an arm of Tippecanoe Bay to the south of TSPA. This latter site was then recorded as 8CH497 with the FSF. It was one of a number of sites that were recorded for Edic's Oral History portion of CHEC's Charlotte Harbor Mounds Survey.

Field Work

The tasks of field work were: 1) to inspect the location of a proposed observation tower for possible cultural resources, 2) to look for possible unknown sites of historical significance in TSPA, and 3) to assess known archaeological sites in TSPA. For each task, methodologies and findings are described below.

Inspection of Tower Location

The proposed location of an observation tower was inspected visually in May 1996. The area is in the southern corner of TSPA at the west end of the large spoil berm paralleling the northern bank of Flamingo Waterway. This is at the western end of the waterway where dredging ceased before reaching Tippecanoe Bay. A remnant section of the mouth of now-defunct Huckeby Creek (dredged and plugged) exists between the end of the waterway and Tippecanoe Bay.

The spoil berm is approximately 3 m (10 ft) in maximum height at its west end where the proposed observation tower would be built. Brazilian pepper bushes and a single cabbage palm grow on the berm's end. The berm consists of geologic material, such as sand and chunks of marl. No cultural materials were observed.

The trail approaching the proposed tower location from the northeast was inspected also, and no cultural remains were seen. In addition, there is no vegetation indicative of an aboriginal midden, or any other kind of historically significant site, in the immediate location of the proposed tower. Thus, it appears that construction of the tower will not impact directly any archaeological site.

However, aboriginal shell middens and a small sand mound do exist in TSPA, a short distance northwest of the proposed tower location. They are far enough away that they should not be affected directly by construction of a tower. Steps to protect these sites are discussed below.

Wider Inspection of TSPA

It was not the purpose of the present work to cover TSPA with transects and shovel tests. Such work is unnecessary since the tract will not be destroyed by land development, and minimal land disturbances are planned in the future. Moreover, the tract already was surveyed for archaeological sites in 1981 (Clausen 1981).

Nonetheless, additional areas of TSPA were inspected on foot and by canoe in an effort to locate possibly unrecorded archaeological sites. As aids in the search, soil survey maps (USDA 1984) and other large scale aerial photographs were scrutinized for vegetative anomalies that are indicative of shell middens. No such anomalies were spotted except those at already recorded 8CH73.

Then, random areas of TSPA were walked over. First, the main western trail was walked southwestward through pine flatwoods to reach the western side of the mouth of No Name Creek. No cultural remains were observed on the sandy trail, nor were any observed

along several hundred meters of sandy firebreaks that had been cut in the summer of 1995, exposing much ground. The 1995 fire had defoliated large areas that also were scanned for sites, but none was observed.

Second, the main eastern trail was hiked southwestward through burned scrubby flatwoods to reach the eastern side of the mouth of No Name Creek. Again, trails, firebreaks, and terrain were inspected, and no previously unknown sites were observed.

Third, a canoe was paddled from State Road 776 down Tippecanoe Creek to Sam Knight Creek and Tippecanoe Bay, and back. Shores of islands, marshes, and creeks were inspected for sites. None was observed except the three, already-recorded midden components of 8CH73.

Finally, it should be noted that though additional sites were not found, this does not rule out the possibility that TSPA contains one or more as yet unknown sites. For example, TSPA could have lithic flakes and bifacial tools that are sparsely scattered and deeply buried; such artifacts occur with some frequency throughout Charlotte County. Many such artifacts date to the Middle and Late Archaic periods, ca. 7000-3000 years ago. In many cases, however, such lithics occur so diffusely that they are difficult to recover in meaningful quantities unless massive amounts of earth are moved.

No Name Creek Midden, West (8CH73, Area A)

This midden is on the western side of the mouth of a small, unnamed, tidal creek. It is very close to three other site components belonging to 8CH73. These consist of two middens and a very small sand mound that are on the other (eastern) side of the creek (see below).

Description. This shell midden represents remains of a campsite used by American Indians. The midden measures approximately 53 m (175 ft) north-south by 30 m (100 ft) east-west.

At high tides, the midden forms an island. It is surrounded by tidal salt marsh on its northern, western, and southern sides, and by open water of the creek along its eastern side. Thus, Indians could reach the midden easily by dugout canoe, landing directly on its east edge. It also could be reached by foot by crossing the marsh from the west.

The midden consists primarily of sand mixed with shells of oyster (Crassostrea sp.) and Carolina marsh clam (Polymesoda caroliniana). These shells represent shellfish that Indians gathered for food from surrounding creeks and marshes. The Indians brought oysters and clams back to the midden where they ate them and discarded them. The Indians also caught fish and other animals

for food, and their fragmentary bones are in the midden. They cooked with fire, often using pottery vessels. Small fragments, called "sherds," from these cooking vessels occur in the midden. The Indians shaped such vessels from clay, and they fired them using wood as fuel.

The midden is of low relief, reaching an elevation of approximately 0.6 m (2 ft) above mean high tide level. It is highest toward the south and along its southeastern margin near the creek. It slopes gently downward around its edges except along the creek where erosion has created a sheer or slightly undercut bank.

Near the highest elevation of the midden are two old, small disturbances. Each was a hole approximately 30-40 cm in diameter and of undetermined depth. Archaeologist Carl Clausen (1981:5-6) mentions having dug a single 30 x 30 cm excavation unit in arbitrary 10 cm levels to around 40 cm below the surface of the midden, and notes that he saw no other evidence of digging. It is possible that one of the two disturbances observed in 1996 represents Clausen's backfilled test, whereas the other was dug later, possibly in the winter of 1983-1984 when vandals dug on the opposite side of the creek (see below).

Perhaps the midden's most interesting surface features are two small tongue-like projections extending westward across the tidal marsh toward the sandy pinewoods. These features appear to have served as bridges for footpaths connecting the midden with the adjacent upland. Both features are located at the narrowest point between the midden and the upland. However, no midden shells or other aboriginal remains extend onto the edge of the upland. This was indicated by careful inspection of areas uprooted by wild hogs along the edge of the marsh and pinewoods.

These two tongue-like features might have led to often-visited sources of fresh water. Just a few meters into the pinewoods are several damp low-lying swales or pockets where fresh water would have been available year-round. Clumps of grass forming elevated pedestals indicate that these pockets often hold standing water. In the dry season, they hold damp black muck, and freshwater can be obtained by digging downward.

Vegetation. At 8CH73's Area A, the higher ground of the shell midden supports coastal hammock vegetation. It consists of a canopy of a few live oak trees and numerous cabbage palms. Below them is a light growth including buckthorn, myrsine, coral bean, white stopper, indigo berry, prickly pear cactus, Spanish bayonet, clumps of coontie, and young cabbage palms.

On the low-lying northern edge of the midden grow some leather ferns. The marsh surrounding most the midden supports black needle rush. Along the creek, the midden's edge supports small white and red mangroves damaged by winter freezes. A few clumps of aquatic

cordgrass grow in the open water of the creek.

To the northwest of the midden, across a narrow stretch of salt marsh, is the sandy edge of the pine flatwoods. This edge supports saw palmetto, small cabbage palms, and waxmyrtle. Just landward, there are several low-lying mucky pockets supporting grassy "high marsh" vegetation. Three such pockets are crossed by a north-south jeep trail (the surveyors' line between Sections 22 and 23). As noted above, these mucky pockets easily could have provided fresh water to the Indians who camped on the nearby shell midden.

Collections. A small surface collection from 8CH73, Area A, was gathered in May 1996 during this assessment survey. It includes 13 small pottery sherds from bowls probably used for cooking. Archaeologists classify pottery sherds by physical attributes, such as kinds of temper, paste, and surface treatment. Based on such criteria, the 13 sherds consist of 10 sand-tempered plain sherds (1 rim, 9 body), 1 rim sherd of Belle Glade Plain ware, 1 body sherd of chalky plain ware, and 1 body sherd of sand-tempered laminated ware.

Most of the sherds in this surface collection are not diagnostic of a single time period, and the sample is too small to determine an overall age range for the midden. Nonetheless, archaeologists believe that Belle Glade Plain pottery dates to ca. A.D. 600-1500 in this part of Florida. In addition, the sand-tempered plain rim sherd has attributes (a flat lip and a thin body wall) suggestive of a similar age. Attributes of the remaining sherds suggest that they all could date to this same time range. Thus, based on this limited evidence, at least some of the site was used ca. A.D. 600-1500, or sometime during the Caloosahatchee II-IV periods.

Also collected from the surface of the midden were several pieces of high-salinity mollusk shells. Indians had brought these shells to the site, probably from near the Gulf of Mexico, for use as tools. They consisted of an eroded specimen of a perforated ponderous ark valve fishnet sinker, a fragment of the posterior of a large left quahog valve, and a fragment of a Van Hyning's cockle.

Other cultural materials from 8CH73, Area A, were collected in 1981 and 1989 during previous visits by archaeologists (see above). In 1981, Clausen recovered 22 sherds (2 rim, 20 body) of sand-tempered plain ware from his excavation unit and "vicinity" (Clausen 1981:6, 13). In July 1989, the HPA field crew made a surface collection that included 25 sand-tempered plain sherds, one whelk shell "hammer/pick," and four fragments of bone (FSF form for 8CH375). In 1991, state CARL archaeologists did not collect any materials, but did observe one sand-tempered plain rim sherd "on the surface" (FSF form for 8CH452).

In addition, a local private collection includes a left-handed

whelk shell cutting-edged tool found in the midden's eroding creekside bank in late 1985 or early 1986. It was a robust, high-salinity shell tool that the Indians probably used for cutting wood. It was similar to a specimen pictured by Luer et al. (1986:Fig. 8 and cover illustration, on right) that came from another low-salinity midden at the Wrecked Site (8CH75) on the nearby Myakka River just north of El Jobean (Estabrook and Ballo 1988; Luer 1986:143; Luer and Almy 1987:Fig. 1). In these and a number of other cases (Luer et. al. 1986:95-98; Luer 1995b:206), robust left-handed whelk shells were imported from higher salinity areas in or near the Gulf of Mexico and adjoining inlets, and were then fashioned into tools that were used in lower salinity areas, such as around Tippecanoe Bay.

No Name Creek Middens, East (8CH73, Areas B and C)

These two small areas of shell midden deposit are on the eastern side of the unnamed tidal creek. It is assumed that both are associated with the larger midden on the opposite side of the creek (8CH73, Area A). In addition to aboriginal remains, the eastern side of the creek yielded traces of early twentieth century economic activities in the Tippecanoe Bay area.

Description, Collection, Vegetation. 8CH73's Area B is the more northern of the two eastern middens. It is visible for about 30 m (100 ft) along the creek's steep or undercut eroding bank (Figure 1). Clausen (1981:5) located it about 63 m (200 ft) across the creek in a north-northeast direction from the larger, western midden (8CH73, Area A).

8CH73's Area B consists primarily of oyster and Carolina marsh clam shells, with some king's crown (Melongena corona) shells. It is buried under approximately 10 cm (0.3 ft) of sand that may be a levee-like washover deposit from flood events associated with the creek. The ground surface is flat and consists of sand over the midden. In the creek bank, the midden deposit extends to a maximum of about 40 cm (1.3 ft) below the ground surface.

Cultural material collected from the creek bank at 8CH73, Area B, includes six sand-tempered plain sherds (1 rim, 5 body). The rim sherd has a relatively thick body wall with an incurved rim that thins to a thin, rounded lip. Together, these attributes suggest an age of ca. 300 B.C. - A.D. 500 for the sherd. The other sherds were too fragmentary to suggest their possible ages. Also eroding from the midden were two fragments of quahog large left valves and four vertebrate bone fragments, including one turtle bone fragment. The bone is from animals hunted by the Indians for food.

8CH73, Area B, appears to be limited to a very narrow stretch along the edge of the creek. It appears to extend only a few meters inland, toward the east. The midden supports numerous

cabbage palms, some live oaks, and smaller plants such as coontie, Spanish bayonet, and coral bean. Rapanea bushes or small trees grow densely on some of the shell-bearing soil of the midden.

Immediately north of where the 8CH73, Area B, midden disappears from the creek's bank, the growth quickly changes to pine flatwoods vegetation, including slash pines and saw palmettos. About 15 m (45-50 ft) to the east of the creek bank is a low-lying swale or seasonal "glade" that often holds standing water. Farther east, the land rises to pine and saw palmetto flatwoods.

It should be noted that the eastern limit of 8CH73 was not verified with shovel tests. This was unnecessary at this initial stage of site assessment. Shovel tests are damaging and should not be dug casually into a shell midden, especially a preserved one. If necessary in the future, some shovel tests could be dug but only if a datum point and a baseline were established so that tests and their results can be properly mapped and recorded.

The third midden component, 8CH73's Area C, is a short distance to the south (Figure 1). It is visible at the base of palm trees at edge of the creek bank and salt marsh. Clausen (1981:5) located it about 45 m (140 ft) across the creek in an east-southeast direction from the large, western midden (8CH73, Area A). Oyster shell was observed in the Area C midden. Vegetation around 8CH73, Area C, is an unusual mix of scrubby plants, such as old scrub oaks, coral bean, and prickly pear cactus, and salt-tolerant plants, such as buttonwood and black needle rush.

Evidence of Turpentining. At 8CH73's Area B and Area C, as well in their immediate vicinity, are a number of old pine stumps, each with a cavity near its base. The cavity, called a "box," represents an old kind of turpentining method, traces of which are seldom seen today.

Several boxes were observed carefully. In general, each cavity is 7-10 cm (3-4 inches) in depth, 18-23 cm (7-9 inches) in width, and 13-25 cm (5-10 inches) in height. The bottom of the cavity is about 15 cm (6 inches) above ground level; it is flat, horizontal, and roughly half-moon shaped. The upper, vertical portion of the cavity narrows as it slopes upward and outward.

Originally, a box was chopped into the base of a living pine tree with an axe. The cavity was used in collecting gum that flowed from a "streak" or groove that was cut into the trunk above the box with a tool called a "hack" (Blount 1993:35, 52; Zilles 1976:68, 69). The "boxing" method was used commonly until around 1915 when it began to be replaced by other methods because it "... was found to weaken the tree at the base, leaving it vulnerable to disease, wind, and fire, and to lessen the value of the tree as timber for lumber" (Forney 1985:277).

Near Tippecanoe Bay, an early turpentine camp existed at "Southland" (the area of present-day El Jobean). In 1912, the CH&N Railroad leased the area to Hall Naval Stores Company, of north-central Florida's Marion County, which retained "exclusive rights to box, cup, chip, scrape, dip, and otherwise use" the area's pine trees (Williams and Cleveland 1993:353-354, 416). In the mid-1970s, a Sarasota rancher and forester mentioned having seen "boxed" stumps in the nearby North Port area of Sarasota County. He attributed them to an early 1900s Charlotte County turpentine camp that was run with Black "convict" labor (Zilles 1976:66).

Evidence of Timber-Cutting. Several old pine stumps in the vicinity of 8CH73's Areas B and C, including boxed ones described above, were sawn off horizontally. Several were sawn at about 85 cm (2.5 ft) above the ground. This suggests that, after the trees became exhausted from turpentining, they were cut for timber. This was a common practice in Florida pine forests in the first half of the 1900s.

All the old pine stumps are weathered, and consist of hard, central heartwood. The outer bark and wood has rotted or burned away due to woods fires, as evidenced by charring on the stumps. The straight-cut stumps suggest that the trees were cut with a two-person hand saw operated by a person on either side of the tree who pulled the blade back and forth. Presumably, the timber then was dragged by mule or ox team to a saw mill.

No Name Creek Mound (8CH73, Area D)

This small sand mound is covered with dense vegetation. It was discovered by vandals who dug into it in the winter of 1984-1985. They removed pottery sherds from a decorated vessel of a ceramic type that is characteristic of local burial mounds dating to the Englewood period, ca. A.D. 900-1200 (see below).

On the basis of this pottery, the mound appears to be a very small aboriginal burial mound. However, no human bone has been observed in the mound, though it easily could have disappeared from deterioration. Judging by the age of the mound's pottery (which falls within the age range of sherds from 8CH73, Area A), and judging by the proximity of the mound to the two east-bank middens (8CH73, Areas B and C), it appears that the mound is associated with these middens.

Here, this report will call the mound the "No Name Creek Mound" and will refer to it as "8CH73, Area D." This is the simplest and clearest step considering past confusion over site names and numbers. In 1991, the mound was recorded on the FSF as 8CH453, but then, in 1993, it was combined with 8CH73 by personnel at the FSF. Unfortunately, however, FSF personnel called it "8CH73B" which Clausen already had used to designate one of the eastern middens. Thus, this report will refer to the mound as 8CH73, Area D, and it

will be included on a FSF form for 8CH73 to be updated as part of this survey project.

Description. The author first visited the No Name Creek Mound in December 1985 or January 1986. Its appearance was unchanged on a subsequent visit in May 1988, and a decade later in May 1996.

The mound is difficult to see due to its small size and the dense vegetation covering it. However, it appears to be approximately 14 m (45 ft) north-south by 11 m (35 ft) east-west, and no more than 50 or 60 cm (1.7 - 2 ft) in maximum height near its center. Compared to most burial mounds that are known in the region, this mound is quite small.

The mound is approximately 18 m (60 ft) east of the creek. It sits on the back or east side of fairly well-drained, levee-like land along the creek. In contrast, the land to the south and east of the mound is low-lying and often damp. These lower areas are separated by a narrow, short "causeway" or strip of higher land extending southeastward from the mound. The Indians might have created this "causeway" intentionally if a small "hollow" to the south was dug as a borrow pit for the mound. The larger "glade" to the east is natural.

Vegetation. The mound is densely covered with saw palmetto, small oak trees, coral bean, southern sumac, waxmyrtle, and coontie. The "hollow" to the south, and the larger "glade" to the east, support open, grassy, high marsh vegetation. On the flat, sandy land to the west of the mound is a large prickly pear cactus, and an old horizontally-sawn pine stump. Numerous cabbage palms are to the north.

Vandalism. Careful inspection of the mound reveals that vandals dug a pair of shallow trenches from the southeastern edge of the mound toward the mound's center. As they dug, they dumped spoil on the mound's southeastern edge, to either side of the trench. On reaching the center of the mound, the trenches widened, and spoil was thrown back into the southern trench.

The spoil consists of bleached white sand. No artifacts were seen in it and, as noted above, no human bone was observed. Presumably, the vandals found little here both by probing with a thin metal rod and by digging, otherwise vandalism would have been more extensive. Indeed, only badly deteriorated sherds from a single vessel were reported (see below). Nonetheless, even if the mound is small, damaged, and now perhaps "empty," it is still an earthen burial monument and thus is protected by law that makes it a felony to disturb it or its vegetation without a state permit (Florida Statute 872.05).

In 1984 and 1986, the author was able to see pottery sherds in a private collection that were claimed to have been removed from

this mound. They all came from one vessel that was decorated on its exterior surface with incised and punctated triangular designs, in several rows. Many of the sherds were small and crumbling, but three were sizeable rim sherds suggesting that the vessel had had an outward flaring rim and a round orifice with a rounded lip. This shape was suggestive of a shallow, wide-mouthed vessel or funnel.

Archaeologists call this kind of pottery "Sarasota Incised" on the basis of its decorative style and paste. It was first described from a large sand burial mound, the Englewood Mound (8SO1), near Lemon Bay and the Sarasota-Charlotte County boundary (Willey 1949). Sarasota Incised has been found in widespread burial mounds in peninsular Florida, and it also can occur in middens. The pottery is believed to date to the Englewood period or early Mississippian-influenced times, ca. A.D. 900-1200. In this area of Florida, this is often considered the latter portion of the Caloosahatchee II period.

Research Potential

8CH73 contains data that are significant to the study and understanding of regional prehistory. If archaeological work is conducted at 8CH73 in the future, then research designs will need to address issues relating to the area's environmental resources and settlement dynamics.

In the upper Charlotte Harbor area, aboriginal Indian land use needs further investigation. During which seasons and in which areas did Indians utilize resources of the environment? How did they organize their seasonal and spacial exploitation of the land?

Resource Utilization

A first step in investigating how aboriginal Indians used resources in the Tippecanoe Bay area is to study animal and plant remains from middens. One such investigation has been conducted by the author (Luer 1995a) who studied animal remains from 8CH87, a small midden just south of TSPA. The close proximity of this midden, and its similar composition, artifact assemblage, and environmental setting, indicate that data from there should be very similar, if not identical, to potential data from 8CH73.

The 8CH87 study shows that, around A.D. 900-1400, Indians intensively used local habitats around Tippecanoe Bay. They gathered shellfish from marshes and creeks, caught fresh and salt water fishes in creeks and the bay, and hunted for diverse animals in creeks, marshes, and pinewoods (see Tables, below, and Appendix I). The investigation shows that Indians caught many very small fishes, apparently with fine-mesh nets designed to capture fish <u>en masse</u> from shallow water. Many of the fishes represent juvenile forms, including tiny sharks, sawfish, spotted eagle ray, gar,

ladyfish, tarpon, catfish, and sea trout. This fact is in keeping with the low-salinity creeks, marshes, and shallows of Tippecanoe Bay, all of which would have created an ideal nursery area for juvenile estuarine fishes.

Results of this study can help in public interpretation, as discussed below. Additional research can expand these findings and address topics such as seasonality and plant utilization. The latter could provide much-needed insight about Indian use of plants from local pine and scrubby flatwoods habitats.

Architecture

Another research topic is the intentional shaping of mounds, courts, causeways, and other features at Indian shell midden and mound sites. The two walkway or causeway-like features at 8CH73, described above, are reminiscent of a feature partially crossing a sand flat northeast of the Coral Creek shell mound site (8CH15) at nearby Placida (Luer 1990b). The walkways also resemble a ramp on the northern side of the eastern end of the Shell Ridge Midden (8SO2) at Historic Spanish Point in Osprey, Sarasota County.

Settlement and Seasonality

These are large and complicated topics that will require the long-term accumulation and analysis of a great deal of data. They were discussed in terms of 8CH73 by Carl Clausen in 1981:

> The newly discovered midden, 8-Ch-73, relates to an environmental situation not previously known to attract prehistoric occupation in the Charlotte Harbor area. ... Unfortunately, little specific knowledge of the subsistence base of the late Glades Tradition inhabitants ... is available. Information in the northern Charlotte Harbor area, for example, is limited to investigations at one or two sites on the Cape Haze peninsula ..., one on Lemon Bay ..., another nearer Englewood ..., all to the west and southwest ....
>
> These western Charlotte Harbor and Lemon Bay sites appear to have little in common with those along the east side of Tippecanoe Bay .... They are larger and associated with more open areas of the bay, inlets and/or the Gulf itself. A wide range of shellfish and vertebrates was gathered for consumption there. Utilization of those sites was undoubtedly seasonal and probably occurred during the late spring and summer.
>
> The Tippecanoe Bay and Hog Island sites, on the other hand, seem to represent a different exploitative pattern, one geared to the estuarial environment at the general confluence of the Myakka River with greater Charlotte Harbor. Very specific food resources were gathered here and the sites are smaller. This general environment was

> either somewhat less productive and/or exploited for shorter periods than the larger sites nearer the Gulf.
>
> We assume aboriginal inhabitants in this area migrated inland up the waterways (to hunt and gather wild foods in the interior hammocks and flatlands) during the fall and winter when conditions on the coast had deteriorated, returning to the coast when the water warmed and cleared in the spring. In view of this model, the presence of the sites along Tippecanoe Bay presents some interesting possibilities. The sites could, for example, represent intermediate "stop-over" points between the larger, better known sites to the west and southwest and the so-far rare interior or inland sites ... to the east [and north]. Or, conceivably, they may represent sites in sheltered areas of the bay which were exploited for brief periods, perhaps during the summer, when adverse meteorological conditions effectively closed down more open waters. Perhaps they simply represent camps utilized for relatively brief periods during optimal gathering times for certain varieties of shellfish in these brackish waters.
>
> In view of these alternatives, the Tippecanoe Bay sites take on added significance. ... Ch-73 may well contain information important to the ultimate reconstruction of Glades Period economics and population dynamics in this area of southwest Florida (Clausen 1981:7-9).

In this passage, Clausen has several implicit assumptions. First, he assumes that 8CH73 and other Tippecanoe Bay sites are seasonally or intermittently inhabited. Second, he assumes that the sites are parts of a large settlement system. Third, he uses perspectives developed from economics, called optimal foraging theory. Many archaeologists working in the region have shared some or all of these assumptions, but models of settlement and seasonality vary. Indeed, year-round habitation is possible at many of the region's sites, although perhaps by seasonally varying numbers of people.

In southwestern Florida, seasonality data are scarce. One seasonality study was based on fish vertebrae from the now-destroyed Brothers Site (8SO31), a midden in Sarasota County on the Myakka River just west of the City of North Port. Like 8CH73, this midden contained Carolina marsh clam and oyster shell, and it bordered extensive salt marshes. The study suggests that Indians occupied the Brothers Site in the winter and spring (sometime from November through June) (Goodwin et al. 1978:Figures 3 and 4). Recent studies of quahog clam shells from large middens near the Gulf and bays show that they were occupied primarily during the spring and summer (from March through August) (Quitmyer 1992:261-263).

Potential for Public Interpretation

Since TSPA is presently without on-site staff or resident land managers, it would be unwise to give wide publicity to TSPA's archaeological resources. The TSPA middens are rare, and should be protected against vandalism.

At the present time, sites in more "guardable" locations lend themselves better to public interpretation. Nonetheless, archaeological data from Tippecanoe Bay sites can enhance the general interpretation of the area's natural environment. The faunal data, in particular, helps elucidate the kinds of natural habitats, and the kinds of animals, originally found in and around Tippecanoe Bay (see Tables 1 and 2, Appendix I).

If Indians are mentioned in future interpretive and education efforts, an emphasis should be placed on plants and animals used by the Indians, not on artifacts and vulnerable sites. The TSPA educational message can be about the natural environment, including habitats, water quality, and the area's role as an estuarine nursery.

Other interesting topics that would lend themselves well to interpretation at TSPA are the extractive forest industries of turpentining and timber-cutting. These activities were very important for Charlotte County in the not too-distant past, yet much of the public is unaware of them.

Land Management and Site Preservation

8CH73 is an important cultural resource that needs to be preserved. It is eligible for listing in the National Register of Historic Places because it contains data of significance to local and regional prehistory.

The site is also significant because its middens are among only a few that are intact in the upper Charlotte Harbor area. A number have been destroyed by erosion or land development; others continue to be threatened by land development, such as the Wrecked Site (8CH75) near El Jobean.

Fire and Exotic Vegetation

When fire is used to maintain the pine and scrubby flatwoods, care should be taken NOT to cut firebreaks ACROSS any of the 8CH73 site area. If exotic Brazilian pepper trees are removed, holes should not be dug to remove them from the midden areas.

Proposed Trails

A map in the "Tippecanoe Scrub Management Plan" (CHEC 1995), shows proposed trails meeting No Name Creek from both the east and

west. As drawn, the trails would run over both the east and west sides of 8CH73. It is recommended that each be shifted to meet the creek farther north, thus avoiding 8CH73.

As far as the eastern trail is concerned, it should also avoid the burial mound. It should be routed to the east of the open, low-lying "glade" that borders the burial mound.

If it is determined that trails will cross 8CH73, then archaeologists need to be consulted to minimize impacts. A raised boardwalk leading to 8CH73, Area A, would be necessary since it is surrounded by salt marsh. If interpretive signs are created, care needs to be taken in their placement. Archaeologists should be consulted about sign content.

Canoeing

Since canoeing will be encouraged at TSPA, 8CH73 will be accessible from the water. It may be wise to post the site with generic "no tresspassing" signs to discourage visitation and to aid in prosecution of vandals, if necessary. Posted signs that would be visible from the water could be placed on palm trees that grow on the middens.

Vandalism

As shell middens become better known to the public and as human population grows, vandalism could become more of a problem. Even the curious can cause damage -- every hole destroys part of the finite, non-renewable archaeological record.

During field work for this assessment, we observed evidence of several recent destructive activities. Shot-gun shells reveal that hunters use the area. Piles of sun-bleaching oyster shells show that oysters are gathered. Tire ruts indicate that three-wheelers are driven frequently into marshes.

Conclusion

This report presents historical, environmental, and archaeological information about TSPA. It reviews previous archaeological work in the immediate area, and assesses the cultural affiliation, condition, and vegetation of TSPA's single archaeological site, 8CH73.

The report also indicates some of 8CH73's research potential and land management needs, such as careful siting of trails. The potential for public interpretation is discussed as well. This information is important at this early stage of public ownership in order to identify cultural resources, and to determine how to protect and preserve them in the future.

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References Cited

Barbour, George M.
1882 Florida for Tourists, Invalids and Settlers. D. Appleton and Co., New York.

Beever, James W., III
1992 The Cedar Point Site, Western Charlotte County, Florida: A Wildlife Survey and Management Plan. Report dated December 15. Florida Game and Fresh Water Fish Commission, Office of Environmental Services, Southwest Florida Field Office, Punta Gorda.

Blount, Robert S., III
1993 Spirits of Turpentine, A History of Florida Naval Stores, 1528 to 1950. Florida Agricultural Museum, Tallahassee.

Bond, Stanley C., Jr.
1987 The Development of the Naval Stores Industry in St. Johns County, Florida. The Florida Anthropologist 40:187-202.

CHEC (Charlotte Harbor Environmental Center, Inc.)
1995 Tippecanoe Scrub Management Plan, Charlotte County. Report dated May. Submitted to Florida Communities Trust, Tallahassee. On file, Charlotte Harbor Environmental Center, Punta Gorda.

Clausen, Carl J.
1981 Archaeological Reconnaissance of General Development Corporation's Bayview Property, Charlotte County, Florida. Report dated January. Performed for General Development Corporation by CCC Enterprises, Inc. Copy on file, Florida Division of Historical Resources, Tallahassee.

Clausen, Carl. J., Marion M. Almy, and Cynthia S. Clausen
1978 Cultural Resource Survey of Planned Additions to Como/Flamingo Waterway System (Section 44), Charlotte County, Florida. Report dated February. Performed for General Development Corporation (GDC) by GDC Cultural Resource Management Section. Copy on file, Florida Division of Historical Resources, Tallahassee.

Edic, Robert F.
1992 Pioneer Fisherfolk of Southwestern Florida's Barrier Islands: An Interview with Esperanza Woodring of Cayo Costa. The Florida Anthropologist 45:221-225.

1996 Fisherfolk of Charlotte Harbor, Florida. University of Florida, Institute of Archaeology and Paleoenvironmental Studies, Gainesville.

Estabrook, Richard W., and Janice R. Ballo
1988 Cultural Resource Assessment Survey of the MRP Land Trust

Properties, Charlotte County, Florida. Report dated December. On file, Florida Division of Historical Resources, Tallahassee.

Florida Natural Areas Inventory
1994 Element Rank Explanations and Natural Communities. The Nature Conservancy and the Florida Department of Natural Resources, Tallahassee.

Forney, Sandra Jo
1985 The Importance of Sites Related to the Naval Stores Industry in Florida. The Florida Anthropologist 38:275-281.

Gibson, Charles D.
1982 Boca Grande, A Series of Historical Essays. Great Outdoors Publishing Co., St. Petersburg.

Goodwin, Larry, Jolee Pearson, and John Fiorini
1978 Salvage Excavations at the Brothers Site, Sarasota County, Florida. The Florida Anthropologist 31:117-127.

HPA (Historic Properties Associates, Inc.)
1989 Historic Properties Survey of Charlotte County, Florida. Report dated August. Conducted for Charlotte County, Florida. Copy on file, Florida Division of Historical Resources, Tallahassee.

Luer, George M.
1986 Some Interesting Archaeological Occurrences of Quahog Shells on the Gulf Coast of Central and Southern Florida. The Florida Anthropologist 39:125-159.

1990a Notes on Glass Demijohns, Rum-Running, and Moonshining in the Charlotte Harbor Area, Southwestern Florida. Unfinished ms. dated February 18. On file with author.

1990b Coral Creek Island. Map sketched in October 1989. Report dated July 1990. Archaeological and Historical Conservancy, Technical Report No. 17, Miami.

1995a A Preliminary Study of a Faunal Sample from a Brackish-Water Shell Midden (8CH87), Charlotte County, Florida. Class paper dated April 27, submitted to Dr. Elizabeth Wing, University of Florida, Gainesville.

1995b The Brookside Mound, Sarasota County, Florida: Notes on Landscape, Settlement, Scrub Habitat, and Isolated Burial Mounds. The Florida Anthropologist 48:200-216.

Luer, George, David Allerton, Dan Hazeltine, Ron Hatfield, and Darden Hood
1986 Whelk Shell Tool Blanks from Big Mound Key (8CH10), Charlotte County, Florida: With Notes on Certain Whelk Shell Tools. The

Florida Anthropologist 39:92-124.

Luer, George M., and Marion M. Almy
1987 The Laurel Mound (8SO98) and Radial Burials, With Comments on the Safety Harbor Period. The Florida Anthropologist 40:301-320.

Luer, George, Marion Almy, Dana Ste. Claire, and Robert Austin
1987 The Myakkahatchee Site (8SO397), A Large Multi-Period Inland from the Shore Site in Sarasota County, Florida. The Florida Anthropologist 40:137-153.

Luer, George M., and Lauren C. Archibald
1988 An Assessment of Known Archaeological Sites in Charlotte Harbor State Reserve. Archaeological and Historical Conservancy, Technical Report No. 6, Miami.

Myers, R. L. and J. J. Ewel, editors
1990 Ecosystems of Florida. University of Central Florida Press, Orlando.

Peeples, Vernon
1986 Punta Gorda and the Charlotte Harbor Area: A Pictorial History. The Donning Company, Publishers, Norfolk, Virginia.

Quitmyer, Irvy R.
1992 Seasonal Growth Patterns in the Shells of Southern Quahog Mercenaria campechiensis from the Palmetto Lane Midden (8SO96), Sarasota, Florida. The Florida Anthropologist 45:253-265.

Sheppard, Donald E.
1995 De Soto's Trail to Apalache. The Florida Anthropologist 45:174-193.

State of Florida
1843 Field Notes, Volume 77. Township 40 South, Range 21 East. Samuel Reid, Surveyor. On file, Bureau of State Lands, Tallahassee.

U.S. Army, Corps of Engineers
1978 Permit issued to General Development Corporation. Application No. 77b-1029. Dated April 21, 1978. Jacksonville District.

USDA (United States Department of Agriculture)
1984 Soil Survey of Charlotte County, Florida. USDA Soil Conservation Service, in cooperation with University of Florida IFAS and Florida Department of Agriculture and Consumer Services, Gainesville and Tallahassee.

Willey, Gordon R.
1949 Archeology of the Florida Gulf Coast. Smithsonian Miscellaneous Collections, Volume 113. Washington, D.C.

Williams, Lindsey W.
1986 Boldly Onward. Precision Publishing Co., Charlotte Harbor, Florida.

1989 A Charlotte Harbor Perspective on de Soto's Landing Site. The Florida Anthropologist 42:280-294.

Williams, Lindsey W., and U. S. Cleveland
1993 Our Fascinating Past: Charlotte Harbor, the Early Years. Privately published by the Charlotte Harbor Area Historical Society, Punta Gorda.

Woodburn, Kenneth D.
1962 Clams and Oysters in Charlotte County and Vicinity. Florida Board of Conservation Marine Laboratory, Maritime Base, St. Petersburg.

Zilles, Jack
1976 A History of Agriculture of Sarasota County, Florida. Sponsored by the Sarasota County Agricultural Fair Association and the Sarasota County Historical Commission. Privately published, Sarasota.

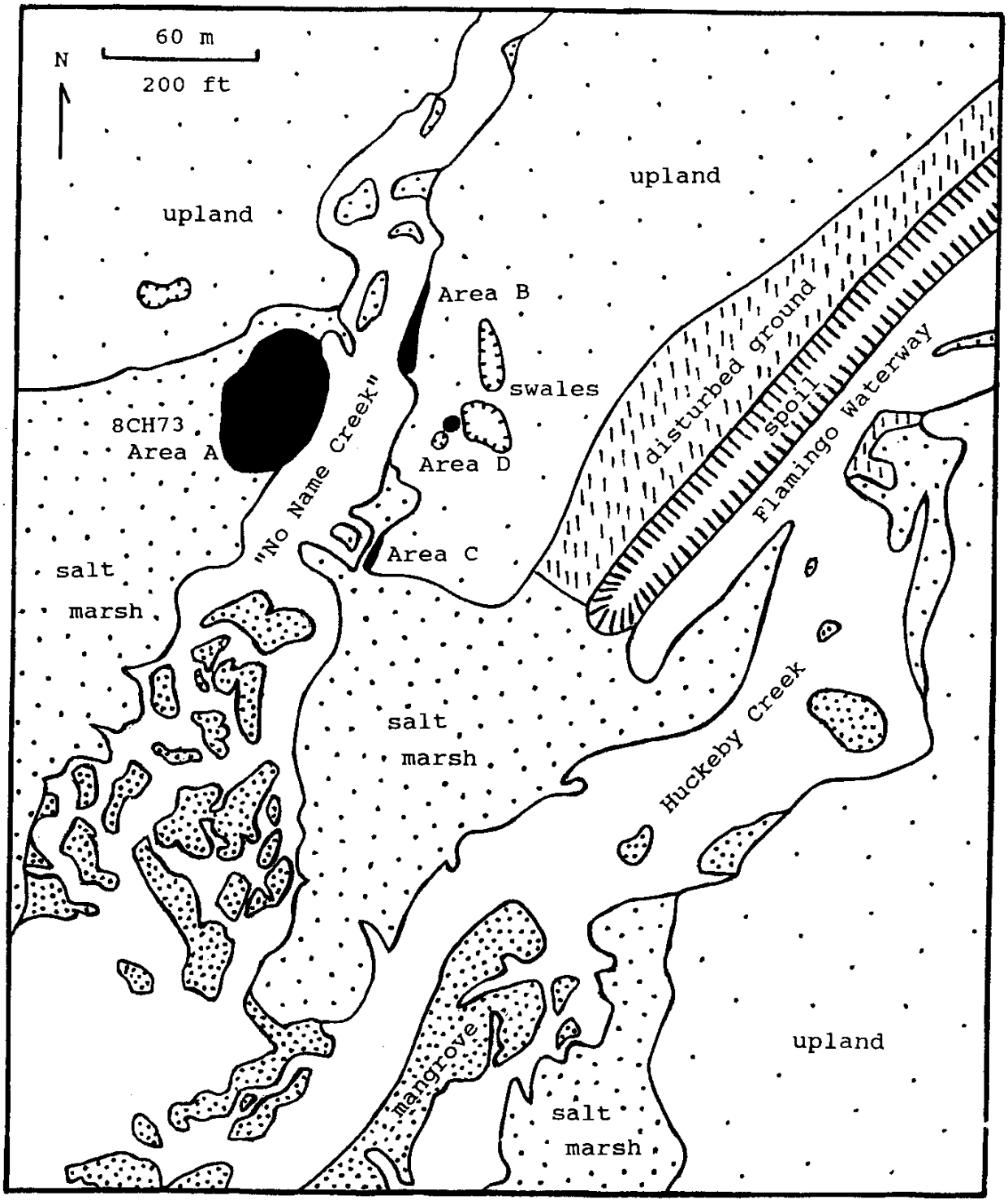

Figure 1. Area around the mouth of Huckeby Creek and "No Name Creek" showing locations of No Name Creek Middens and Mound (black areas).

Table 1. Typical Ecological or Habitat Niches of Some Mollusc Species Represented in Tippecanoe Bay Shell Middens.

From salt marshes and tidal creeks:
oyster, Carolina marsh clam, and king's crown

From mud flats and sand bars:
cat's eye or moon snail

Table 2. Typical Ecological or Habitat Niches of Some Vertebrate Species Identified from Tippecanoe Bay Shell Middens.

From pine and scrubby flatwoods:
deer

From fresh water creeks or ponds:
mudfish or bowfin, gar, tarpon, ladyfish, killifish, sunfish, alligator, and mud turtle

From brackish water marshes and tidal creeks:
gar, tarpon, ladyfish, herring, bay catfish, killifish, sunfish, mullet, and alligator

From moderate- or high-salinity bay waters:
sawfish, bull shark, spotted eagle ray, cownose ray, tarpon, ladyfish, bay catfish, gafftopsail catfish, sheepshead, sea trout, whiting, and mullet

Occasionally in low- to moderate-salinity bay waters:
bull shark, spotted eagle ray, cownose ray, gar, sheepshead, sea trout, and alligator

Appendix I. List of Vertebrate Species Represented by Remains from 8CH87 (from Luer 1995a).

1. cf. sandbar shark (Carcharhinus cf. plumbeus)
2. cf. bull shark, (Charcharhinus cf.leucas)
3. sawfish (Pristis sp.)
4. spotted eagle ray (Aetobatis narinari)
5. cownose ray (Rhinoptera bonasus)
6. ray, Myliobatidae
7. gar (Lepisosteus sp.)
8. mudfish or bowfin (Amia calva)
9. ladyfish (Elops saurus)
10. tarpon (Megalops atlanticus)
11. herring (Opisthonema sp.)
12. bay catfish (Arius felis)
13. gafftopsail catfish (Bagre marinus)
14. killifish (Fundulus sp.)
15. sunfish (Lepomis cf. gulosus)
16. sunfish (Lepomis sp.)
17. sheepshead (Archosargus probatocephalus)
18. sea trout (Cynoscion sp. -- A)
19. sea trout (Cynoscion sp. -- B)
20. whiting (Menticirrhus sp.)
21. mullet (Mugil sp.)
22. alligator (Alligator mississippiensis)
23. turtle, Kinosternidae,
    cf. mud turtle (Kinosternon subrubrum)
24. deer (Odocoileus virginianus)

MONITORING AND RADIOCARBON DATING AT NO NAME CREEK MIDDEN (8CH73A), TIPPECANOE ENVIRONMENTAL PARK, CHARLOTTE COUNTY, FLORIDA

George M. Luer, Ph.D., Archaeologist

Prepared for

Charlotte County Parks, Recreation, and Cultural Resources Department

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MONITORING AND RADIOCARBON DATING AT NO NAME CREEK MIDDEN (8CH73A), TIPPECANOE ENVIRONMENTAL PARK, CHARLOTTE COUNTY, FLORIDA

George M. Luer, Ph.D., Archaeologist

Executive Summary: As part of building bridge ramps at Tippecanoe Environmental Park, archaeological work was conducted at No Name Creek Midden. Five radiocarbon dates show that two portions of the midden date to approximately 2,500 to 3,000 years ago, with a sixth date suggesting an age of as much as 4,000 years. This means that Indians lived at the No Name Creek Midden during the Terminal Archaic Period (ca. 500-1000 B.C.) and possibly in the Late Archaic Period (ca. 1000-2000 B.C.). There also are suggestions, based on cultural remains, that the midden perhaps was visited by more recent Indians (since ca. A.D. 500). These and other findings are further confirmation that the No Name Creek Midden merits protection. The site contains significant information about our region's past, including human adaptation to the Charlotte Harbor estuarine system, of which Tippecanoe Bay is an important part.

Introduction

In June 2008, Charlotte County government asked me to conduct archaeological monitoring of postholes to be dug in a Native American shell midden on Charlotte County property in Tippecanoe Environmental Park. The monitoring was designed to avoid impacts to potential sensitive features (e.g., possible human burials) and to recover information about the age and cultural affiliation of the No Name Creek Midden (which is recorded in the Florida Department of State's Florida Master Site File as 8CH73A).

Earlier, in 2006, I was contacted about construction plans at the No Name Creek Midden by Linda Coleman and David Milligan of the Charlotte County Parks, Recreation, and Cultural Resources Department. In May 2006, we visited the site and discussed possible impacts to the Indian midden. Planning by Charlotte County continued in 2007, with final approval by the State of Florida in May 2008 that included monitoring for impacts to the archaeological site (Gaske 2008).

Prior to this present project, the age of the No Name Creek Midden was unknown. It was important to investigate its age and cultural affiliation for two main reasons. First, the midden was purchased for preservation in 1995 through Charlotte County and the State of Florida's Preservation 2000 Trust Fund, with avoidance of impacts required by the Florida Communities Trust. Second, gaining basic knowledge about the midden is necessary for public education at Tippecanoe Environmental Park. Thus, to offset impacts and to gain needed knowledge, the County included the recovery and dating of radiocarbon samples as part of the present monitoring work.

Archaeological Background

The No Name Creek Midden is located in the upper reaches of the Charlotte Harbor estuarine system in north-central Charlotte County. The midden is on the western side of an unnamed tidal creek that enters Tippecanoe Bay, near the mouth of the Myakka River. The site is in the salt marsh/mangrove ecotone. This is an environmentally stressed area maintained by winter frosts and freezes, spring droughts, and sporadic fires. Another stress is the area's seasonally fluctuating salinity (low in the rainy season, high in the dry season).

The No Name Creek Midden was first recorded in the Florida Master Site File in 1981. At that time, two much smaller middens (8CH73B and C) also were noted on the opposite, eastern side of the creek. In 1995, I was hired by the land manager to make a limited assessment of the site and to update the Florida Master Site File. I wrote a report that included a contour sketch map of the No Name Creek Midden, which measured approximately 55 m (180 ft) north-south, 34 m (110 ft) east-west, and 0.6 m (2 ft) above high tide level. I described the midden's drought and fire resistant vegetation, and I analyzed a limited surface collection (Luer 1997).

In 2002, I included information about the No Name Creek Midden in a historical and zooarchaeological study of the Tippecanoe Bay area (Luer 2002). My data from the No Name Creek Midden was very limited, with most of my information coming from a smaller, more southern state-owned midden (outside County property) that I radiocarbon dated to the Late Weeden Island Period (ca. A.D. 700-1000) and precontact Safety Harbor Period (ca. A.D. 1200 to 1500). In my 2002 study, I emphasize that shell middens in this ecological zone are important repositories of cultural and paleoenvironmental data about human use of, and adaptation to, the upper estuary. This zone contains a variety of freshwater and saltwater fish, and it is a nursery area for juvenile saltwater fish.

Upper Charlotte Harbor was strategically located between inland and more seaward areas, each with a different array of resources. We need to study Indian middens in this area so that we can learn when people began to use the upper estuary (hundreds or thousands of years ago?). We also need to learn if people used the area seasonally or year-round. The eventual recovery of data bearing on these questions will help us to study human adaptation to upper Charlotte Harbor and Tippecanoe Bay, which are important parts of one of the largest estuarine systems in Florida.

Background of Construction

The Charlotte County Parks, Recreation, and Cultural Resources Department assumed management of Tippecanoe Environmental Park on October 1, 2001. Formerly, since 1995, the property had been named Tippecanoe Scrub Preservation Area and managed by the Charlotte Harbor Environmental Center. In its effort to develop the site for public access and to improve land management (e.g., accessibility for fire control), the County began to build paths and bridges on the property.

In 2002, Charlotte County built a wooden bridge (Bridge B) across No Name Creek. The western end of Bridge B met the northeastern edge of No Name Creek Midden, where several wooden pilings were inserted. Further work at the site was halted in 2002 due to the passage of Hurricane Charly and its impact on Charlotte County.

In the spring of 2006, construction resumed when the County built another wooden bridge (Bridge A) across the salt marsh to the west of the site. Bridge A met the western edge of No Name Creek Midden, where several more wooden pilings were inserted. At that time, plans called for construction of heavy wooden ramps that would descend to the midden at each bridge end. Discussions indicated that these ramps, as then designed, would impact the midden considerably because they would entail digging for pilings and cross-pieces.

In order to minimize such impacts, the County redesigned the ramps in 2007. The new design would limit impacts to 24 postholes, each 5- to 6-inches in diameter and 24-inches deep. Nine postholes would be dug at the midden's western edge (Bridge A, South Ramp), and 15 postholes would be dug at the midden's northeastern edge (Bridge B, West Ramp). These designs were approved by the State of Florida, and construction resumed in June 2008.

Field Observations

Methods

Early on June 23, 2008, I and a field assistant, Bill Godek, met the construction crew, who used a standard posthole digger to dig a series of postholes at the western edge of the site. I numbered the postholes as Hole #1 through Hole #9 in the sequence in which they were dug (Figure 1). I did the same at the northeastern edge of the site, where I numbered postholes in sequence as Hole #10 through Hole #24 (Figure 2).

As the holes were dug, the crew dumped extracted material on plastic sheeting. Black or dark grey muddy dirt was abundant in every hole. The dirt included sand in the midden's western portion. It contained even more sand in the midden's northeastern portion, where it also had a more muddy consistency.

Midden mollusc shells also were abundant, especially fragments of the eastern oyster (*Crassostrea virginica*) and valves of the Carolina marsh clam (*Polymesoda caroliniana*). Also present were valve fragments of the ribbed mussel (*Geukensia demissa granosissima*) and a few king's crown (*Melongena corona*) and moon snail (*Polinices duplicatus*) shells. For each posthole, I noted major changes in extracted materials in order to record a general indication of stratification (Appendices 1 and 2).

We troweled through the extracted midden material, collecting items by numbered hole and by general stratigraphic association. We did not employ a screen so that we did not slow the construction crew. A screen was not essential for our goals of monitoring for possible features (e.g., human burials) and recovering radiocarbon samples.

All collected materials were placed in labeled plastic bags. We collected fragments of pottery, conspicuous vertebrate faunal remains, and unusual mollusc shells (e.g., fragments of high-salinity shells). At a number of holes on each side of the midden, we also collected Carolina marsh clam valves to use for radiocarbon dating. By the end of the afternoon of June 23, 2008, we completed our work at the 24 postholes.

Stratification

Material removed from postholes does not yield a precise record of stratification. In this case, however, it provided some information about the layering and composition of the midden. In both areas tested, the midden's upper 6 inches consisted of black dirt (sand and organic material) mixed with shells, often fragmentary, such as bits of oyster shell. This uppermost stratum may be more recent than underlying, denser shell deposits.

Below 6 or 8 inches, denser midden deposits were encountered. They contained dark grey sandy soil and fairly intact food shells, predominantly eastern oyster and Carolina marsh clam valves. Some vertebrate food remains also were present.

At the midden's western edge (Holes #1 through #9), the bottom of the midden was not reached (it continued below 24 inches from the surface). At the midden's northeastern edge, many postholes reached sand that may represent the bottom of the midden. However, it is possible that cultural material may occur deeper in some of these postholes. Deeper testing will be needed to investigate this.

Shell was greater in quantity (denser) in the midden's western portion than in its northeastern portion. The black organic soil was not as sandy in the midden's western portion as it was in its northeastern portion. Indeed, dense sand appeared in the bottoms of some postholes there (Holes #14, #22), and it rose upward (Holes #19, #21) to comprise almost the lower halves of the farthest north postholes (Holes #15, #16, #17, #18). This sandy deposit may be a buried levee alongside the creek. Sand in this northeastern portion of the midden may reflect repeated flooding of the adjacent tidal creek and the gradual deposition of sand on and into the midden.

In general, shell middens tend to accumulate upward and outward. Along a shore, they tend to grow upward and backward (away from the shorefront). Applying this model to the No Name Creek Midden, one could hypothesize that the deepest midden deposits near the creek may be the oldest, if habitation began by the open water of the creek. In such a scenario, the midden could have accumulated upward and westward (back from the creek) over time.

At present, data are insufficient to test this model. Some support may come from the oldest radiocarbon date, from Hole #20, which is the deepest sample from the midden's northeastern portion (see below). However, the rest of the radiocarbon dates, from both areas of the midden, are younger and in the same age range. No radiocarbon dates were obtained from the midden's upper stratum in either area (above 6 to 8 inches below the surface).

Cultural Materials Recovered

Laboratory Work

In the days immediately after field work, I used freshwater to wash some of the materials we collected, especially the shells we collected for radiocarbon dating. This was labor-intensive because much dirt adhered to the shells. It was a sticky fine mud on shells from the western portion of the midden. The mud was less sticky on shells from the midden's northeastern portion, but some concreted sand was cemented to shells from that area. After drying, I replaced the materials in bags for storage.

Next, I inspected all our collections and listed them by provenience (Appendices 3 and 4). Then, I described and analyzed them (see below). I also removed mollusc shells from six of our collections, and these I used for radiocarbon samples. I carefully weighed and filled out forms describing these shells. These shell samples were then shipped to a radiocarbon dating laboratory for analysis (see below).

Artifacts and Other Cultural Items

Pottery sherds were not common. They consist of sand-tempered plain rim and body sherds. An outcurving sand-tempered plain rim sherd with a flat lip came from the shallow, upper layer (0 to 6 inches below surface) in the western portion of the midden (Hole #7). This rim sherd is suggestive of a relatively recent occupation, since ca. A.D. 500.

In contrast, two incurving sand-tempered plain rim sherds came from the lower shell deposit in Holes #18 and #23. The two sherds crossmend, even though they came from approximately 14 feet apart. These rim sherds have a very slightly champfered lip and four incised lines on their interior surface (two running parallel to the lip, two running diagonally). Such pottery can date to ca. 1000 B.C. to ca. A.D. 500 in the Charlotte County area.

Fragments of possible shell tools include pieces of marine shells apparently imported by the Indians from high-salinity areas. These include pieces of robust left-handed whelk (*Busycon sinistrum*) shells from Holes #3, #10, #17, and a piece of a large, heavy quahog (*Mercenaria campechiensis*) left valve in Hole #8. Such quahog valves often were used as anvils or chopper tools, while robust whelk shells were used as cutting-edged tools or hammers. The piece of robust whelk shell from Hole #10 has a portion of its outer lip intentionally ground smooth, suggesting that it is a fragment of a broken tool (probably a cutting-edged tool).

One shell from Hole #8 may represent an item from a high-salinity estuary or barrier beach to the west. It is a relatively small, shallow valve of a scallop (cf. *Argopecten* sp.) with fine ribs and traces of reddish coloration. Such shells can be colorful, and the Indians might have brought it to the site as a curiosity or ornament.

An apparent curiosity is a mineralized fossil horse tooth from Hole #10. Such fossils erode from downcut streams in the surrounding area, and they also wash up on beaches in the region. The Indians apparently found this fossil horse tooth and brought it to the midden, where it was uncovered in Hole #10.

Faunal Remains

Shells from surrounding creek and marsh habitats were abundant, especially fragments of the eastern oyster and valves of the Carolina marsh clam. These represent food shellfish harvested by the Indians, who discarded their shells on the midden. These and several other common shellfish taxa are identified above (see "Field Observations"). In addition, we found scarce remains of high-salinity shellfish, namely a single surf clam (*Spisula solidissima similis*) valve (Hole #4) and a claw fragment of a stone crab (*Menippe mercenaria*) (Hole #19).

We also recovered a number of vertebrate remains (Appendices 3 and 4). They are biased in favor of fragments of dense bone due to effects of preservation and recovery methods (we did not use a screen in the field, and we did not collect column samples for analysis). Nonetheless, identified vertebrate taxa include saltwater catfish, black drum, jack, mullet, turtle, snake, alligator, and deer. All were represented by bone fragments, with catfish also represented by otoliths ("ear stones").

In addition to two hardhead catfish (*Arius felis*) otoliths of typical size (Hole #1), I was surprised to discover eight tiny otoliths of saltwater catfish (Ariidea). I found them in the dark sand that I washed off the Carolina marsh clam valves that we collected as radiocarbon samples from Holes #10 and #12. The tiny size of these otoliths (less than 5 mm across, and most of them approximately 3 mm across) indicates that they came from very small, juvenile catfish of less than 10 cm standard length. The Indians could have caught such small catfish in fine-mesh nets or traps of some kind.

We recovered a large atlas vertebra of a black drum (*Pogonias cromis*) in Hole #23. Hole #6 produced a bone fragment from a jack (*Caranx* cf. *hippos*), and Hole #4 yielded a bone fragment perhaps of a sheepshead (*Archosargus probatocephalus*). Black drum, crevalle jack, and sheepshead occur in surrounding creeks and Tippecanoe Bay. The Indians could have caught them using nets or hooks and lines. In Hole #1, I found a vertebra of a mullet, probably a striped mullet (*Mugil* cf. *cephalus*), which are common in local creeks and Tippecanoe Bay. The Indians could have caught mullet using nets and spears. Two opercula from two kinds of very small unidentified bony fish also came from Hole #20. The Indians could have caught such small fish in fine-mesh nets.

Remains of turtles (Testudines) came from a number of postholes (Holes #1, #4, #7, #8, #12, #18) and represent several individuals, possibly including a terrapin and a pond turtle. A single small snake (Serpentes) vertebra came from Hole #12. We recovered a single scute fragment of alligator (*Alligator mississippiensis*) in each tested portion of the midden (Holes #7, #11), which may suggest that the Indians hunted alligator during the Terminal Archaic Period.

Alligator remains are scarce or lacking at some later midden deposits in Charlotte County. Remains of white-tailed deer (*Odocoileus virginianus*) include fragments of a phalange (Hole #4) and distal fragments of a longbone (Hole #19). The Indians hunted deer in the area surrounding Tippecanoe Bay.

Future recovery and research of faunal remains may help us understand what times of the year the Indians visited or lived at the No Name Creek Midden. For example, tiny catfish otoliths may reflect a certain season in the growth of these fish, and thus they may suggest a particular season when the Indians caught them. In addition, growth increments in Carolina marsh clam valves may support certain seasons of exploitation, or year-round harvesting.

Rocks

Several limestone rocks were collected from the postholes dug in the midden. All appear to be of local origin, probably exposed naturally by erosional down-cutting in nearby tidal creeks. Most, if not all, might have had oysters attached to them when they were collected and brought by the Indians to the midden, where they were discarded. No fire-cracked rock was observed.

Radiocarbon Dating

Prior to this present project, the age of the No Name Creek Midden was unknown. Based on my 1996 surface collection of pottery sherds, I wrote that "the sample is too small to determine a definite age range for the midden," although I speculated that it "might have been used sometime during the Late Weeden Island through precontact Safety Harbor periods (ca. A.D. 700-1500)" (Luer 2002:53). It was because of this uncertainty that I urged Charlotte County to make radiocarbon dating part of this present project.

I submitted six samples of mollusc shells to Beta Analytic, Inc., an experienced professional radiocarbon laboratory in Miami, Florida. Three of the samples came from the midden's western side (Bridge A, South Ramp), and three came from the midden's northeastern side (Bridge B, West Ramp). I described these samples and their proveniences in detail in radiocarbon sample submittal sheets that I sent to the laboratory with the samples.

The reader is cautioned that sets of radiocarbon dates are needed to interpret the age of stratified deposits, such as a shell midden. A single radiocarbon date is a piece of data only, which needs the further corroboration and refinement of additional dates. Moreover, every radiocarbon date is really a probability age range, with no fixed definite "date." Because of this, I obtained three radiocarbon dates from each portion of the midden that was dated. In this case, three dates are a minimum for beginning to interpret an accurate estimate of age for each portion of the site.

At the No Name Creek Midden, I used Carolina marsh clam shells as radiocarbon samples. Today, Carolina marsh clams live in low-salinity estuarine habitats that can fluctuate greatly in salinity. It is a safe assumption that this was the case in previous centuries as well.

The isotopic carbon ratios (the "carbon 13-carbon 12 ratios") that were obtained for the six shell samples are strongly negative (Table 1). These ratios appear to reflect a significant influence of freshwater, meaning that the shells grew in a freshwater or low-salinity setting (Darden Hood, Co-Director of Beta Analytic, Inc., personal communication 2008). For that reason, I do not apply marine corrections in Table 1 (marine corrections would make the calibrated age ranges approximately 400 years younger).

The radiocarbon dates from the No Name Creek Midden support an age range of ca. 2500 to 3000 years ago. In west-central Florida, this age range equates to the Florida Transitional Period (a.k.a., the Terminal Archaic Period in southern Florida). The two oldest dates from the midden also suggest earlier use (one date from Hole #20 suggesting perhaps as much as ca. 3800 to 4000 years ago), which may place some occupation at the midden during the Late Archaic Period (which ranges from 5000 to 3000 years ago).

These dates support the interpretation that portions of the No Name Creek Midden date primarily to the Terminal Archaic Period (ca. 500 to 1000 B.C.). This is an older age for the midden than previously suspected. However, it is not inconsistent with material remains recovered during this project.

In the Charlotte Harbor area, some other sites were used during the Terminal Archaic Period, although they are uncommon. In Charlotte County, they include the Turtle Bay 2 Site (8CH37) (Newman and Swann 2008) and apparently portions of the Cedar Point Shell Heap (8CH8, now mostly destroyed) and Cedar Point Ridge (8CH62/64) (Luer 1999). In Lee County, they include Calusa Island (8LL45) (Luer 1989) and two areas on Useppa Island (8LL51) (Marquardt 1999:81-84). In Sarasota County, evidence of possible Terminal Archaic occupation has been found at the Myakkahatchee Site (8SO397) in North Port (Luer et al. 1987). At all these sites, the Terminal Archaic Period is not well-known and is in need of study.

Comments on Mobility and Stratification

The No Name Creek Midden yielded some shells that originated in high-salinity areas (areas that are typically higher in salinity than Tippecanoe Bay and upper Charlotte Harbor, including the mouths of the Myakka and Peace rivers). Midden remains that originated in high-salinity areas support the interpretation that some Indians who camped at the No Name Creek Midden had contact with the higher-salinity Gulf coast or outer estuary. This suggests that some Indians either moved back and forth between the upper estuary and the higher-salinity coast, and/or that they traded with other Indians who lived in higher-salinity areas.

If some Indians came directly to the No Name Creek Midden from the outer coast, they might have brought tools and food grubsteaks (including living edible shellfish) with them. Two high-salinity shells (a surf clam valve in Hole #4 and a small left-handed whelk shell in Hole #7) are suggestive of such food grubsteaks. Likewise, a quahog valve fragment in Hole #8 might have been part of a food grubsteak or a tool shell. These three high-salinity shells are all from 0-

6 inches below surface in the uppermost black dirt layer on the western side of the site (Bridge A, South Ramp). This shallow layer did not yield enough shell to be dated during this project. The uppermost black dirt layer may be younger than the underlying deposits of oyster and Carolina marsh clam shell, where all of this project's radiocarbon samples were obtained.

Two high-salinity shells also came from the uppermost black dirt layer in the northeastern area of the site (Bridge B, West Ramp). There, in the top of Holes #14 and #15, we found a valve and a valve fragment of the ponderous ark (*Noetia ponderosa*). These shells also may be from the outer estuary and may suggest food grubsteaks or shells brought for use as tools. In post-Archaic times, the Indians made perforations in ponderous ark valves and used them as fishnet sinkers (but the Indians apparently did not perforate and use them as sinkers during the Archaic Period).[1] If related to post-Archaic fishing activity, perhaps the two ark valves from Holes #14 and #15 may represent late additions to the top of the midden.

In 1996, I did find a perforated ponderous ark valve on the surface of the No Name Creek Midden. This artifact, plus a Belle Glade Plain sherd that I found on the midden's surface in 1996 (Luer 2002:53), suggest that the midden was visited by post-Archaic Indians while fishing in the immediate area. We know from other nearby middens, such as state-owned Tippecanoe Bay Midden (8CH87) and Muddy Cove 2 (8CH72), that Indians used the area in post-Archaic times (Luer 2002; Luer and Almy 1980:219; Patton 2000:38-40). Visitation by such later Indians may account for high-salinity shells in the uppermost black dirt layer of the No Name Creek Midden. Further research could determine if Indians used the midden after the Terminal Archaic.

Some contact with the outer estuary also is suggested by high-salinity remains from deeper in the No Name Creek Midden. These remains consist of a fragment of a robust whelk shell from Hole #3 (15-28 inches b.s.) and a piece of a stone crab claw from Hole #19 (8-18 inches b.s.). The apparent origin of these remains in the midden's deeper, dense shell deposit (that was radiocarbon dated by this project) suggest that they date to the Terminal Archaic Period. They hint that contacts between the Indians of the outer estuary and those Indians who used the No Name Creek Midden were already established during the Archaic Period.

More research is needed to determine the nature and extent of such possible contact. Nonetheless, a major focus for Indians at the No Name Creek Midden during the Terminal Archaic Period was the exploitation of its surrounding, local food resources. The midden's dense shell deposit (generally below 6 to 8 inches from the surface) shows that obtaining fish, oysters, Carolina marsh clam valves, turtles, and deer were important activities of the Indians. The mollusc shells comprising the midden also show that salt marsh and tidal creek habitats were in existence 2500 to 3000 years ago.

Conclusion

This was a worthwhile project. It led to the discovery that the No Name Creek Midden contains deposits that are older than previously suspected. Indeed, portions of the midden date to approximately 2500 to 3000 years ago. This discovery re-enforces earlier assessments that the

midden is a significant site worthy of preservation and research. The site contains information that can improve our understanding of Charlotte County's human history and natural environment. It can help us understand how people used and adapted to the greater Charlotte Harbor estuary, in particular its upper reaches, where rivers and creeks mix with the sea.

Acknowledgments

I want to thank Linda Coleman and David Milligan of the Charlotte County Parks, Recreation, and Cultural Resources Department. Without their interest, this project would not have happened. I also want to thank Tom Henry, Special Projects Foreman, for his interest and for providing field equipment and construction diagrams. In the field, Ron Marco and his crew worked carefully to provide material from postholes. Their help was important to the success of the field work. Also important was the field assistance of Bill Godek. A visit from Tina Powell, Environmental Specialist with Charlotte County, was appreciated.

Note

[1] In 1982, I did not find perforated ponderous ark valves while working in the Hill Cottage Midden at the Palmer Site in Osprey, Sarasota County, which dates to the Archaic Period. Such valves are common in the neighboring Shell Ridge Midden, which is post-Archaic in age.

References Cited

Gaske, Frederick P.
2008 Letter to Mr. Tom Henry, Special Project Foreman, re: Tippecanoe Environmental Park – Constuct Two Boardwalk Ramps, Charlotte County/DHR Project File No. 2008-3091. Dated May 28. Copy on file, Charlotte County Parks, Recreation, and Cultural Resources Department, Port Charlotte, Florida.

Luer, George M.
1989 Notes on the Howard Shell Mound and Calusa Island, Lee County, Florida. *The Florida Anthropologist* 42:249-254.

1997 *Archaeology and Tippecanoe Scrub Preservation Area, Charlotte County, Florida.* Report dated February 24. Prepared for the Charlotte Harbor Environmental Center, Inc., Port Charlotte, Florida.

1999 Cedar Point: A Late Archaic through Safety Harbor Occupation on Lemon Bay, Charlotte County, Florida. In *Maritime Archaeology of Lemon Bay, Florida*, edited by George M. Luer, pp. 43-56. Florida Anthropological Society Publication Number 14. Clearwater.

2002 Archaeology and Faunal Analysis at Tippecanoe Bay. In *Archaeology of Upper Charlotte Harbor, Florida*, edited by George M. Luer, pp. 49-71. Florida Anthropological Society Publication No. 15, Tallahassee.

Luer, George M., and Marion M. Almy
1980 The Development of Some Aboriginal Pottery of the Central Peninsular Gulf Coast of Florida. *The Florida Anthropologist* 33:207-225.

Luer, George, Marion Almy, Dana Ste. Claire, and Robert Austin.
1987 The Myakkahatchee Site (8So397), A Large Multi-Period Inland From The Shore Site in Sarasota County, Florida. *The Florida Anthropologist* 40:137-153.

Marquardt, William H.
1999 Useppa Island in the Archaic and Caloosahatchee Periods. In *The Archaeology of Useppa Island*, edited by William H. Marquardt, pp. 77-98. University of Florida, Institute of Archaeology and Paleoenvironmental Studies, Monograph Number 3. Gainesville.

Newman, Christine, and Brenda Swann
2008 Archaeological Salvage at Turtle Bay 2 (8CH37), Charlotte County, Florida. *The Florida Anthropologist* 61:85-93.

Patton, Robert B.
2000 *The Charlotte Harbor Mounds Survey, Phase II: Report of Investigations*. Conducted for the Florida Division of Historical Resources by the Florida Museum of Natural History. Gainesville.

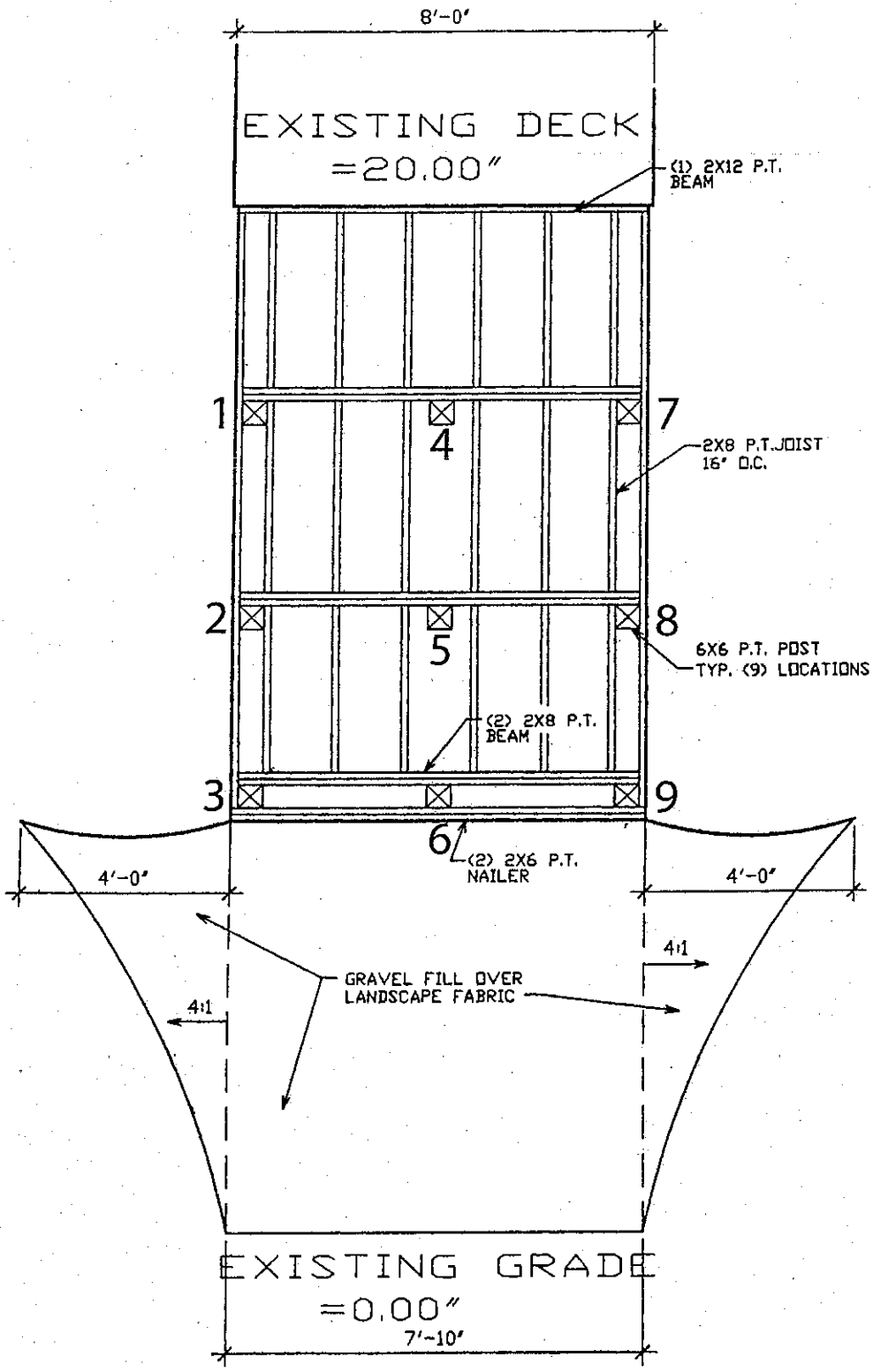

Figure 1. Plan of numbered postholes 1 through 9, Bridge A, South Ramp. These are the locations of Holes #1 through #9 in the western side of the No Name Creek Midden (deck = bridge).

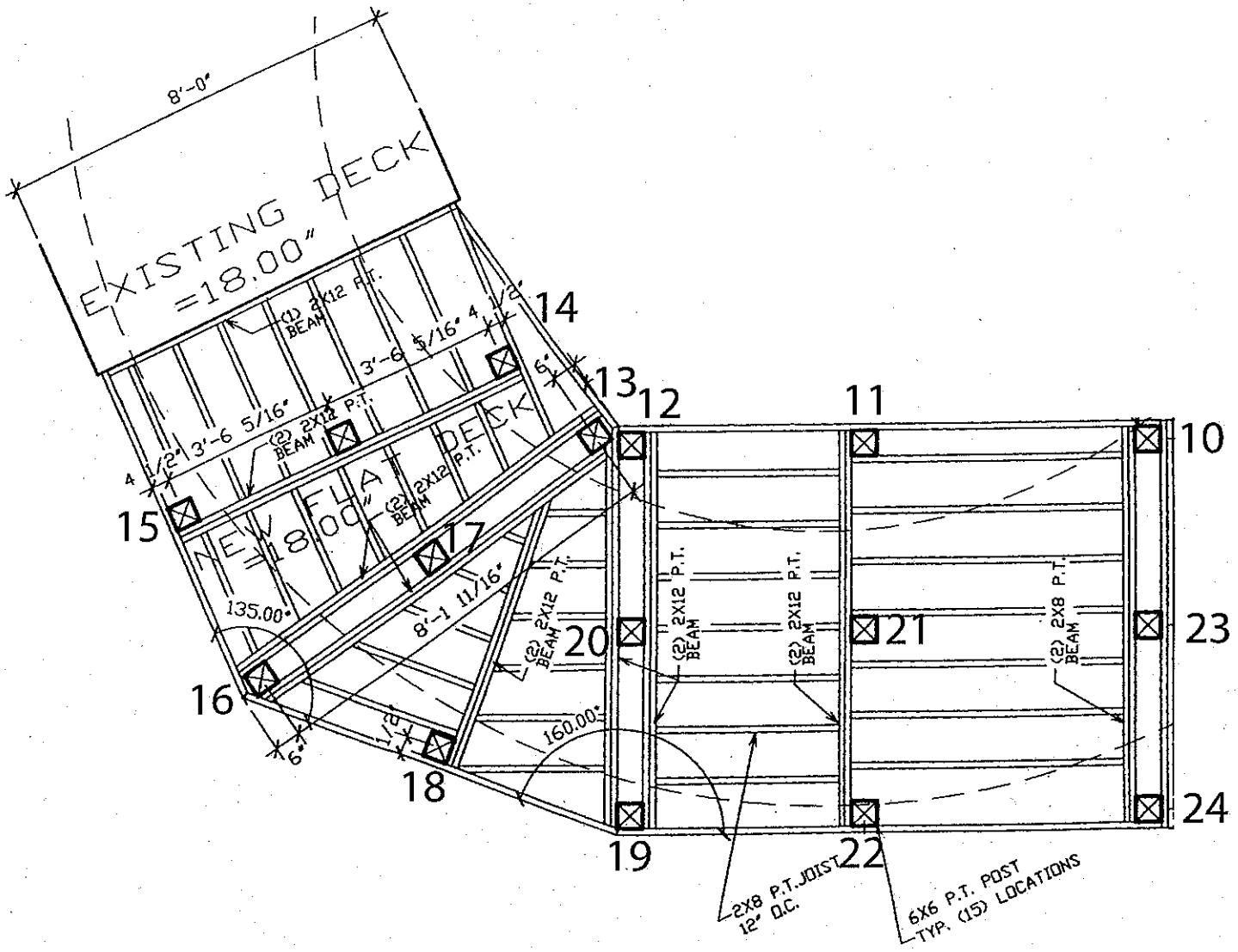

Figure 2. Plan of numbered postholes 10 through 24, Bridge B, West Ramp. These are the locations of Holes #10 through #24 in the northeastern side of the No Name Creek Midden (deck = bridge).

Table 1. Radiocarbon dates, with freshwater calibration (reservoir effect not applied). These dates are for Carolina marsh clam valves from the No Name Creek Midden (8CH73A). The measured and conventional ages are in radiocarbon years before present (B.P.; present = A.D. 1950) and are rounded to the nearest ten. The values for stable isotopes (the 13C/12C ratios) are strongly negative, suggesting an input from freshwater (typical marine shell = 0 o/oo). The conventional ages reflect the addition of 410 years for typical marine shell, from which years are subtracted for negative 13C/12C values (at 1 o/oo = 16 years) (e.g., - 2.5 = -40 years). All the conventional and calibrated dates in this table were derived by Beta Analytic, Inc., using the Intcal98 Radiocarbon Age Calibration. One sigma age ranges have 68% probability, and two sigma age ranges have 95% probability.

Location on Midden, Hole #, Depth Below Surface, Lab ID#	**Measured, Uncorrected Age B.P., 1 Sigma**	**13C/12C Ratio (o/oo)**	**Conventional, Corrected Age B.P., 1 Sigma**	**Calibrated, Calendrical Range, 2 Sigma**
Western Side				
1. Hole #1, 9-24 inches, Beta-249020	2350 +/- 50	-6.6	2650 +/- 50	cal B.C. 900-780
2. Hole #6, 8-24 inches, Beta-249021	2340 +/- 50	-9.4	2590 +/- 50	cal B.C. 800-590
3. Hole #9, 6-24 inches, Beta-249022	2710 +/- 50	-8.5	2980 +/- 50	cal B.C. 1380-1040
Northeastern Side				
4. Hole #10, 6-24 inches, Beta-249023	2320 +/- 50	-5.5	2640 +/- 50	cal B.C. 900-770
5. Hole #12, 12-23 inches, Beta-249024	2550 +/- 40	-11.0	2780 +/- 40	cal B.C. 1010-830
6. Hole #20, 16-24 inches, Beta-249025	3300 +/- 40	-9.0	3570 +/- 40	cal B.C. 2020-1780

Appendix 1. Stratigraphic descriptions, western edge of midden, Bridge A, South Ramp. Strata are based on material removed from postholes. CMC = Carolina marsh clam.

Hole #1
0-9 in b.s.: black dirt, diffuse degraded oyster and CMC valves.
9-24 in b.s.: black/grey dirt, oyster shell, CMC valves.

Hole #2
0-5 in b.s.: black dirt, diffuse degraded oyster and CMC valves.
5-15 in b.s.: black/grey dirt, oyster shell, CMC valves.
15-24 in b.s.: grey/black dirt, oyster shell, CMC valves more dense.

Hole #3
0-8 in b.s.: black dirt, diffuse oyster shell and CMC valves.
8-15 in b.s.: black/grey dirt, oyster shell and CMC valves (not very dense).
15-28 in b.s: grey/black dirt, oyster shell and CMC valves (not very dense).

Hole #4
0-6 in b.s.: black dirt.
6-12 in b.s.: black dirt, diffuse oyster shell.
12-24 in b.s.: black/grey dirt, oyster shell, CMC valves.

Hole #5
0-8 in b.s.: black dirt.
8-24 in b.s.: grey dirt, oyster shell, CMC valves.

Hole #6
0-8 in b.s.: black dirt.
8-24 in b.s.: black dirt, oyster shell, CMC valves (the latter increasing with depth).

Hole #7
0-6 in b.s.: black dirt.
6-24 in b.s.: black/grey dirt, oyster shell, CMC valves (the latter increasing with depth).

Hole #8
0-8 in b.s.: black dirt.
8-24 in b.s.: black/grey dirt, oyster shell, CMC valves (the latter increasing with depth).

Hole #9
0-6 in b.s.: black dirt.
6-17 in b.s.: black dirt, oyster shell, CMC valves.
17-24 in b.s.: black/grey dirt grading into muck, oyster shell, CMC valves.

Appendix 2. Stratigraphic descriptions, northeastern edge of midden, Bridge B, West Ramp. Strata are based on material removed from postholes. CMC = Carolina marsh clam.

Hole #10
0-6 in b.s.: black dirt.
6-24 in b.s.: black dirt, oyster shell, CMC valves.

Hole #11
0-6 in b.s.: black dirt.
6-24 in b.s.: black/grey dirt, oyster shell, CMC valves.

Hole #12
0-12 in b.s.: black dirt and oyster shell.
12-23 in b.s.: black dirt, oyster shell, CMC valves.
23-24 in b.s.: black/grey sandy muck.

Hole #13 (same as Hole #12).

Hole #14
0-24 in b.s.: black dirt, oyster shell, a few CMC valves.
23-24 in b.s.: dark dense sand.

Hole #15
0-15 in b.s.: black dirt and oyster shell.
15-24 in b.s.: dark dense sand (old levee bank?).

Hole #16 (same as Hole #15).

Hole #17
0-12 in b.s.: black sandy dirt and oyster shell.
12-18 in b.s.: black sandy dirt, oyster shell, CMC valves.
18-24 in b.s.: black/grey sand (old levee bank?).

Hole #18
0-8 in b.s.: black sandy dirt, diffuse oyster shell.
8-18 in b.s.: black sandy dirt, oyster shell.
18-24 in b.s.: black sandy dirt (old levee bank?), some oyster and CMC valves.

Hole #19
0-8 in b.s.: black sandy dirt.
8-18 in b.s.: black sandy dirt, diffuse shell.
18-24 in b.s.: black sandy dirt.

Hole #20
0-10 in b.s.: black sandy dirt.
10-16 in b.s.: black sandy dirt, some oyster shell.
16-24 in b.s.: black sandy dirt, oyster, CMC valves (some with cemented sand adhering).

Hole #21
0-12 in b.s.: black sandy dirt, oyster shell.
12-22 in b.s.: black sandy dirt, oyster shell, CMC valves (some with cemented sand adhering).
22-24 in b.s.: grey/black sand.

Hole #22
0-21 in b.s.: black sandy dirt, sparse oyster shell.
21-24 in b.s.: black/grey sand, oyster shell, CMC valves (some with cemented sand adhering).
24 in b.s.: grey/black sand.

Hole #23, 18-20 in b.s.: CMC valves.
0-16 in b.s.: black sandy dirt, sparse oyster and CMC shell.
16-24 in b.s.: black sand, CMC valves (some with cemented sand adhering).

Hole #24
0-24 in b.s.: black sandy dirt, sparse oyster and CMC shell (some with cemented sand adhering).

Appendix 3. Collections from postholes at Bridge A, South Ramp. These consist of collected items and residual materials from which radiocarbon samples were removed. Depths are in inches below surface (in b.s.).

Hole #1, 0-9 in b.s.: 2 STP body sherds, 2 king's crown shells (fragmentary), 4 saltwater catfish elements (2 otoliths, 1 neurocranial fragment, 1 lateral spine), 1 mullet vertebra, 1 large bony fish premaxilla fragment, 1 bony fish vertebra; 9-24 in b.s.: 1 turtle longbone fragment (humerus or femur), residual Carolina marsh clam valves after removal of radiocarbon sample.

Hole #2, 15-24 in b.s.: unwashed limestone rocks and Carolina marsh clam valves.

Hole #3, 15-28 in b.s: 1 robust left-handed whelk shell fragment (possible tool fragment, imported shell), 1 limestone fragment (flat), unwashed oyster and Carolina marsh clam valves.

Hole #4, 0-6 in b.s.: 1 STP body sherd, 1 surf clam valve (imported shell), 1 bony fish bone fragment (sheepshead operculum fragment?), 1 turtle carapace pleural fragment (terrapin?), 1 deer phalange; 15 in b.s.: 1 eroded limestone rock, 1 unidentified bone fragment (bony fish?).

Hole #5, 24 in b.s.: 2 STP body sherds, 1 limestone rock, 4 oyster valves, 22 Carolina marsh clam valves, 2 unidentified bone fragments.

Hole #6, 8-24 in b.s.: 1 sizeable hyperostosis of a jack (cleithrum, cf. crevalle jack), unwashed oyster valves and limestone rocks (Carolina marsh clam valves removed for washing and radiocarbon dating).

Hole #7, 0-6 in b.s.: 3 STP sherds (1 rim, 2 body), 1 small limestone rock, 1 small left-handed whelk shell (fragmentary, imported shell), 1 turtle carapace nuchal; 6-24 in b.s: 1 STP body sherd (2 cross-mending fragments, fresh break), 1 alligator scute fragment.

Hole #8, 0-6 in b.s.: 1 quahog left valve fragment (large heavy valve, posterior portion, imported shell); 10 in b.s.: 1 scallop valve (cf. upper valve, imported shell); 24 in b.s.: 1 turtle bone fragment; Other: 1 moon snail shell, 1 bony fish rib fragment.

Hole #9, 6-17 in b.s.: small amount of dirt and shell fragments including 3 unwashed Carolina marsh clam valves (other Carolina marsh clam valves removed for washing and radiocarbon dating).

Appendix 4. Collections from postholes at Bridge B, West Ramp. These consist of collected items and residual materials from which radiocarbon samples were removed. Depths are in inches below surface (in b.s.). Nothing was collected from Holes #16, #21, #22, and #24.

Hole #10: 3 STP body sherds, 1 robust left-handed whelk shell fragment (apparent tool fragment with a portion of the outer lip intentionally ground smooth, imported shell), 1 mineralized fossil horse tooth, 1 tiny catfish otolith, 1 bony fish dorsal spine, 2 unidentified bone fragments; 6-24 in b.s.: residual Carolina marsh clam valves (some with cemented sand adhering) after removal of radiocarbon sample.

Hole #11 (all from 24 in b.s): 2 STP body sherds, 1 bony fish hyperostosis, 1 alligator scute.

Hole #12: 7 tiny catfish otoliths, 7 bony fish vertebrae, 1 bony fish vertebra fragment, 1 bony fish hyperostosis, 1 bony fish spine, 1 catfish (Arridae) neurocranial fragment, 1 turtle shell fragment, 1 snake vertebra, and 4 unidentified bone fragments; 12-23 in b.s.: 1 moon snail shell with predator drill hole, oyster valve fragments, and residual Carolina marsh clam valves (some with cemented sand adhering) after removal of radiocarbon sample.

Hole #13, 12-23 in b.s.: unwashed Carolina marsh clam valves.

Hole #14: 3-4 in b.s.: 1 ponderous ark valve.

Hole #15: 1 chunk of fossil-bearing stone; 0-6 in b.s.: 1 ponderous ark valve fragment.

Hole #17: 1 STP sherd (body or possible rim), 1 robust left-handed whelk shell fragment (possible tool fragment, imported shell).

Hole #18, 18-24 in b.s.: 1 STP rim sherd (thick body wall, incurving rim, pointed or very slightly champfered lip, four incised lines on interior surface of rim with two of them running parallel to the lip and two running diagonally, cross-mends with rim sherd from Hole #23), unwashed Carolina marsh clam valves, 1 turtle carapace peripheral, 1 longbone fragment.

Hole #19, 8-18 in b.s.: unwashed Carolina marsh clam valves, 1 stone crab claw fragment, 3 fragments of the distal end of a deer longbone.

Hole #20: 6 STP body sherds, 1 quahog valve fragment (utilized?), 2 bony fish opercula (2 small unidentified taxa), 2 bony fish vertebra (1 very large), 1 snake vertebra; 16-24 in b.s.: residual Carolina marsh clam valves (some with cemented sand) after removal of radiocarbon sample.

Hole #23, 18-20 in b.s.: 1 STP rim sherd (fairly thick body wall, incurving rim, pointed or very slightly champfered lip, three incised lines on interior surface of rim with two running parallel to the lip and one running diagonally, cross-mends with rim sherd from Hole #18), 1 large black drum atlas vertebra, unwashed Carolina marsh clam valves.

I N V O I C E

TO: Tom Henry, Special Projects Foreman
Charlotte County Parks, Recreation, and Cultural Resources

DATE: December 9, 2008

FOR: Tippecanoe Environmental Park,
Archaeological project for installation of bridge ramps at No Name Creek Midden:
Field work, analysis, and report preparation

AMOUNT: $1500.00

FROM: George M. Luer, Ph.D., Archaeologist
3222 Old Oak Drive
Sarasota, FL 34239

Luer's cellphone: 941-628-4412

Tippecanoe II Florida Scrub-Jay Mitigation Area
Land Management Plan

FCT Project No. 01-063-FF1

Prepared for

Florida Communities Trust
U.S. Fish and Wildlife Service

September 2011

Prepared By
Charlotte County Community Services
Parks and Natural Resources Division

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Appendices

1.0 INTRODUCTION

Tippecanoe II Florida Scrub-Jay Mitigation Area (Mitigation Area) is a 182-acre tract of environmentally sensitive land located in northwest Charlotte County, southeast of the Charlotte Sports Park (Figure 1). Flamingo Boulevard borders the east boundary of the Mitigation Area. Joppa Avenue and Como Street border the Mitigation Area to the north and south, respectively. Pear St. borders the Mitigation Area to the west. The Mitigation Area is located in Township 40 South, Range 21 East, Sections 14, 23, and 24 of USGS Quadrangle El Jobean. The Mitigation Area is adjacent to other county and state preserve land (Figure 6).

This property was acquired in 2006 to mitigate the impacts of two Charlotte County projects on seven scrub-jay families. Grant funding from the Florida Communities Trust (FCT) was used to acquire a portion of the Mitigation Area. The remainder was acquired using the Charlotte County Local Option Sales Tax, which has no restrictions on the use of the property.

The Mitigation Area was platted by General Development Corp. several decades ago, but was never developed. Approximately 38 acres of the 182-acre site consisted of undeveloped roads and their rights-of-way (ROW). The remaining acreage is dominated by scrub and scrubby flatwoods. Listed species such as the Florida scrub-jay (*Aphelocoma coerulescens*), the gopher tortoise (*Gopherus polyphemus*), and the osprey (*Pandion haliaetus*) have been observed within the Mitigation Area and other listed species such as the gopher frog (*Rana capito*), eastern indigo snake (*Drymarchon corais*), Florida mouse (*Podomys floridanus*), Sherman's short-tailed shrew (*Blarina carolonensis shermani*), southeastern American Kestrel (*Falco sparverius*), and Florida pine snake (*Pituophis melanoleucus mugitus*), have the potential to be present.

This Management Plan outlines the monitoring and management activities for the Mitigation Area, and was developed to ensure that the Mitigation Area will be developed in accordance with the Grant Award Agreement (Appendix A) and in furtherance of the purpose of the grant application. Key management strategies include prescribed burns and exotic/invasive species removal. Activities such as garbage removal, road removal, site security, grading of ditch lines and plow lines, and re-vegetation of the ROW has assisted in restoring the Mitigation Area to its native state. The Mitigation Area has good manageability; however, the adjacent land use of low-density residential may have an impact on the fire management (Section 3.5).

The Mitigation Area will be open to the public. Trails and a wildlife observation platform will further public enjoyment of this site. Regular tours of the Mitigation Area will be available for the willing public. Only passive use recreation (e.g. hiking, bird watching, etc.) will be allowed within the Mitigation Area. Ordinances prohibiting destructive uses such as ATV use, camping, illegal dumping, creating new trails, and others are already in existence or are being developed. Literature and advertising identify that Tippecanoe was acquired with funds from the Florida Communities Trust.

2.0 PURPOSE

Charlotte County is proposing two county projects that will impact a total of seven scrub-jay families. The first project proposes to enhance Edgewater Drive from a two-lane roadway to a four-lane roadway. The enhancement would start at the corner of Edgewater Drive and Collingswood Blvd and continue northwest along Flamingo Blvd. The project would end at the corner of Flamingo Blvd and State Road 776, a total of

three miles. This project is anticipated to impact six scrub-jay families. A second project, the Murdock Village Redevelopment Area in northwest Charlotte County was anticipated to impact one scrub-jay family.

It is the goal of Charlotte County to continue to restore and manage the mitigation area for the optimal health of each habitat and to maximize the diversity of both flora and fauna within the communities and habitats onsite. Priority management objectives include:

- Focus on managing for the Florida scrub-jay as an umbrella species where appropriate.
- Increase suitable habitat for the Florida scrub-jay to aid in the overall expansion of the species in Charlotte County.
- Increase habitat suitability for other known or potential listed species.
- Manage for reduction of wildfire fuel.

The Mitigation Area was purchased primarily to obtain an Incidental Take Permit from the United States Fish and Wildlife Service (USFWS) for impacting scrub-jays. The properties will be managed in perpetuity for scrub-jay conservation. Mitigation sites for both of these projects are adjacent and will be combined and treated as a single property for land management and public recreation purposes. The 150-acre mitigation area for the Edgewater Drive project occurs from Carbon Ave to the southern boundary. The 32-acre mitigation area for the Murdock Village project occurs from Joppa Ave south to Carbon Ave (Figure 2).

This particular property was purchased because it contains scrub habitat and scrubby flatwoods, which, once properly managed, will provide ideal scrub-jay habitat. It is anticipated that the current jay families will benefit from land management, that other jays may relocate to this area, and that the scrub-jay individuals and families will increase. Listed species such as gopher tortoises and indigo snakes may reside in these habitats, and will benefit from proper land management as well. *This Mitigation Area will be managed by the Charlotte County Community Services, Parks and Natural Resources Division (Division) for the conservation, protection, and enhancement of natural resources*.

The secondary purpose for acquiring this habitat is for public outdoor recreation and education that is compatible with the conservation, protection, and enhancement of the site (Section 4.2 and 5.2). Passive recreation is the desired future use of the Mitigation Area.

The future land use and zoning designations were changed 2008. The final future land use designation for Tippecanoe II is Preservation. The zoning designation for Tippecanoe II is Environmentally Sensitive.

Objectives of Recreation and Open Space Element, of the Charlotte County, Smart Charlotte 2050 Plan that would be furthered by managing the Mitigation Area include:

- **REC Objective 1.2 Park and Recreation Maintenance and Management**

  To protect and maintain existing parks and assets to preserve physical, environmental, functional, recreational and aesthetic values.

- **REC Policy 1.2.1 Public Awareness**

  The County shall protect, restore, and manage natural resources in parks and provide interpretive information regarding environmental resources, conservation easements and ecosystems within parks. The County shall consider the proper long-term ecological functions and recreational value of the land and will work to increase public awareness and understanding of ecological systems.

- **REC Policy 1.2.2 Park Management and Maintenance Guidelines**

  The County shall develop and implement guidelines for all park assets and improvements that will serve to provide a uniform basis for establishing management and maintenance practices and criteria which consider periodic, short and long-term needs.

- **REC Policy 1.2.3 Invasive Species Removal**

  The County shall develop and pursue invasive, exotic plant and animal eradication programs for parks and open space by 2012.

Objectives of Natural Resources Element, of the Charlotte County, Smart Charlotte 2050 Plan that would be furthered by managing the Mitigation Area include:

- **ENV Policy 2.2.7 Environmental Acquisition and Management**

  The County shall acquire and manage environmental lands using all available opportunities including, but not be limited to: levying an ad valorem tax; obtaining State, Federal and non-profit grant funding; land swaps; public/private partnerships; public/public partnerships (such as Florida Communities Trust); community land trusts; and conservation easements. All lands acquired by the County for preservation shall be managed to retain their environmental value.

- **ENV Policy 2.2.11 Land Management**

  The County, or duly authorized management agencies, shall develop and implement long range management plans for preservation or conservation lands consistent with the natural resources found on these properties.

- **ENV Policy 2.2.12 Public Awareness of Environmental Lands**

  In cooperation with other government agencies and non-profit groups, the County shall work to increase public awareness, appreciation, and (consistent with the resources found at each site) access to the publicly owned preserves and environmental parks within the County's borders.

- **ENV Policy 2.3.6 Exotic Plant Removal**

  The County shall continue to enforce the removal of invasive exotic plants. The County shall also prohibit the planting of species listed as noxious weeds by 5B-

57.007, Florida Administrative Code, and listed as invasive species on the Florida Exotic Pest Plant Council Invasive Plant Lists.

- **ENV Policy 2.3.8 Environmental Education**

  The County shall support efforts to increase the public's understanding and stewardship of wildlife, natural communities, and other natural resources through partnerships with non-profit organizations such as the Florida Master Naturalist Program, the Florida Yards and Neighborhoods Program, and the University of Florida Food and Agricultural Sciences program.

Acquisition and management of this Mitigation Area will also further the acquisition and management goals of the Florida Department of Environmental Protection (DEP) by adding conservation and recreational lands adjacent to Charlotte Harbor Buffer Preserve; and to the Charlotte County Community Services Department by adding conservation and recreation lands next to the Tippecanoe Environmental Park (Tippecanoe FCT # 92-012-P2A).

3.0 NATURAL AND CULTURAL RESOURCES

The valuable natural resources in the Mitigation Area include imperiled ecosystems, including scrub habitat, and endemic species. The most important tools for the management of the natural resources within the Mitigation Area will include prescribed fire and invasive species removal (Sections 3.4 and 3.5). The natural communities are delineated in Figure 4. During the mapping of the natural communities Division staff recorded common vegetative species within each community. No unusual vegetation was observed in any of the communities. When occurrences of previously unknown protected and special plant and animal species are observed onsite these observations will be reported to FNAI utilizing the FNAI Field Report Forms or on the FNAI web site at: http://www.fnai.org/FNAI_data/RareSpeciesDataForm.cfm.

3.1 Natural Communities

Scrubby Flatwoods

The Mitigation Area contains approximately 134 acres of scrubby flatwoods, which aerially, comprises the majority of the Mitigation Area. The Florida Natural Areas Inventory (FNAI) ranks scrubby flatwoods as rare or uncommon and restricted (FNAI and Florida Department of Natural Resources (DNR), 1990). This ecosystem is nearly endemic to Florida, but does appear in bordering states (Myers and Ewel, 1992). Scrubby flatwoods are generally characterized by an overstory of longleaf pine (*Pinus palustris*) and slash pine (*Pinus elliottii*), and a short, shrubby understory of saw palmetto (*Serenoa repens*), scrub oaks, wiregrass (*Aristida* spp.), gopher apple (*Licania michauxii*), rusty lyonia, lichens, and tarflower (*Bejaria racemosa*) (FNAI and DNR, 1990). The most common vegetation includes slash pine, saw palmetto, shiny blueberry (*Vaccinium myrsinites*), sand live oak (*Quercus geminata*), myrtle oak (*Quercus myrtifolia*), Chapman's oak (*Quercus chapmanii*), and staggerbush (*Lyonia fruticosa*). All scrubby flatwoods habitat within the Mitigation Area is minimally disturbed, but overgrown to varying degrees due to fire suppression. On 60 acres south of the Belden Ave and north of Wintergarden Ave., palmettos are overgrown, but tree canopy is not. On 73 acres from Wintergarden south to the Christopher Waterway, the flatwoods are succeeding into xeric hammock. The pine canopy is closing, and the oak trees are

growing large. On approximately one acre, the flatwoods contain a palm hammock depression. South of the Christopher Waterway, there is high pine tree mortality from previous hurricane activity and the canopy is open. Introducing the appropriate fire regime or mechanical thinning is the key strategy to restoring this habitat (Section 3.5).

Scrub

The Mitigation Area contains approximately 30 acres of scrub habitat. The FNAI ranks scrub habitat as imperiled both in-state and globally (FNAI and DNR, 1990). Florida scrub communities are unique to the state, although several neighboring states have similar habitats (Myers and Ewel, 1992). Scrub communities (synonyms: sand pine scrub, Florida scrub, sand scrub, rosemary scrub, oak scrub tend to be dominated by a closed to open canopy of sand pines (*Pinus clausa*), with an understory of scrub oak species and shrubs. Groundcover, if any, consists of lichens and, rarely, herbs. Common vegetation includes sand pine, sand live oak, myrtle oak, Chapman's oak, scrub oak (*Quercus inopina*), saw palmetto, rosemary (*Ceratiola ericoides*), rusty lyonia (*Lyonia ferruginea*), scrub hickory (*Carya floridana*), scrub palmetto (*Sabal etonia*), hog plum (*Ximenia Americana*), silkbay (*Persea humilis*), beak rush (*Rhyncospora* spp.), milk peas (*Galactica* spp.), and staggerbush (*Lyonia* spp.) (FNAI and Florida DNR, 1990). The most common vegetation includes Myrtle oak, Chapman's oak, sand live oak, hickory (*Carya* sp.), prickly pear (*Opuntia humifusa*), saw palmetto, staggerbush, and winged sumac (*Rhus copallinum*). All scrub habitat within the Mitigation Area is minimally disturbed but mildly to badly overgrown due to fire suppression. Patches of Brazilian pepper (*Schinus terebinthifolius*) have been observed within these communities. Introducing the appropriate fire regime is the key strategy to restoring this habitat (Section 3.5).

Hydric Hammock

The Mitigation Area contains approximately 17 acres of hydric hammock. Hydric hammocks are characterized as a well-developed hardwoods and cabbage palm (*Sabal palmetto*) forest, with a variable understory of palms and ferns. Typical plants include cabbage palm, laurel oak (*Quercus laurifolia*), red cedar (*Juniperus virginiana*), red maple (*Acer rubrum*), swamp bay (*Persea palustris*), sweetbay (*Magnolia virginiana*), water oak (*Quercus nigra*), southern magnolia (*Magnolia grandiflora*), wax myrtle (*Morella cerifera*), saw palmetto, bluestem palmetto (*Sabal minor*), needle palm (*Rhapidophyllum hystrix*), poison ivy (*Toxicodendron radicans*), dahoon holly (*Ilex cassine*), myrsine (*Myrsine floridana*), hackberry (*Celtis* spp.), sweetgum (*Liquidambar styraciflua*), loblolly pine (*Pinus taeda*), Florida elm (Ulmus americana), swamp chestnut oak (*Quercus michauxii*), American hornbeam (*Carpinus caroliniana*), Walter viburnum (*Viburnum obovatum*), royal fern (*Osmunda regalis*), peppervine (*Ampelopsis arborea*), rattanvine (*Berchemia scandens*), yellow Jessamine (*Gelsemium* spp.), and Virginina creeper (*Parthenocissus quinquefolia*). Although a comprehensive vegetation survey has not yet been conducted within the hydric hammock it is dominated by cabbage palm, peppervine, Carolina willow (*Salix caroliniana*), and non-scrub oak species, water oak, buttonbush (*Cephalanthus occidentalis*), poison ivy, and ferns. Although somewhat dry today, this hammock was likely a wetland before the Mitigation Area was platted. Road and ditch construction likely lowered the water table. This site is minimally disturbed, but contains a large amount of vegetative debris and some illegally dumped debris. Although this area burned previously, hydric hammocks rarely burn (FNAI and

DNR, 1990). However, because it has dried out over the last 30 years, it may carry fire when the adjacent scrubby flatwoods are burned (Section 3.5). If it does not carry fire, some mechanical thinning may be necessary in removing the vegetative debris (Section 3.5). Hydric hammocks are typically self-sustaining communities. Because it may be succeeding to another community type since the water table was lowered, the only management will be to keep the vegetative debris down and monitor conditions over time.

Historical aerial photos from 1953 reveal several streams that crossed the Mitigation Area. Later aerials from 1970 show the expansion and development of three of these streams into the Flamingo Waterway, the Christopher Waterway, and the Knox Waterway. Two of the streams were still present within the Mitigation Area (Publication of Archival, Library & Museum Materials, 2007). No wetlands are present in these areas today. Patches of Carolina willows and buttonbush and depressions in the ground currently remain where the stream beds once existed.

Ruderal

The Mitigation Area contains ruderal sites, of which 38 acres are associated with the road ROW and seven acres are associated with former land uses. FNAI and DNR (1990) do not have a typical plant listing for ruderal sites. Currently, the site is dominated by weedy colonizing species and grasses. After the removal of the roads and debris, these areas were allowed to re-vegetate with native vegetation, monitoring for exotic species will be ongoing for the restoration of this habitat. One ruderal site south of Joppa Ave. will be maintained as the park entrance and will remain an open field. This area may be the recipient of a community bat house (Sections 3.2 and 4.2).

Xeric Hammock

A small patch of xeric hammock (approximately 2 acres) is found within the Mitigation Area, north of the scrub. This xeric hammock may be an advanced successional stage of the neighboring scrub (FNAI and DNR, 1990). Xeric hammocks are classified as scrubby, dense, or low-canopy forests with little understory other than palmetto; or, a multi-storied forest of tall trees with an open or closed canopy. Typical plants in a xeric hammock include live oak (*Quercus virginiana*), sand live oak, laurel oak, turkey oak (*Quercus laevis*), blackjack oak (*Quercus marilandica*), red oak (*Quercus falcata*), sand post oak (*Quercus margarettae*), staggerbush, saw palmetto, sparkleberry (*Vaccinium arboreum*), pignut hickory (*Carya glabra*), southern magnolia, redbay (*Persea borbonia*), American holly (*Ilex opaca*), wild olive (*Osmanthus americanus*), black cherry (*Prunus serotina*), fox grape (*Vitis labrusca*), beautyberry (*Callicarpa americana*), bluejack oak (*Quercus incana*), Chapman's oak, persimmon (*Diospyros virginiana*), and yaupon (*Ilex vomitoria*) (FNAI and DNR, 1990). The xeric hammock within the Mitigation Area is dominated by large oaks, including live oak, and slash pine with a saw palmetto understory. Typically, xeric hammocks develop when fire has been excluded for 30 or more years. When fire occurs, typically every 30 to 50 years, it may be devastating and change the community. The xeric hammock will not likely be burned. However, because it is adjacent to the scrub community, some burning on the edge may occur. Removal and monitoring of invasive species will be the key in managing this habitat.

Listed Plant Species

Federally- or state-listed plant species that have been observed within the Mitigation Area include the Florida bonamia (*Bonamia grandiflora*) (federally threatened), and the beautiful pawpaw (*Deeringothamnus pulchellus*) (Federally and state- endangered). The

many-flowered grasspink (*Calopogon multiflorus*) (state endangered) has the potential to exist within scrub and flatwoods communities in Charlotte County (Chaffin, 2000 and Florida Department of Agriculture & Consumer Services Division of Forestry (DOF), 2007a). Wildlife

3.2 Wildlife

Typical animal species that inhabit scrub and scrubby flatwoods communities include the red-widow spider (*Latrodectus bishopi*), scrub wolf spider (Family Lycosidae), oak toad (*Bufo guercicus*), blue-tailed mole skink (*Eumeces eqregius lividus*), six-lined racerunner (*Cnemidophorus sexlineatus)*, coachwhip (*Masticophis flagellum*), common ground dove (*Columbina passerina)*, Florida scrub-jay, loggerhead shrike (*Lanius ludovicinianus*), eastern towhee (*Pipilo erythrophthalmus)*, and eastern spotted skunk (*Spilogale putorius*) (FNAI and Florida DNR, 1990). Several species that utilize these habitats are endemic to the state of Florida, including the Florida scrub-jay, the Florida mouse, the Florida scrub lizard (*Sceloporus woodi*), and sand skink (*Neoseps reynoldsi*) (Hipes et al., 2001). Many of these species have been observed within the Mitigation Area, including oak toads, six-lined racerunner, common ground dove, Florida scrub-jay, and eastern towhee.

Typical animal species that may be found in a hydric hammock include green anole (*Anolis carolinensis*), flycatchers, warblers, and gray squirrel (*Sciurus carolinensis*) (FNAI and DNR, 1990). Florida scrub-jays have been known to utilize this area.

Typical animal species that may be found in a xeric hammock include barking treefrog (*Hyla gratiosa*), spadefoot toad (*Scaphiopus holbrookii*), gopher tortoise, Florida worm lizard (*Rhineura floridana*), eastern fence lizard (*Sceloporus undulatus*), black racer (*Coluber constrictor priapus)*, red rat snake (*Elaphe guttata*), hognose snake (*Heterodon* spp.), crowned snake (*Tantilla* spp.), eastern screech owl (*Megascops asio*), turkey (*Meleagris gallopavo*), blue jay (*Cyanocitta cristata*), eastern mole (*Scalopus aquaticus*), gray squirrel, and eastern flying squirrel (*Glaucomys volans*) (FNAI and DNR, 1990). Many of these species have been observed within the Mitigation Area including gopher tortoise, black racer, red rat snake, screech owl, and blue jay.

A list of species observed to date within the Mitigation Area by County staff is supplied in the annual stewardship report. This list includes birds, mammals, amphibians, reptiles, and some distinct insects. As additional species are observed throughout the changing of seasons, wildlife surveys, or during management efforts, the list shall be updated.

Prior surveys have been conducted for gopher tortoises and scrub-jays within the Mitigation Area. Nightly and/or post-rain surveys may be conducted to record frog species via calls. Night surveys may also be conducted to determine the presence of owl species and nightjar species. In addition, burrow scope surveys of gopher tortoise burrows may be conducted to determine the presence of listed and non-listed species of rodents, reptiles, and amphibians that associate with gopher tortoise burrows.

Gopher Tortoises

A baseline survey for gopher tortoises, a Florida Fish and Wildlife Conservation Commission (FWC) Threatened Species, was conducted by Preserving the Environment through Ecological Research (PEER), Inc. in January 2007, in accordance with FWC's accepted methodology (Cox, J., D. Inkley, and R. Kautz. 1987). Approximately 41 acres of the 150-acre Edgewater Drive portion of the Mitigation Area were surveyed; 137

active and inactive burrows were documented (Appendix C). Of these 137 burrows, 13 were found in scrub, 16 were found in ruderal areas, and 108 were found in scrubby flatwoods. Tortoise density was calculated at 2.06 tortoises per acre for those 41 acres. The remainder was deemed as poor habitat and not surveyed. An additional 11 burrows have since been recorded in the Murdock Village portion of the Mitigation Area.
The appropriate carrying capacity varies from habitat to habitat depending on available resources. Scrub habitat may accommodate 0.8 tortoises/acre (Ashton and Ashton, 2007). Flatwoods habitat may accommodate up to four tortoises per acre (Ashton and Ashton, 2007). Old pasture may accommodate up to four tortoises per acre (Ashton and Ashton). Since the ruderal sites contain similar grassy and weedy vegetation, this estimate will be used for comparing tortoise density. While these initial figures would suggest that the tortoise population is under the carrying capacity, the Mitigation Area is largely overgrown with a high percentage of dead leaf litter, resulting in a decline of forage. Only 41 acres in the baseline report were conducive to surveying because the remainder was deemed as poor habitat condition. Once the Mitigation Area has undergone management for all tracts (Figure 7), and is deemed suitable habitat, the area will be surveyed again to see if it can potentially serve as a long term recipient site for tortoises.

Scrub-Jays
The FWC identified the northern portion of the Mitigation Area, as well as the portion south of the Christopher waterway as a Strategic Habitat Conservation Area (SHCA) for scrub-jays. SHCA lands are essential to providing some of the state's rarest animals, plants, and natural communities with the land base necessary to sustain populations into the future (Cox et al., 1994). A baseline survey for scrub-jays, a FWC and U.S. Fish and Wildlife Service (USFWS) Threatened species, was conducted by the Center for Avian Conservation, Inc. September 2001-February 2002 (Miller and Stith, 2002). The survey documented 16 scrub-jays (in four family groups) in the Tippecanoe South study area, which includes the Mitigation Area. This shows a considerable decrease from the 29 jays (in 14 family groups) that were documented for the same study area in 1992 as part of a Statewide Mapping Project (Fitzpatrick et al., 1994), which was not even as comprehensive as the 2002 study.
Management and monitoring (Section 3.5) of the Mitigation Area will assess the value of the habitat for scrub-jays. Currently, surveys have determined that the habitat does not meet most scrub-jay requirements due to fire suppression. All updated scrub-jay family data by the Division and USFWS to date are submitted in the annual stewardship reports.

Other Listed Species
A letter from the FWC identified the majority of the Mitigation Area to be a “Biodiversity Hotspot” for three to four focal species. These areas support rare plant and wildlife communities and co-occurring species selected by the FWC (Cox et al., 1994). Also, the FWC letter identified Priority Wetlands in the southern portion of the site, south of the Christopher Waterway. Although these areas are uplands, one to three focal wetland-dependent species identified by the FWC requires suitable upland habitat in close proximity to their wetland habitat (Kautz et. al, 1994). Bald eagles were identified as one of these focal wetland-dependent species in the Mitigation Area (Rousso, 2007) because they require shallow water for foraging and build their nests within 1.8 miles of water (FWC, 2007). Bald eagles have been observed within the scrub and scrubby flatwoods portion of the Mitigation Area, within a quarter mile of the Flamingo Waterway. Although no wetlands exist within the Mitigation Area, the adjacent waterways may provide bald

eagles with foraging opportunities. Also, there are tall pine trees within the Mitigation Area that may provide nesting sites.
Other listed species that may occur include the southeastern American kestrel (FWC threatened species), gopher frog (FWC Species of Special Concern (SSC)), eastern indigo snake (FWC and USFWS Threatened species), and Florida pine snake (FWC SSC). These species, except for the American kestrel, have the potential to associate with gopher tortoise burrows within Charlotte County (Hipes et al., 2001), and may be surveyed with a burrow scope. Observed listed species will be reported to FNAI using the standard FNAI reporting form.

3.3 Soils

The soils within the Mitigation Area are dominated by Isles fine sand, slough (65.6 acres); Wabasso sand, Limestone substratum (65.3 acres); and Immokalee sand (25 acres). Isles fine sand, slough is typically associated with depressions and drainages that are not associated with streams or lakes. However, this sand zone corresponds with the former creeks and wetlands that crossed the Mitigation Area, until the construction of the Flamingo Waterway, the roads, and the ditches drained these wetlands. Although, some small patches of hammock remain, this area has since dried. Wabasso sand, limestone substratum and Immokalee fine sand are associated with flatwoods (NRCS, 2007 and Soil Conservation Service, 1981).

Other soils within the Mitigation Area include Felda fine sand and Oldsmar fine sand, limestone substratum, which were also associated with historical wetlands before the construction of the Flamingo Waterway; and Oldsmar sand and Boca fine sand, which are associated with flatwoods (Figure 5).

3.4 Invasive/Exotic and Feral Species Management

Exotic/Invasive Plants

Exotic, or nonnative, plants reduce the quantity and quality of habitat available for native wildlife, especially when those exotic species become invasive and out-compete the native habitats. Exotic species should be removed to benefit the listed species observed and the listed species that have the potential to be present (Section 3.2).

Exotic/invasive species observed within the Mitigation Area include Brazilian pepper, melaleuca (*Melaleuca quinquenervia*), lantana (*Lantana camara*), and cogongrass (*Imperata cylindrica*), with the most widely distributed being the Brazilian pepper and the melaleuca. These species are ranked as a Category I according the 2005 List of Invasive Species from the Florida Exotic Pest Plant Council (FLEPPC). Category I species alter native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives. This definition does not rely on the economic severity or geographic range of the problem, but on the documented ecological damage caused (FLEPPC, 2005).

After an initial treatment in 2007, all exotic/invasive species are at very manageable levels. Ongoing monitoring for exotics throughout the mitigation area will continue and will be treated on an as-needed basis. Prevention is the most effective method of control; staff continually monitors the sites for early detection and control of populations. Currently, efforts to eradicate these Category I species closely parallel the exotic species control plans recommended by FLEPPC. Application of the most recent treatment

recommendations by species are available via the FLEPPC web site (http://www.fleppc.org/).

Exotic/Feral Animals
Feral pigs (*Sus scrofa*) are known to move through Tippecanoe II Mitigation Area Environmental on a regular basis, but do not seem to remain on the property for long periods of time. County staff implemented a trapping program for pigs in 2002 at Tippecanoe Environmental Park that is ongoing.

Domestic cats (felis domesticis) are dropped off occasionally at the property. These animals have the potential to severely impact the scrub-jays and other listed species. The cats are trapped and removed as they are discovered.

Cuban anoles (*Norops sangrei*) have been also been observed within the Mitigation Area. There is no state, federal, or local eradication program being implemented for Cuban anoles. Other than recording observations within the Mitigation Area, there is no monitoring planned for Cuban anoles.

European starlings (*Sturnus vulgaris*) have been seasonally observed within the Mitigation Area. There is no state, federal, or local eradication program being implemented for European starlings, except in individual situations. Other than recording observations within the Mitigation Area, there is no monitoring planned for European starlings.

No other exotic or feral animals have been observed within the Mitigation Area.

Monitoring
An annual site inspection, to exclusively assess the presence of invasive/exotic species (plant and animal), will be conducted. These annual inspections will be conducted in perpetuity in order to prevent re-infestation or infestation of new species. If invasive/exotic species are determined to be present, removal strategies will be implemented within that year.

3.5 Mitigation Area Management

Both scrub and scrubby flatwoods are fire-maintained communities. In the absence of fire, these communities may succeed into a xeric or mesic hardwood hammock (Myers and Ewel, 1992). Because scrub habitat is ranked as imperiled (FNAI and DNR, 1990) and scrubby flatwoods is ranked as rare (FNAI and DNR, 1990), it is imperative that these habitats receive the proper burn regime for conservation and the benefit of the wildlife that live in these ecosystems.

Fire is one of the key management strategies within the Mitigation Area. Because of the proximity to homes and roads, however, weather parameters are limiting for burning any portion of the property. When and where fire is not able to be used, mechanical treatment will be utilized instead. Mechanical treatment may also be used to supplement burning before and/or after a fire in order to obtain the desired results for each management unit. All management units have perimeter fire-lines which are maintained throughout the year. Burning is coordinated with the DOF, specific burn plans are written for each management tract as part of the burn planning process. Charlotte County's outreach program to inform residents of the area of the benefits of prescribed burns includes presentations, direct mailings and additional coordination with DOF.

The Mitigation Area is divided into Management Tracts (Figure 7). Each tract will have its own unique combination of fire, mechanical thinning, and monitoring based on the conditions. Management of the Mitigation Area will be coordinated with adjacent public landowners. The Mitigation Area is specifically being managed for the Florida scrub-jay; specific goals can be found in section 3.6.

Roads
Several decades ago, the Mitigation Area was platted by General Development Corp. As a result, approximately 38 acres of the 182-acre site was associated with paved roads and their ROW, resulting in considerable fragmentation of the habitat. In 2008 all roads not providing egress/ingress to existing homes were removed.

Management Monitoring
Fitzpatrick et al. (1991) recommends burning oak scrub every five to 20 years in order to allow the scrub oaks to produce a mast acorn crop that is sufficient to support jays. Flatwoods commonly burn between every one to eight years (Behm and Duryea, 2003). Post-management surveys will help determine the timing of the next management regime, whether burning or mechanically thinning.

Surveys will be taken pre-management and post-management to assess the value of the habitat for scrub-jays, within all natural communities, including road ROW and road restoration areas. These surveys will measure the following categories: height of the shrub layer, the areal coverage of shrub layer, the percentage of scrub oaks in the shrub layer, presence of a mast crop, the areal coverage of bare substrate, the canopy cover, and the canopy species. Photo points will be established at each of these transects with rebar. Photographs will be taken at the same height, in each of the four cardinal directions.

Management of the Mitigation Area will also serve to enhance the water quality of the adjacent waterways, by eliminating development, removing impervious surfaces, and restoring habitats which filter sediments and nutrients before discharging into the water. The waterways flow into Tippecanoe Bay, which is part of the Gasparilla Sound – Charlotte Harbor Aquatic Preserve, a state-designated aquatic preserve and Outstanding Florida Water.

3.6 Habitat Conservation Plan Requirements

The Mitigation Area was purchased primarily to obtain an Incidental Take Permit from the United States Fish and Wildlife Service (USFWS) for impacting scrub-jays. The properties will be managed in perpetuity for scrub-jay conservation. As part of the Incidental Take Permit, the County prepared a Florida scrub-jay Habitat Conservation Plan (HCP). The HCP outlines the biological goals and objectives to mitigate for the impacts to scrub jays, these goals, objectives, management considerations and monitoring requirements are outlined below:

- Biological Goals:
    - Reduce extinction risk and increase population persistence by acquiring, restoring, and permanently managing identified Florida Scrub-Jay habitat.
    - Enhance recovery potential of the impacted Charlotte County Metapopulations.

- Protect the biological integrity and species diversity that is characteristic of the scrub systems by returning the mitigation areas to conditions representative of the historical landscape.

- Biological Objectives:
  - Acquire the scrub tracts identified in section 2.8 of this document.
  - Apply mechanical treatments to reduce the tree canopy to less than 20% and to eliminate nonindigenous invasive tree species. Logging operations shall be used as the primary mechanical technique to thin pine trees and to remove tree sized (> 3.0 inch diameter at breast height (dbh)) scrub oaks and cabbage palms. Nonindigenous invasive species will be removed with a combination of cut-stump herbicidal control, bulldozing, mowing, or bull-hogging. Pines will be thinned to 20%-30% of the canopy, but will not be removed in their entirety.
  - Initiate an aggressive restoration burning program (in areas that are remote enough) after completion of mechanical treatments. Burns will be conducted during the summer fire season, post nesting (July) wherever conditions within the burn prescription allow. Where fire is not practical, vegetative debris will be removed from site, shrub height will be reduced mechanically and open areas will be created mechanically.
  - Establish a comprehensive monitoring program that annually, for the term of the ITP, monitors the success of the applied mechanical and fire management treatments in achieving the biological objectives. The presence of optimal Florida Scrub-Jay habitat requirements found in Fitzpatrick et al. 1991 and described in section 5.4 will be used by the applicants to measure achievement of these biological objective at the landscape scale.
  - Explore the potential of establishing interagency partnerships with FWS, FWC, DEP, SWFWMD, and DOF and/or obtaining additional funding through grants for management and education.

- Management Considerations:
  - The scrub and scrubby flatwoods will be managed with a combination of fire and mechanical means. The scrub and scrubby flatwoods will be managed for Florida Scrub-Jays according to methods in the most current Habitat Requirements issued by the United States Fish and Wildlife Service or the Florida Fish and Wildlife Conservation Commission.
  - Scrub will be maintained so as not to exceed 3 meters (9.8 feet) in height. Fire and mechanical management will decrease the height of the scrub oaks, as well as decrease the density of saw palmetto and other woody vegetation.
  - Fire frequency will be determined based on habitat parameters from monitoring events at individual sites, rather than set time intervals. Mitigation areas will be managed in mosaic landscape so that the compensation areas maintain microhabitats and variability.
  - Within one year from acquisition, exotic flora and fauna will be removed, and the tree canopy and sub-canopy will be reduced.
  - Fire breaks will be placed along existing jeep trails, plow lines, or disturbed areas whenever possible.
  - Feral cats will be trapped and removed from the mitigation area.

- Monitoring:
    - Habitat assessments shall be performed annually during the spring (February-March). Details will include representative 10 meter^2 plots for assessments of pine canopy coverage, canopy height, percent oak coverage, percent bare sand, scrub oak height, species composition and coverage of nonindigenous species.
    - Records on mechanical or fire (both prescribed and wild) will be recorded.

    - Representative photo points, at least one per 25 acres, will be randomly installed in several locations within each of the compensation areas for long term vegetation monitoring. Qualitative and quantitative sampling will be conducted.
    - Florida Scrub-Jay surveys will be conducted at least twice annually; pre-nesting (February) and post-fledging (July). Surveys will be conducted according to standard Florida Scrub-Jay protocols.

3.7 Greenways and Trails

Charlotte County Resolution No. 980440A0 pledged to develop an integrated system of trails, greenways, corridors, preserves, and waterways, in order to provide a foundation for the eco-tourism industry, provide wildlife corridors, and enhance public access to and appreciation of the County's natural resources. The Mitigation Area will enhance Charlotte County's existing integrated network of greenways and blueways by creating additional publicly-owned, passive-use open space adjacent to and in the general vicinity of this integrated network. A map of publicly-owned land within the vicinity of the Mitigation Area is provided in Figure 6.

Tippecanoe Environmental Park (Tippecanoe) is adjacent to the Mitigation Area (across Flamingo Waterway), which allows wildlife movement between the two sites. State land is within a mile of the Mitigation Area, and directly adjacent to Tippecanoe. The Mitigation Area is accessible by the Flamingo Waterway, the Christopher Waterway, and by walking and biking pedestrians from Flamingo Blvd. There is no land trail that directly connects the Mitigation Area with Tippecanoe or the state land due to the canals. A 5' concrete sidewalk will be eventually be constructed along the east side of the road for the Edgewater Drive expansion project, linking pedestrian access from the Mitigation Area to Tippecanoe (Section 4.2). Also, because the canals are part of Charlotte County's Blueway Trail systems (Figure 12), they provide access to both of these preserves by water. While the Mitigation Area will not have an official canoe or kayak launch, there are places along the Flamingo Waterway that may accommodate a canoe landing. The Blueway Trail also accesses the Tippecanoe Bay, part of the Gasparilla Sound – Charlotte Harbor Aquatic Preserve, a state-designated aquatic preserve and Outstanding Florida Water.

Although not public land, the Mitigation Area is directly adjacent to a 7-acre conservation easement managed by the Charlotte Harbor Environmental Center (CHEC) (Figure 2). CHEC maintains this area for scrub-jays by periodic mechanical thinning.

Charlotte County currently has a land acquisition program, Conservation Charlotte, which may create further greenways and trails in this area.

It is important that the Division coordinate with federal, state, and local agencies on the management of this greenway and blueway corridor, as management of one property may affect or enhance the management objectives of another. Coordinated management is discussed in Sections 3.5 and 5.1

3.8 Archeological, Cultural, and Historical Resources

The Mitigation Area does not contain, or is not within ¼ mile, a site listed on the National Register of Historic Places by the National Park Service or a site listed in the Florida Master Site File maintained by the Department of State, Division of Historical Resources (Historical Resources).

The Mitigation Area is not recognized by a local historic board or the Historical Resources as being significant at the local, regional, or state level. The closest historical site, CH00497, is within ½ mile south of the Pear St. and Maureen St. intersection (Southeastern Archeological Research, Inc., 2008). The report does not detail this site.

According to one historian, Hernando DeSoto may have camped within the Mitigation Area in 1539, at the present Flamingo Waterway between Joppa Ave. and Wintergarden Ave. (Sheppard, 2007). However, supporting archaeological evidence has not been officially documented (Luer, 2002). An archelogocal survey was conducted in June 2011 and is provided in Appendix D.

The Division of Historical Resources will be contacted immediately if evidence is found to suggest an archaeological or historic resource/site at the Mitigation Area. If artifacts or historic sites are discovered, collection or disturbance will be prohibited without authorization from the Division of Historical Resources. If artifacts or historical sites are discovered, the Division of Historical Resources will be coordinated with and management will comply with Chapter 267, Florida Statutes, Section 267.061 2(a) and (b). Any significant resources will be interpreted for the public using educational signs.

4.0 SITE DEVELOPMENT

4.1 Existing Physical Improvements

Existing physical structures within the Mitigation Area include improvements that provide for appropriate public access. The following improvements are existing:

- **Entrance Signage** – An entrance sign, bearing the Charlotte County logo and park name will be will be installed and maintained at the entrance area on Joppa Ave. Included with this sign will be an additional acknowledgement sign identifying the Mitigation Area being purchased with funds from “Florida Communities Trust.” The acknowledgement sign shall be 4’X4’ in size and include the FCT logo and the year the site was acquired.
- **Mitigation Area Public Access** – Joppa Ave, at the northern border of the Mitigation Area, provides access as the entrance for the Mitigation Area. A compacted dirt road connects Joppa Ave to the parking area. The parking area is located on a former outdoor basketball court that has been augmented with crushed shell and accommodates 10 vehicles, including one ADA accessible space. A fence and locked gates exclude vehicles from entering the remainder of the Mitigation Area. A pedestrian walk-thorough, adjacent to the gate, allows foot-traffic from the parking area to the trailhead and trail system. Pedestrians

may also enter the Mitigation Area trail system at other pedestrian crosswalks located on Wintergarden Ave, Jessica Terrace, Calhoun Lane, Gabor Street, and Samantha Ave (Figure 6).

- **Nature Trails** – A network of dirt nature trails over one mile in total length, a portion of which will be a loop trail, will be provided. The nature trails will begin at the parking area, traversing around sensitive natural communities. The trails will follow existing roadways and ATV trails when possible to minimize disruption to the natural communities. There will be no trails south of the Christopher Waterway because this area is too small and isolated from the main Mitigation Area to justify the habitat disruption that would result from public use (i.e., secondary parking lot and new trails).
- **Interpretive Signs and Kiosks** – Signage will be provided throughout the Mitigation Area to identify trails, facilities, and educational features.
    - A two-paneled kiosk, six feet tall, will be installed at the trailhead on Joppa. Each panel measures 24" x 30." At least two educational signs will be featured on this panel, allowing room to post news or seasonal information.
    - An educational sign, measuring 8.5"x11, will be developed for the butterfly garden once it is constructed.
    - Vegetation ID tags for the butterfly garden.
- **Fencing**
  Access to the Mitigation Area will continue to be restricted to foot traffic only outside of the planned parking area. Fencing has been installed to secure the entire perimeter of the site. Signage was installed at key points along the fencing to advise visitors of the restricted areas. The fencing is made of 4 barbless strands of wire on poles that space up to 20 feet apart. Seven locked gates provide vehicle access to the Mitigation Area for Division personnel or emergency vehicles. Seven pedestrian walk-throughs allow foot-traffic to the trail system. Signage will clarify restricted areas, times, and activities.
- **Road Removal and Grade** – All of the roads not providing access to residents such as Joppa Ave, Wintergarden Ave, Maureen Ave, Christopher St., Jessica Terrace, Como St. Caldwell Ln., and segments of Calhoun Ln., Centennial Ln., Gabor St., and Majestic St. have been removed. During the reclaiming process, the road is grinded into a fine sand, 12-18 inches deep, and tilled back into the soil. Several roads within the Mitigation Area fence line will be maintained for access, and are specified on Figure 3.
- **Covered Picnic Pavilion/Wildlife Observation Platform** – Due to the nature of the natural communities onsite, the wildlife observation platform amenity would not provide an enhancement to the park, and likely would not get very much use. A covered picnic pavilion is provided near the entrance of the park in an area formerly disturbed. The pavilion is approximately 10' x 10' and will accommodate at least 4 picnic tables; two tables are provided at this time.
- **Dirt Mound -** When the Flamingo Waterway was developed, the excavated soil was piled along the banks. The dirt mound within the mitigation area is approximately 20 feet high, 350 feet long, and provides a good overview of the Mitigation Area. Over the years, the dirt mound has partially re-vegetated. Several gopher tortoise burrows are located on the slope of this mound.
- **Bike Rack –** A bike stand is provided at the main entrance parking lot.

4.2 Proposed Physical Improvements

Proposed physical improvements will provide for appropriate public access compatible with the project, while meeting the management goal of conservation, protection, and enhancement of the Mitigation Area's natural resources. Charlotte County will request written approval from FCT before undertaking any alterations or physical improvements that are not addressed in the MP.

Listed species surveys will identify any protected vegetation or wildlife inhabiting the Mitigation Area. Site plans will be adjusted accordingly to protect any such species. The development of nature trails, interpretive signs and displays, observation platforms, and permanent fire breaks will utilize existing roads, trails, and disturbed areas to the greatest extent possible in order to minimize disturbance of native vegetation and reduce fragmentation. The main park amenities will occupy approximately five acres of disturbed habitat, with access from Joppa Ave. off of Flamingo Blvd. A Master Site Plan of proposed structures and developments is presented in Figure 3. The following improvements are proposed:

- **Sidewalk Access** – A five foot concrete sidewalk will be constructed along the east side of Flamingo for the Edgewater Drive expansion project, allowing pedestrian access. Currently, the road is scheduled to be constructed between 2010 and 2012. Therefore, the sidewalk will not be constructed until this time. It is unknown where the exact location of the sidewalk will be.
- **Landscaping –** The fence along the entrance road is landscaped with native muhly grass. The Division is currently working on finding a non-profit organization to set-up and maintain a butterfly or wildlife garden using native plants. Specific details of the butterfly garden will be determined by the organization that will maintain the garden; only native plants will be utilized. At least one picnic table will be provided in the vicinity of the butterfly garden.
- **Benches** – A minimum of 2 benches will be provided in the vicinity of the butterfly garden.
- **Trash facilities** – No trash cans or recycling bins are planned, due to funding. The Mitigation Area will implement a policy of bringing out what is taken in.

The entire Mitigation Area is located within the 100-year flood plain, defined as Zone A by Federal Emergency Management Agency (Figure 8). Because there are no major structures planned for this Mitigation Area, this designation will not affect site design. The majority of the Mitigation Area is located within a Category 2 Storm Surge. A small portion at the northern tip may be within a Category 1 Storm Surge (Figure 9).

Any proposed modifications of the MP and/or undertaking any site alterations or physical improvements that are not addressed in this MP require FCT review and approval.

4.3 Easements, Concessions and Leases

There are two existing easements within Tippecanoe II Mitigation Area. The first easement provides ingress/egress to a landlocked parcel along the Flamingo waterway. This easement was provided at the time of acquisition. One additional easement occurs to provide underground utilities (FPL and Verizon) to the pre-existing homes along the Flamingo waterway, as well as to the outparcels adjacent to Tippecanoe II. Charlotte County maintains the mowing of the easement as part of general land management.

The Division will provide FCT 60 day prior written notice and information regarding any lease of any interest, the operation of any concession, any sale or option, the granting of any management contracts, and any use by any person other than in such person's capacity as a member of the general public, and no document will be executed without the prior written approval of FCT. If fees are collected, they will be placed in a segregated account solely for the upkeep and maintenance of the Mitigation Area.

5.0 MANAGEMENT NEEDS

5.1 Coordinated Management

Management activities will be coordinated with local, state, and federal agencies as follows. Publicly owned lands within the vicinity of the mitigation area are presented in Figure 6:

- The **USFWS** will be coordinated with to ensure federal regulations regarding wildlife are enforced within the Mitigation Area boundaries. USFWS guidance and expertise may also be sought in habitat restoration and management of federally listed wildlife species utilizing the project site.
- Any proposed modifications of the MP and/or undertaking any site alterations or physical improvements that are not addressed in this MP require **FCT** review and approval.
- The **DOF** will be asked to assist in prescribed burning, as may be necessary, and for the required authorizations to conduct such burns. They will also be called upon to assist with wildland fire emergencies.
- The **FWC** will be coordinated with to ensure state regulations regarding wildlife are enforced within the Mitigation Areas boundaries. FWC guidance and expertise may also be sought in habitat restoration and management of state listed wildlife species utilizing the Mitigation Area. **CHEC** may be coordinated with for management of where the County parcel adjoins theirs.
- A copy of this MP will be supplied to the **DEP, Charlotte Harbor Aquatic & State Buffer Preserve**, due to their adjacent location to the Mitigation Area.
- The **Mangrove Chapter of the Florida Native Plant Society** will be coordinated with to conduct listed plant surveys; and to contribute to public education efforts.
- The **Charlotte County Sheriff's Office (Sheriff)** may be asked for assistance with security and vandalism concerns.
- The **Charlotte County Animal Control** may be asked for assistance with the removal of stray or feral pets.
- The **Charlotte County Fire and Emergency Medical Services Department (Fire/EMS)** may be asked for assistance in conducting prescribed burning and responding to emergencies as necessary.
- Adjacent **neighborhood associations** and **property owners** will be asked to report suspicious activity.

5.2 Public Education and Outreach

The Division is committed not only to providing appropriate outdoor recreational facilities to allow the community access to the Mitigation Area, but also educational programming opportunities to facilitate a greater understanding and appreciation of their natural resources. The environmental education program includes

- **Providing organized excursions into the Mitigation Area**. At least 12 regularly scheduled environmental programs per year will be provided at the

Mitigation Area by Division staff or a non-profit organization partner. These programs may include:
  - Evening/nightly tours featuring frog and owl calls.
  - Daytime nature walks featuring the plants and natural communities
  - Daytime nature walks featuring birds and other species
  - Daytime walks featuring commensal animals in gopher tortoise burrows using a burrow scope.
- **Providing self-guided excursions into the Mitigation Area.** Trail signs, educational kiosks, trail maps, and a wildlife checklist will be available to the public through the County's website.

Organized program descriptions will be included in the annual stewardship report, including types of programs, population served, and frequency of event.

5.3 Maintenance

The Division has the responsibility for managing and maintaining the Mitigation Area. Upon completion of construction of the planned improvements for public access, the site will have a dedicated contracted staff or volunteer/community service workers to perform routine maintenance tasks, including

- Mowing and pruning of vegetation around the entrance, parking areas, trails, and fire breaks
- Upkeep and cleaning of the facilities (including parking areas, fencing, kiosks, and signage)
- Garbage and debris removal
- Land Management (including removal of exotic species and controlled burns)

The maintenance objectives for the Mitigation Area are visitor and employee health, safety, and welfare while assessing the site, maintenance of aesthetic qualities, and protection of natural resource values.

5.4 Security

The Division ultimately has the responsibility for site security, including prevention of vandalism, property damage, unauthorized vehicle access, and trespassing. A three pronged approach to site security will be employed by the Division:

- **Staff** – Division staff shall monitor the integrity of the fences, repair damage by vandalism, monitor the site for evidence of ATV use, and take measures to clarify restricted areas and activities to citizens with signage.
- **Sheriff, Fire/EMS, and DOF** – Shall respond to emergency calls from citizens.
- **Signage and Fencing** – Fencing shall be installed to restrict ATV and vehicle access. At each point in which the fence crosses a former road, two red diamond-shaped signs are posted to signify the road closure and bring attention to fence. A "Property of Charlotte County" sign is also posted at each of these points.

5.5 Staffing

The Division will provide staffing, management, and maintenance for the Park. A full time Environmental Specialist will be directly responsible for all land management activities. Assistance from other Environmental Specialists and additional Department staff will be available as needed and the support of the Division Manager and other

administrative positions will be available. Additional staffing may be obtained through volunteers, non-profit organizations, and/or contracted services as needed.

6.0 COST ESTIMATE AND FUNDING SOURCES

A portion of this Mitigation Area was acquired using funds from FCT. The remainder was funded by Charlotte County Local Option Sales Tax. The Mitigation Area will be managed using ad valorem County taxes.

Cost estimates for this project were initially prepared by PEER, Inc. Some of the estimates have been updated and vary from what was included in the initial PEER, Inc. report.

The cost estimate was broken into seven major categories:

- **Structures and Improvements**
  - Parking Area - $1,640 (Resurface and repainting)
  - Picnic Pavilion - $8,000
  - Miscellaneous amenities (benches, picnic area, butterfly garden) - $3,000
  - Fencing, Gates, and trail- $62,288 (Materials and labor)
- **Natural Resource Protection**
  - Scrub-Jay Habitat photo-monitoring – $100
  - Feral animal/Exotic plant monitoring - $2,900
  - Exotic vegetation treatment - $12,000
  - Exotic/Feral animal removal - $2,900
  - Remote camera wildlife monitoring and security - $850
  - Listed species survey – in house or volunteer
- **Resource Enhancement**
  - Road Removal - $78,300
  - Fire breaks – included in Road removal
  - Restoring Ditch and Plow Lines - $5,600
  - Controlled burning – $5,600 (One rotation of all management units, approximately 350 burnable acres at approximately $16 per acre, in house cost)
  - Mechanical thinning - $63,000 (One rotation of management units, approximately 100 acres at $630 per acre)
  - Initial Garbage and debris removal - $8750
- **Archeological and Historical Resource Protection**
- **Educational Program**
  - 12 classes per year – $1,800
  - Educational signs and kiosk - $3,412
- **Maintenance - Total $8,166**
  - Mowing and pruning of vegetation around the entrance, fence, parking area, trails, and fire breaks - $6,000 annually at $1,500 per event
  - Upkeep of facilities (parking area, fencing, kiosk, signage) - $300 annually ($300 per fence repair, estimate 1 repairs per year)
  - Periodic Exotic Species Treatment -$2,400 per event
  -
- **Staffing –** see Section 5.5

7.0 PRIORITY SCHEDULE

A priority schedule that details a timeline for major events is included in Appendix B. This priority schedule in covers 20011-2020.

8.0 MONITORING AND REPORTING

8.1 Stewardship Report

It is the Division's responsibility to provide an Annual Stewardship Report each year on October 30th, as required by Rule 9K-7.013 F.A.C. which evaluates the implementation of the Management Plan.

Any proposed modification of the MP and/or undertaking any site alternations or physical improvements that are not addressed in the FCT-approved MP requires FCT review and approval.

8.2 Habitat Assessment Monitoring

The goals of habitat assessment monitoring are to evaluate management efforts to ensure they are meeting ideal habitat requirements that are required for scrub-jays and other listed species to thrive. Evaluations from these monitoring efforts will be included in the Annual Stewardship Report.

Monitoring efforts have been described at length in Sections 3.1, 3.4, and 3.5. Those monitoring efforts are summarized here:

- Pre-management scrub-jay habitat inspection for each management tract and a 3-month initial post-management scrub-jay habitat inspection for each management tract where management has occurred
- Ongoing inspection for feral pig (or other invasive species) damage.
- Listed Plant Survey
- Bird surveys
- Scrub-jay surveys
- Gopher tortoise surveys as needed
- General surveys/site inspections.

9.0 REFERENCES

Arny, N. 2006. *Common oaks of Florida*. FOR51. University of Florida, IFAS Extension.

Ashton, R. and P. Ashton. 2007. *The natural history and management of the gopher tortoise (Gopherus polyphemus* Daudin). Draft. Ashton Biodiversity Research & Preservation Institute.

Auffenberg, W., and R. Franz. 1982. *The status and distribution of the gopher tortoise (Gopherus polyphemus)*. Pp. 95-126 in North American tortoises: conservation and ecology. Wildlife Research Report No. 12, U.S. Fish and Wildlife Service, Washington, DC.

Behm, A. and M. Duryea. 2003. *Fire in the wildland-urban interface: considering fire in Florida's ecosystems*. University of Florida Institute of Food and Agricultural Services.

Chaffin, .G. 2000. *Field guide to the rare plants of Florida*. Florida Natural Areas Inventory, Tallahassee, FL.

Cheatham, A. 2007. Charlotte Harbor Environmental Center. Telephone conversation with Kim Hermann, Charlotte County Natural Resources. May 10.

Cox, J., D. Inkley, and R. Kautz. 1987. *Ecology and habitat protection needs of Gopher Tortoise (*Gopherus polyphemus*) populations found on lands slated for large-scale development in Florida*. Florida Game and Fresh Water Fish Commission, Nongame Wildlife Program Technical Report No. 4, Tallahassee. 75pp.

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

DOF. 2007a. *Florida's federally listed plant species*. Available online at http://www.fl-dof.com

DOF. 2007b. Fires by Section/township/range. Myakka River District. April 26. Available online at http://www.fl-dof.com/

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

Fitzpatrick, J.W., B. Pranty, and B. Stith. 1994. *Florida scrub-jay statewide map 1992-1993*. Report from Archbold Biological Station, Lake Placid, Florida.

FLEPPC. 2005. *List of Florida's Invasive Species*. Florida Exotic Pest Plant Council. Internet: http://www.fleppc.org/list/05list.htm

Florida Natural Areas Inventory and Florida Department of Natural Resources. 1990. *Guide to the natural communities of Florida*. February.

FWC. 2007. *Draft Bald eagle management plan*. November 2. Tallahassee, Florida.

Hipes, D., D. Jackson, K. NeSmith, D. Printiss, and K. Brandt. 2001. *Field guide to the rare animals of Florida*. Florida Natural Areas Inventory.

Kautz, R., J. Cox, M. MacLaughlin, J. Stys. 1994. *Mapping wetland habitats of high priority to endangered and threatened species in Florida*. Final Project Report. Revised 2000.

Luer, G.M. 2002. *Archaeology and faunal analysis at Tippecanoe Bay*. Florida Anthropological Society. Publication No. 15, Archaeology of Upper Charlotte Harbor, Florida. September, pages 49-71.

Miller, K. and B. Stith. 2002. *Florida scrub–jay distribution and habitat in Charlotte County*. Final Report. Center for Avian Conservation, Inc. Contract # 2001000116: Scrub-Jay Survey. December.

Miller, K. 2008. Florida Fish and Wildlife Conservation Commission. Email to Kim Hermann, Charlotte County Natural Resource. February 1.

Myers, R. and J. Ewel. 1992. *Ecosystems of Florida*. University of Central Florida Press.

NRCS. 2007. Web soil survey. Available online at http://websoilsurvey.nrcs.usda.gov/app/

Publication of Archival Library & Museum Materials. 2007. *Aerial photography Florida*. State University System of Florida. Available online at http://palmm.fcla.edu/

Rousso, S. 2007. Florida Fish and Wildlife Conservation Commission. Email to Kim Hermann, Charlotte County Natural Resources. August 22.

Sheppard, D. 2007. www.floridahistory.com. Email to Kim Hermann, Charlotte County Natural Resources. October 9.

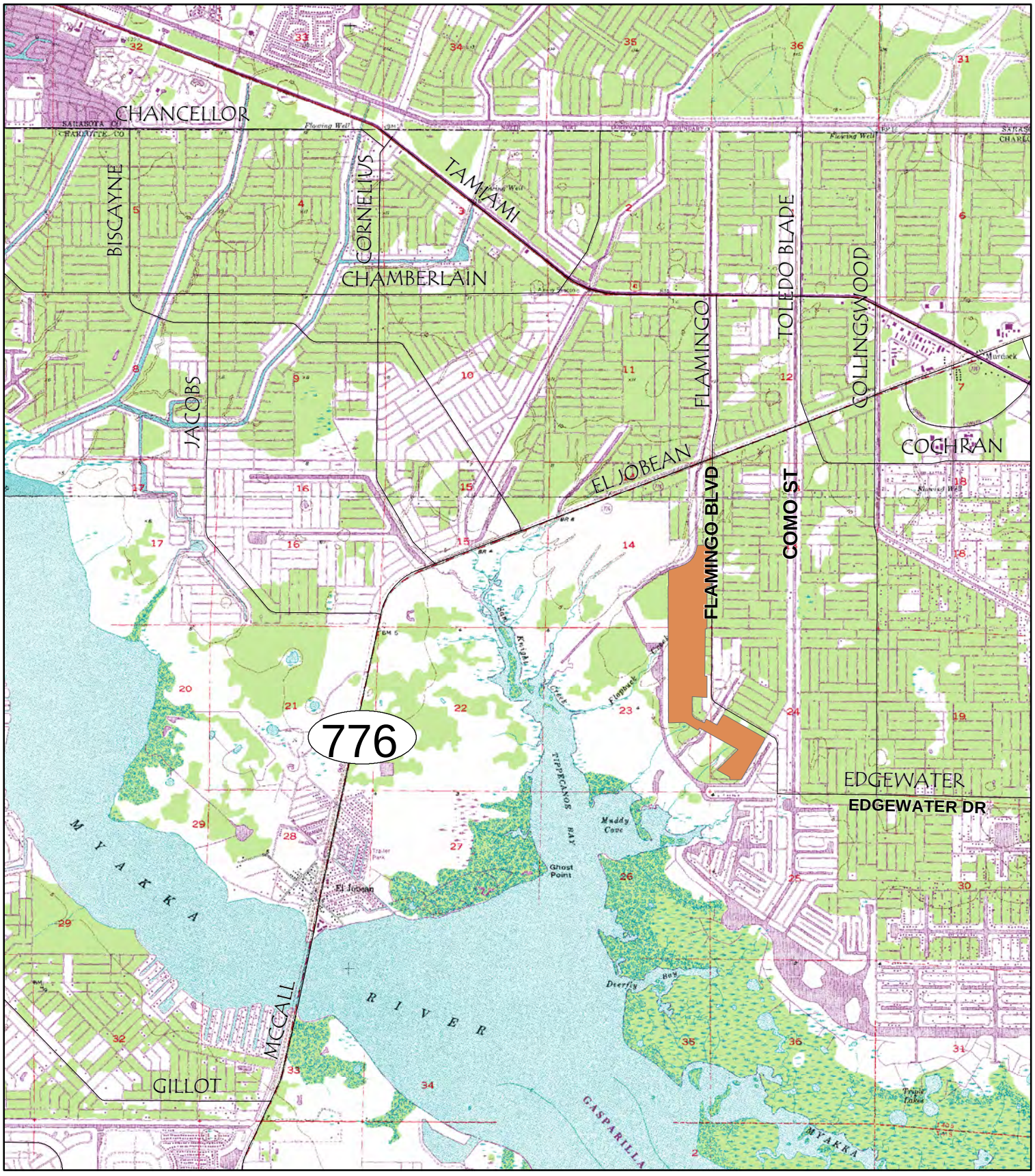
Soil Conservation Service. 1981. *Soil survey of Charlotte County*. United States Department of Agriculture.

Southeastern Archaeological Research, Inc. 2008. *Survey of historical resources, Charlotte County, Florida*. Draft. Search Project Number 2212-07056. January.

Thaxton, J. and T Hingtgen. 1994. *Response of Florida scrub-jays to management of previously abandoned habitat, OSSP -1- DO*. Florida Park Service Annual Report. District 4 Research.

Watson, M. 2005. *Habitat fragmentation and the effects of roads on wildlife and habitats*. New Mexico Department of Game and Fish.

Figure 1: Location Map



Tippecanoe II Mitigation Area

N W E S

0 0.5 1 2 Miles

Boundary

Figure 2: Aerial Overview

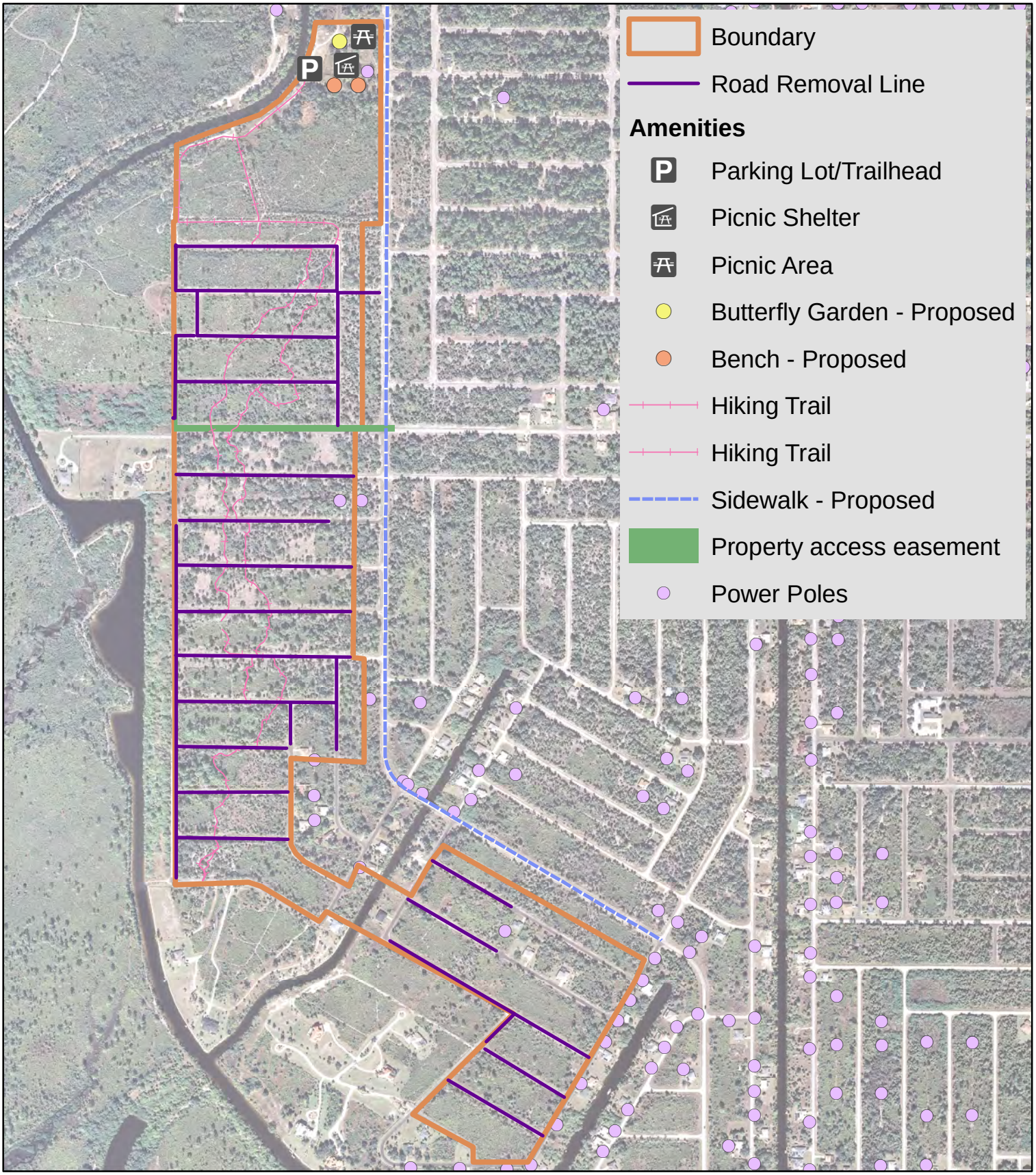
Tippecanoe II Mitigation Area

N
W E
S

0 495 990 1,980 Feet

Boundary

Figure 3: Master Site Plan

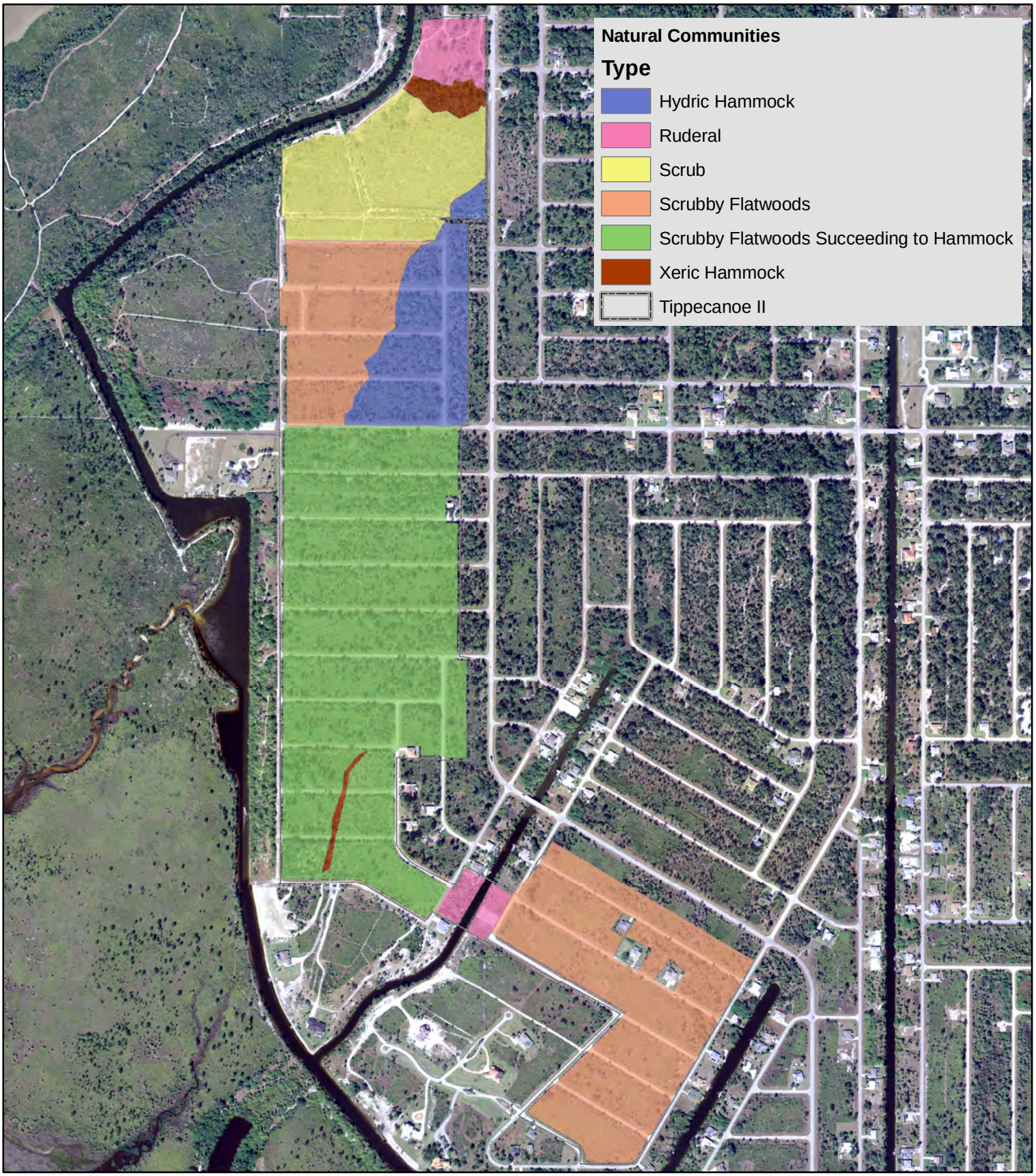


Tippecanoe II Mitigation Area

N W E S

0 480 960 1,920 Feet

Figure 4: Natural Communities

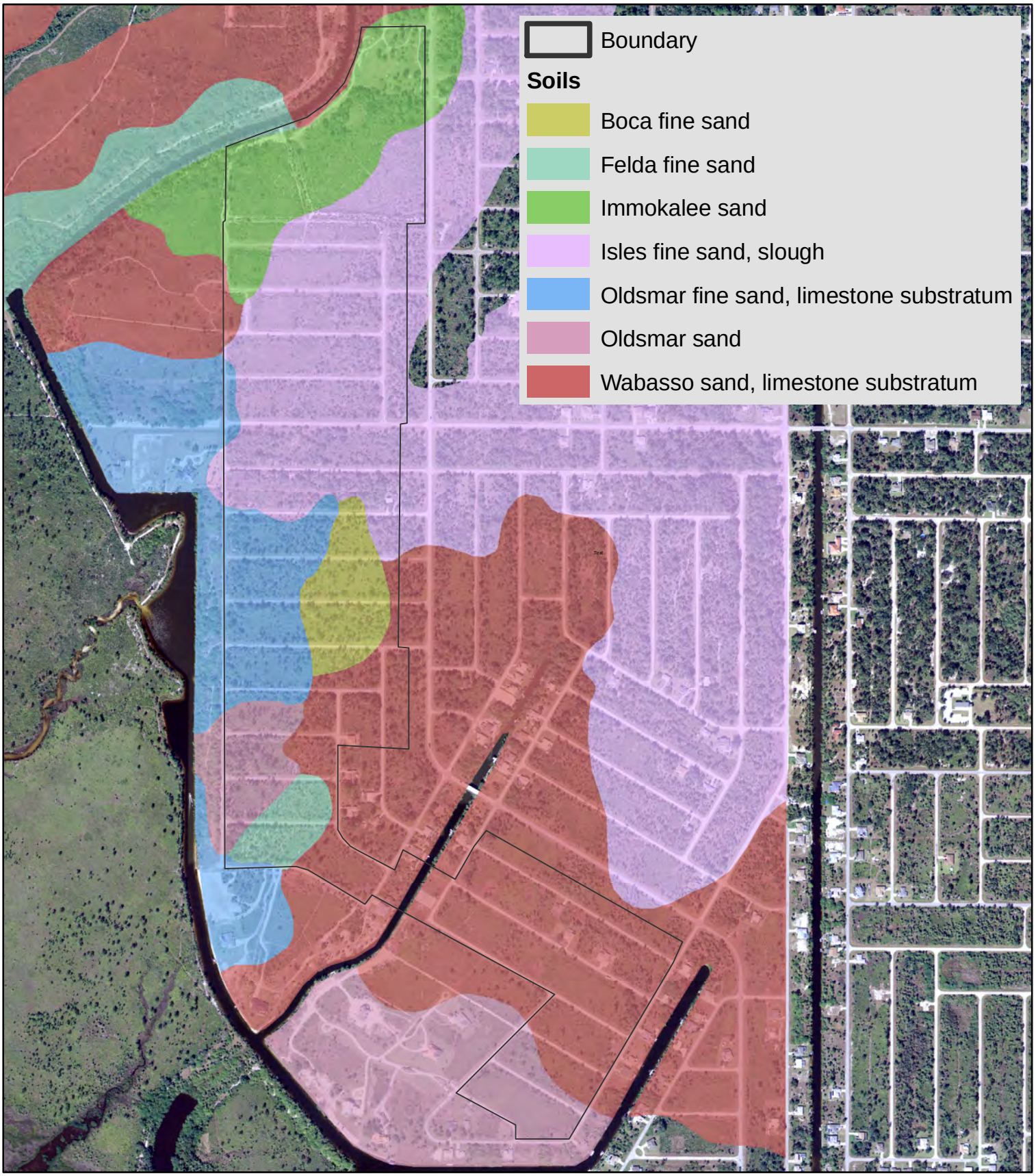


Tippecanoe II Mitigation Area

N
W E
S

0 700 1,400 2,800 Feet

Figure 5: Soils

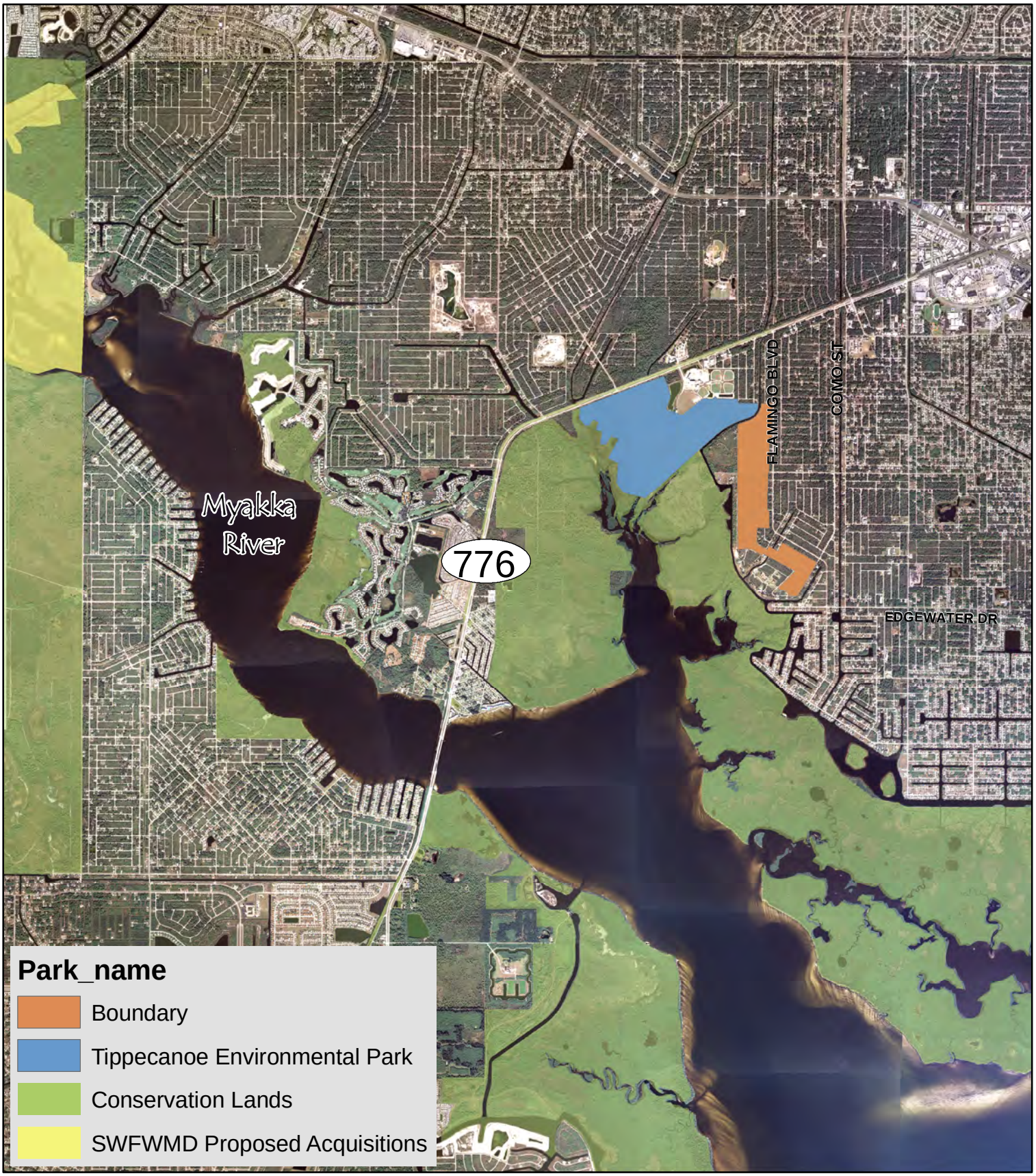


Tippecanoe II Mitigation Area

N
W E
S

0 750 1,500 3,000 Feet

Figure 6: Public Conservation Lands



Tippecanoe II Mitigation Area

N W E S

0 4,300 8,600 17,200 Feet

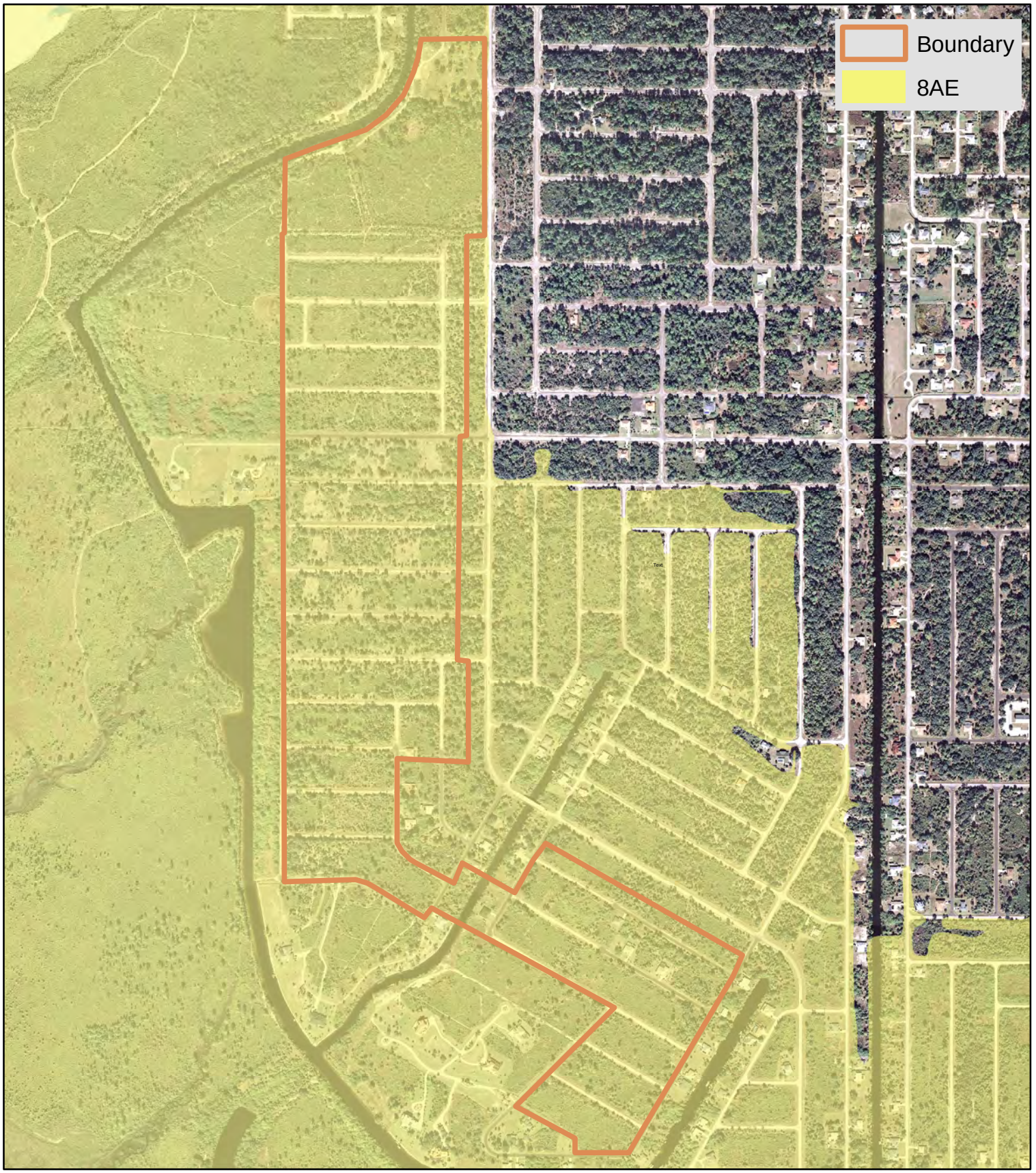
Figure 7: Management Units

Tippecanoe II Mitigation Area

N
W E
S

0 800 1,600 3,200 Feet

Figure 8: FEMA

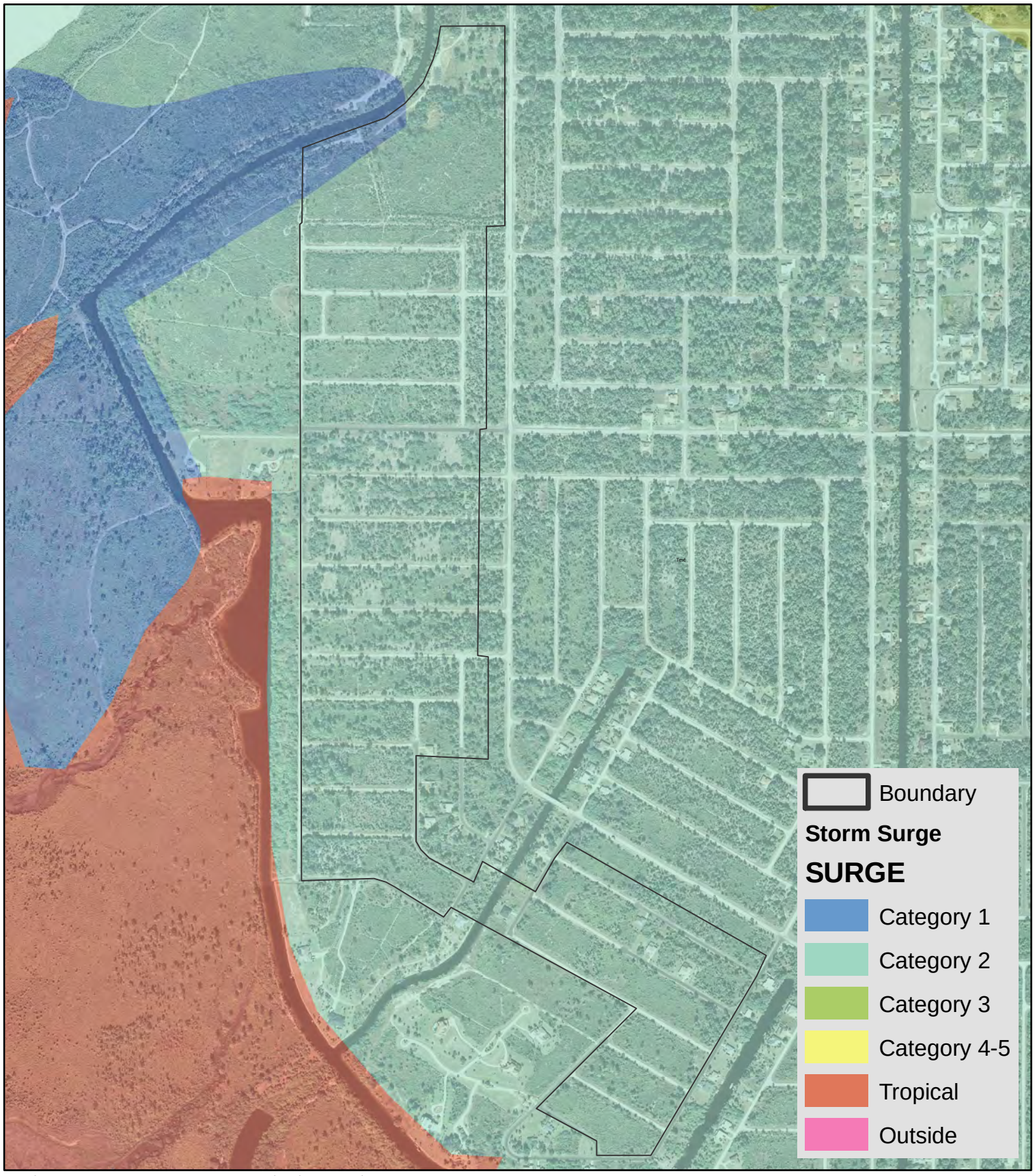


Tippecanoe II Mitigation Area

N
W E
S

0 800 1,600 3,200 Feet

Figure 9: Storm Surge

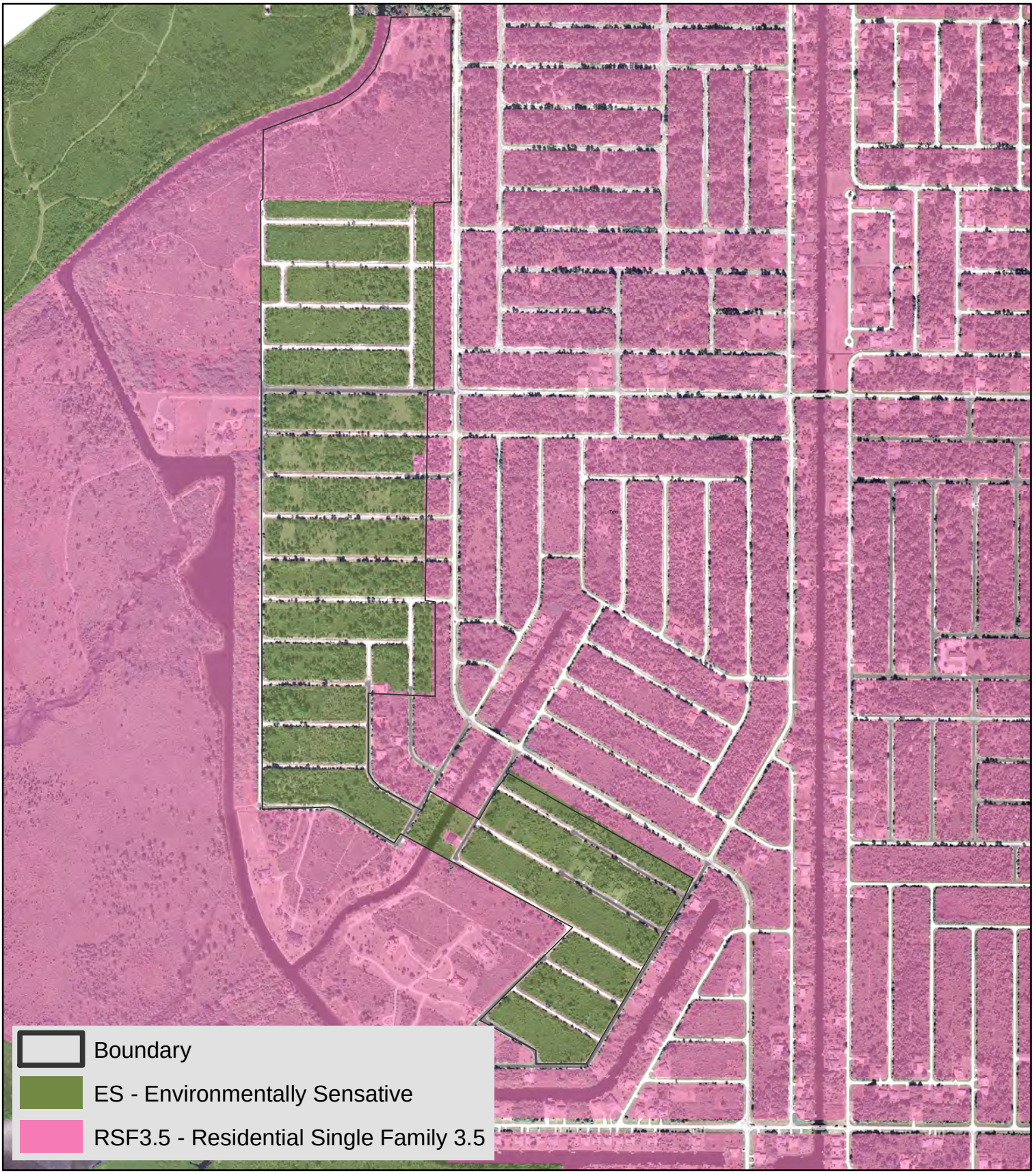


Tippecanoe II Mitigation Area

N
W E
S

0 750 1,500 3,000 Feet

Figure 10: Zoning

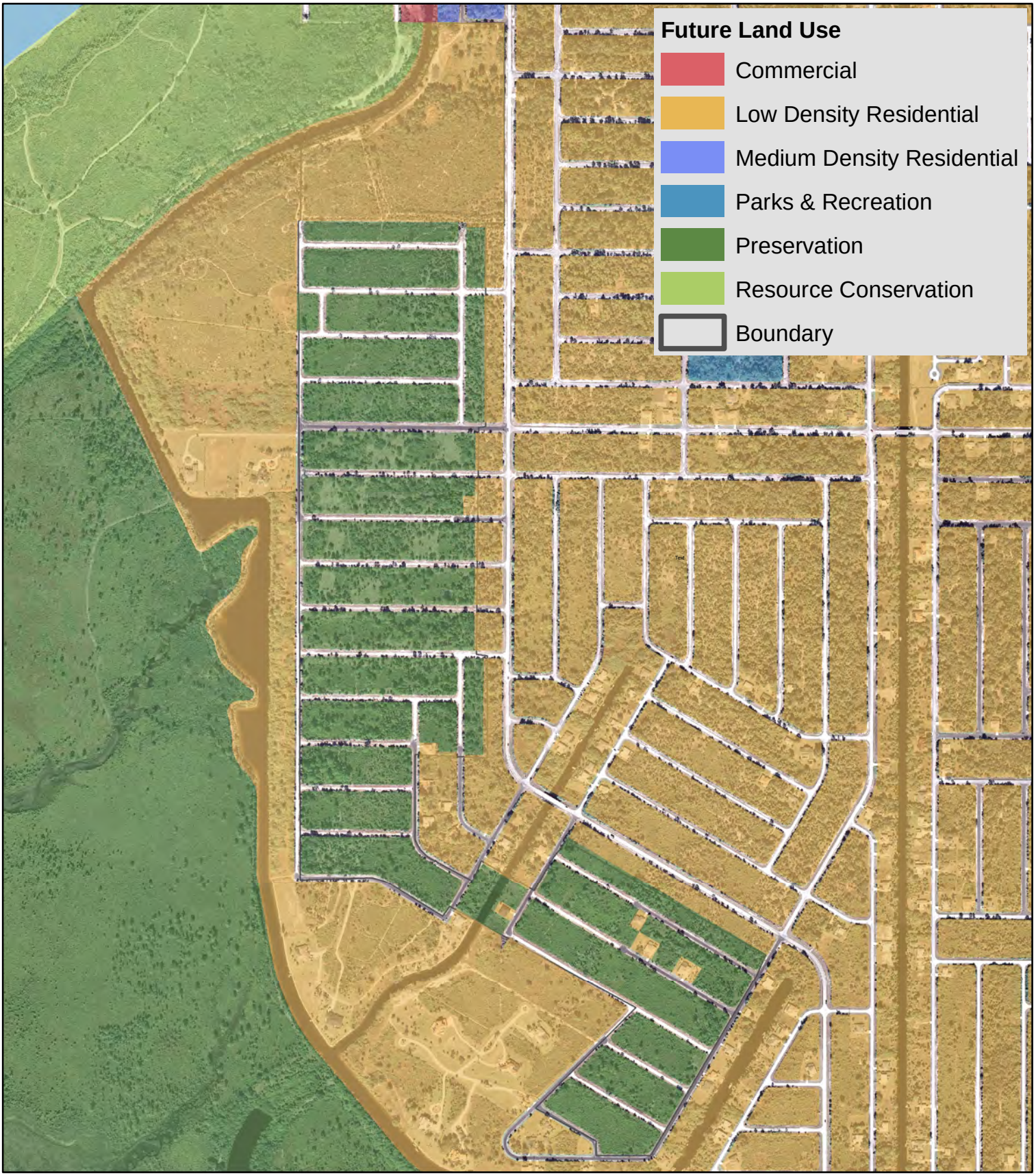


Tippecanoe II Mitigation Area

N
W E
S

0 800 1,600 3,200 Feet

Figure 11: Future Land Use



Tippecanoe II Mitigation Area

N W E S

0 750 1,500 3,000 Feet

Figure 12: Charlotte County Blueways

Tippecanoe II Mitigation Area

N W E S

0 1,250 2,500 5,000 Feet

GRT 2002-013

BARBARA T. SCOTT, CLERK
CHARLOTTE COUNTY
OR BOOK 02423
PGS 2087-2108 (22 Pg(s))
FILE NUMBER 1170891
RECORDED 03/18/2004 03:13:57 PM
RECORDING FEES 100.50

This document prepared by:
Kristen L. Coons, Esq.
Florida Communities Trust
Department of Community Affairs
2555 Shumard Oak Blvd.
Tallahassee, FL 32399

FLORIDA COMMUNITIES TRUST
FF1 AWARD #01-063-FF1
FCT Contract#04-CT-3U-01-FF1-063
TIPPECANOE SCRUB PARK

GRANT AWARD AGREEMENT

THIS AGREEMENT is entered into this 10th day of March, 2004, by and between the FLORIDA COMMUNITIES TRUST ("FCT"), a nonregulatory agency within the State of Florida Department of Community Affairs, and CHARLOTTE COUNTY, a political subdivision of the State of Florida ("Recipient"), in order to impose terms, conditions, and restrictions on the use of the proceeds of certain bonds, hereinafter described, and the lands acquired with such proceeds and as described in Exhibit "A" attached hereto and made a part hereof ("Project Site"), as shall be necessary to ensure compliance with applicable Florida Law and federal income tax law and to otherwise implement provisions of Chapters 259.105, 259.1051, and 380, Florida Statutes.

WHEREAS, Part III Chapter 380, Florida Statutes, the Florida Communities Trust Act, creates a nonregulatory agency within the Department of Community Affairs, which will assist local governments in bringing into compliance and implementing the conservation, recreation and open space, and coastal elements of their comprehensive plans or in conserving natural resources and resolving land use conflicts by providing financial assistance to local governments and nonprofit environmental organizations to carry out projects and activities authorized by the Florida Communities Trust Act;

WHEREAS, Section 259.105(3)(c), F.S., of the Florida Forever Act provides for the distribution of twenty- two percent (22%) less certain reductions of the net Florida Forever Revenue Bond proceeds to the Department to provide land acquisition grants to local governments and nonprofit environmental organizations through the FCT for acquisition of community-based projects, urban open spaces, natural resource conservation areas, parks, greenways and outdoor recreation areas to implement local comprehensive plans;

WHEREAS, the Bonds were issued as tax-exempt bonds, meaning that the interest on the Bonds is excluded from the gross income of Bondholders for federal income tax purposes;

WHEREAS, Rule Chapter 9K-7, Florida Administrative Code (F.A.C.), authorizes FCT to impose conditions for funding on those FCT applicants whose projects have been selected for

MINUTES

funding in accordance with Rule Chapter 9K-7, F.A.C.;

WHEREAS, the FCT has approved the terms under which the Project Site is acquired and the deed whereby the Recipient acquires title to the Project Site shall contain such covenants and restrictions as are sufficient to ensure that the use of the Project Site at all times complies with Section 375.051, Florida Statutes and Section 9, Article XII of the State Constitution and shall contain clauses providing for the conveyance of title to the Project Site to the Board of Trustees of the Internal Improvement Trust Fund upon the failure of the Recipient to use the Project Site acquired thereby for such purposes; and

WHEREAS, such covenants and restrictions shall be imposed by an agreement which shall describe with particularity the real property which is subject to the agreement and shall be recorded in the county in which the real property is located; and

WHEREAS, the purpose of this Agreement is to set forth the covenants and restrictions that are imposed on the Project Site subsequent to its acquisition using funds from the Florida Forever Trust Fund award.

NOW THEREFORE, in consideration of the mutual covenants and undertakings set forth herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, FCT and Recipient do hereby contract and agree as follows:

I. GENERAL CONDITIONS.

1. Upon execution and delivery by the parties hereto, the Recipient shall cause this Agreement to be recorded and filed in the official public records of Charlotte County, Florida, and in such manner and in such other places as FCT may reasonably request, and shall pay all fees and charges incurred in connection therewith.

2. The Recipient and FCT agree that the State of Florida Department of Environmental Protection will forward this Agreement to Department of Environmental Protection Bond Counsel for review. In the event Bond Counsel opines that an amendment is required to this Agreement so that the tax-exempt status of the Florida Forever Bonds is not jeopardized, FCT and Recipient shall amend the Agreement accordingly.

3. This Agreement may be amended at any time. Any amendment must be set forth in a written instrument and agreed to by both the Recipient and FCT.

4. This Agreement and the covenants and restrictions contained herein shall run with the Property herein described and shall bind, and the benefits shall inure to, respectively, the FCT and the Recipient and their respective successors and assigns.

5. This Agreement shall be governed by and construed in accordance with the laws of the State of Florida, with respect to both substantive rights and with respect to procedures and remedies.

6. Any notice required to be given hereunder shall be given by personal delivery, by registered mail or by registered expedited service at the addresses specified below or at such other addresses as may be specified in writing by the parties hereto, and any such notice shall be deemed received on the date of delivery if by personal delivery or expedited delivery service, or upon actual receipt if sent by registered mail.

FCT: Florida Communities Trust
Department of Community Affairs
2555 Shumard Oak Blvd.
Tallahassee, FL 32399-2100
ATTN: Program Manager

Recipient: Charlotte County Government
18500 Murdock Circle
Port Charlotte, Florida 33948

ATTN: County Attorney

7. If any provision of the Agreement shall be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired.

II. PROJECT SITE REQUIREMENTS IMPOSED BY CHAPTER 259, CHAPTER 375, AND CHAPTER 380, PART III, FLORIDA STATUTES.

1. If any essential term or condition of this grant agreement is violated by the Recipient or by some third party with the knowledge of the Recipient and the Recipient does not correct the violation within 30 days of notice of the violation, fee simple title to all interest in the Project Site shall be conveyed to the Board of Trustees of the Internal Improvement Trust Fund. The FCT shall treat such property in accordance with Section 380.508(4)(e), Florida Statutes.

2. Any transfer of the Project Site shall be subject to the approval of FCT and FCT shall enter into a new agreement with the transferee, containing such covenants, clauses, or other restrictions as are sufficient to protect the interest of the people of Florida.

3. The interest, if any, acquired by the Recipient in the Project Site will not serve as security for any debt of the Recipient unless FCT approves the transaction.

4. If the existence of the Recipient terminates for any reason, title to all interest in real

property it has acquired with the FCT award shall be conveyed to the Board of Trustees of the Internal Improvement Trust Fund, unless FCT negotiates an agreement with another local government or nonprofit organization which agrees to accept title to all interest in and to manage the Project Site.

5. In the event that the Project Site is damaged or destroyed or title to the Project Site, or any part thereof, is taken by any governmental body through the exercise or the threat of the exercise of the power of eminent domain, the Recipient shall deposit with the FCT any insurance proceeds or any condemnation award, and shall promptly commence to rebuild, replace, repair or restore the Project Site in such manner as is consistent with the Agreement. The FCT shall make any such insurance proceeds or condemnation award moneys available to provide funds for such restoration work. In the event that the Recipient fails to commence or to complete the rebuilding, repair, replacement or restoration of the Project Site after notice from the FCT, the FCT shall have the right, in addition to any other remedies at law or in equity, to repair, restore, rebuild or replace the Project Site so as to prevent the occurrence of a default hereunder.

Notwithstanding any of the foregoing, FCT will have the right to seek specific performance of any of the covenants and restrictions of this Agreement concerning the construction and operation of the Project Site.

III. PROJECT SITE OBLIGATIONS IMPOSED BY FCT ON THE RECIPIENT.

1. The Project Site shall be managed only for the conservation, protection and enhancement of natural and historical resources and for passive, natural resource-based public outdoor recreation which is compatible with the conservation, protection and enhancement of the Project Site, along with other related uses necessary for the accomplishment of this purpose. The proposed uses for the Project Site are specifically designated in the Project Plan as approved by FCT.

2. The Recipient shall prepare and submit to FCT an annual stewardship report as required by Rule 9K-7.013, F.A.C.

3. The Recipient shall ensure that the future land use designation assigned to the Project Site is for a category dedicated to open space, conservation, or outdoor recreation uses as appropriate. If an amendment to the Recipient's comprehensive plan is required to comply with this paragraph, the amendment shall be proposed at the next comprehensive plan amendment cycle available to the Recipient.

4. Recipient shall ensure, and provide evidence thereof to FCT, that all activities under this Agreement comply with all applicable local, state, regional and federal laws and regulations, including zoning ordinances and the adopted and approved comprehensive plan for the jurisdiction as applicable. Evidence shall be provided to FCT that all required licenses and permits have been obtained prior to the commencement of any construction.

5. The Recipient shall, through its agents and employees, prevent the unauthorized use of the Project Site or any use thereof not in conformity with the FCT approved project plan.

6. FCT staff or its duly authorized representatives shall have the right at any time to inspect the Project Site and the operations of the Recipient at the Project Site.

7. All buildings, structures, improvements, and signs shall require the prior written approval of FCT as to purpose. Further, tree removal, other than non-native species, and/or major land alterations shall require the written approval of FCT. The approvals required from FCT shall not be unreasonably with-held by FCT upon sufficient demonstration that the proposed structures, buildings, improvements, signs, vegetation removal or land alterations will not adversely impact the natural resources of the Project Site. The approval by FCT of the Recipient's management plan addressing the items mentioned herein shall be considered written approval from FCT.

8. If archaeological and historic sites are located on the Project Site, the Recipient shall comply with Chapter 267, Florida Statutes. The collection of artifacts from the Project Site or the disturbance of archaeological and historic sites on the Project Site will be prohibited unless prior written authorization has been obtained from the Department of State, Division of Historical Resources.

9. The Recipient shall ensure that the Project Site is identified as being publicly owned and operated as a passive, natural resource-based public outdoor recreational site in all signs, literature and advertising regarding the Project Site. The Recipient shall erect a sign(s) identifying the Project Site as being open to the public and as having been purchased with funds from FCT and Recipient.

IV. OBLIGATIONS INCURRED BY RECIPIENT AS A RESULT OF BOND PROCEEDS BEING UTILIZED TO PURCHASE THE PROJECT SITE.

1. If the Project Site is to remain subject, after its acquisition by the State and the Recipient, to any of the below listed activities or interests, the Recipient shall provide at least 60 days written notice of any such activity or interest to FCT prior to the activity taking place, and shall provide to FCT such information with respect thereto as FCT reasonably requests in order to evaluate the legal and tax con-sequences of such activity or interest:

a. any lease of any interest in the Project Site to a non-governmental person or organization;

b. the operation of any concession on the Project Site to a non-governmental person or organization;

c. any sales contract or option to buy things attached to the Project Site to be severed from the Project Site, with a non-governmental person or organization;

d. any use of the Project Site by non-governmental persons other than in such person's capacity as a member of the general public;

e. a management contract of the Project Site with a non-governmental person or organization; and

f. such other activity or interest as may be specified from time to time in writing by FCT to the Recipient.

2. Recipient agrees and acknowledges that the following transaction, events, and circumstances may not be permitted on the Project Site as they may have negative legal and tax consequences under Florida law and federal income tax law:

a. a sale of the Project Site or a lease of the Project Site to a non-governmental person or organization;

b. the operation of a concession on the Project Site by a non-governmental person or organization;

c. a sale of things attached to the Project Site to be severed from the Project Site to a non-governmental person or organization;

d. any change in the character or use of the Project Site from that use expected at the date of the issuance of any series of bonds from which the disbursement is to be made;

e. any use of the Project Site by non-governmental persons other than in such person's capacity as a member of the general public;

f. a management contract of the Project Site with a non-governmental person or organization; and

g. such other activity or interest as may be specified from time to time in writing by FCT to the Recipient.

DELEGATIONS AND CONTRACTUAL ARRANGEMENTS BETWEEN THE Recipient AND OTHER GOVERNMENTAL BODIES, NOT FOR PROFIT ENTITIES, OR NON GOVERNMENTAL PERSONS FOR USE OR MANAGEMENT OF THE PROJECT SITE WILL IN NO WAY RELIEVE THE Recipient OF THE RESPONSIBILITY TO ENSURE THAT THE CONDITIONS IMPOSED HEREIN ON THE PROJECT SITE AS A RESULT OF UTILIZING BOND PROCEEDS TO ACQUIRE THE PROJECT SITE ARE FULLY COMPLIED WITH BY

THE CONTRACTING PARTY.

V. CONDITIONS THAT ARE PARTICULAR TO THE PROJECT SITE AS A RESULT OF THE FCT APPROVED MANAGEMENT PLAN.

The management plan for the Project Site is mentioned throughout this Agreement, and is particularly described in Section IV. above. In addition to the various conditions already described in this Agreement, which apply to all sites acquired with FCT funds, the Management Plan shall address the following conditions that are particular to the Project Site and result from either representations made in the application that received scoring points or observations made by the FCT staff during the site visit described in Rule 9K-7.009(1), F.A.C.:

1. Two or more resource-based outdoor recreational facilities including a wildlife observation platform and nature trails shall be provided. The facilities shall be designed and located with minimal impact to natural resources on the Project Site.

2. A permanent recognition sign shall be maintained in the entrance area of the Project Site. The sign shall acknowledge that the Project Site is open to the public and was purchased with funds from the Florida Communities Trust Program and Charlotte County.

3. Interpretive signage shall be provided to educate visitors about the natural environment of the Project Site.

4. A biological inventory of the natural communities found on the Project Site, including the dominant and listed plant and animal species, shall be conducted prior to any site development. The inventory shall be used to ensure the protection of biological resources and be updated periodically.

5. The natural communities that occur on the Project Site shall be preserved and appropriately managed to ensure the long-term viability of these communities.

6. The Project Site shall be managed in a manner that protects and enhances habitat for native wildlife species that utilize or could potentially utilize the site, including scrub jays. The development of the Management Plan shall be coordinated with the Fish and Wildlife Conservation Commissioner's Office of Environmental Services to ensure the preservation and viability of native wildlife species and their habitat in a manner that furthers the Strategic Habitat Conservation Area designation. Periodic surveys shall be conducted to ensure that site management is compatible with the listed species using the Project Site.

7. A vegetation analysis shall be performed to determine which areas of the Project Site need a prescribed burn regime to maintain natural fire-dependent natural communities. The development of the prescribed burn program shall be coordinated the Division of Forestry and the

Florida Fish and Wildlife Conservation Commission.

8. The water quality of the Flamingo Waterway adjacent to the Project Site shall be protected and enhanced. The County shall implement a plan to improve water quality in the area including the removal of paved county roads in the subdivision within, and adjacent to, the Project Site.

9. Degraded uplands shall be restored to a natural community in terms of biological composition and ecological function.

10. An ongoing monitoring and control program for invasive vegetation including exotic (non-native) and nuisance native plant species shall be implemented at the Project Site. The objective of the control program shall be the elimination of invasive exotic plant species and the maintenance of a diverse association of native vegetation. The Management Plan shall reference the Exotic Pest Plant Council's List of Florida's Most Invasive Species to assist in identifying invasive exotics on the Project Site.

11. A feral animal removal program shall be developed and implemented for dogs, cats, ducks, hogs, and other non-native wildlife that may be found on the Project Site.

12. Management of the Project Site shall be coordinated with management of the adjacent Charlotte Harbor Buffer Preserve, Tippecanoe Scrub Environmental Park, and Charlotte County School Board property.

13. Prior to the commencement of any proposed development activities, measures shall be taken to determine the presence of any archaeological sites. All planned activities involving known archaeological sites or potential site areas shall be closely coordinated with the Department of State, Division of Historic Resources in order to prevent the disturbance of significant sites.

14. The location and design of the parking and other site improvements shall have minimal impact on natural resources. The parking area shall incorporate pervious material wherever feasible. Stormwater management facilities on the Project Site shall be designed to provide recreational open space or wildlife habitat.

15. Pedestrian and bicycle access to the Project Site shall be promoted through the provision of pedestrian oriented walkways and bicycle facilities that link the Project Site with adjacent residential neighborhoods. Bike parking stands shall be installed at the Project Site to provide an alternative to automobile transportation to the Project Site.

16. The development and management of the Project Site shall be coordinated with the agencies managing conservation lands in the Charlotte County Greenway, to ensure that it is protected and managed as part of a linked conservation lands and recreation opportunities.

17. Proposed site improvements shall be designed and located to minimize or eliminate the long-term risk of storm damage or flooding in conjunction with appropriate hazard mitigation agencies or experts.

18. The requirements imposed by other grant program funds that may be sought for activities associated with the Project Site shall not conflict with the terms and conditions of this agreement.

This Agreement including Exhibit "A" embodies the entire agreement between the parties.

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement.

Witness:

Diane Gant
Print Name: Diane Gant

Stacey K. Miller
Print Name: Stacey K. Miller

CHARLOTTE COUNTY

By: Matthew D. DeBoer
Print Name: Matthew D. DeBoer
Title: Chairman, Board of County Commissioners
Date: 2/24/04

Approved as to Form and Legality:
By: Renee Francis Lee
Print Name: Renee Francis Lee
County Attorney
MCF

STATE OF FLORIDA
COUNTY OF CHARLOTTE

The foregoing instrument was acknowledged before me this 24th day of February, 2004, by Matthew D. DeBoer as Chairman of CCBCC on behalf of the Local Government, and who is personally known to me.

OFFICIAL NOTARY SEAL
JOANN M DILLON
NOTARY PUBLIC STATE OF FLORIDA
COMMISSION NO. DD136364
MY COMMISSION EXP. JULY 24,2006

Joann M Dillon
Notary Public
Print Name: JOANN M DILLON
Commission No.
My Commission Expires:

Attest:
Barbara T. Scott, Clerk
of the Circuit Court and
Ex-Officio Clerk to the
Board of County Commissioners
By: Janet L Parker
Deputy Clerk

GAA\01-063-FF1
February 13, 2004

Witness:

Print Name: Barbara Wilson

Print Name: Rebecca Toner

FLORIDA COMMUNITIES TRUST

By: _____
Kathy Baughman McLeod,
Community Program Manager

Date: 3/10/04

Approved as to Form and Legality:
By: Leslie Anderson-Adams
for Kristen L. Coons, Trust Counsel

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 10th day of March, 2004, by Kathy Baughman McLeod as Community Program Manager. She is personally known to me.

Notary Public
Print Name: _____
Commission No. _____
My Commission Expires: _____

Gayle H. Brett
MY COMMISSION EXPIRES
October 5, 2008
#DD153509
Bonded thru
Troy Fain-Insurance
NOTARY PUBLIC, STATE OF FLORIDA

EXHIBIT "A"

Lots 4 and 5, Block 2742, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 26A through 26F, of the Public Records of Charlotte County, Florida.

AND

Lots 31 and 32, Block 2742, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 26A through 26F, of the Public Records of Charlotte County, Florida.

AND

Lots 33, 34 and 35, Block 2742, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 26A through 26F, of the Public Records of Charlotte County, Florida.

AND

Lot 36, Block 2742, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 26A through 26F, of the Public Records of Charlotte County, Florida.

AND

Lots 37 and 38, Block 2742, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 26A through 26F, of the Public Records of Charlotte County, Florida.

AND

Lots 4 and 5, Block 2743, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 26A through 26F, of the Public Records of Charlotte County, Florida.

AND

Lots 13 and 14, Block 2743, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 26A through 26F, of the Public Records of Charlotte County, Florida.

AND

Lot 17, Block 2743, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 26A through 26F, of the Public Records of Charlotte County, Florida.

AND

Lot 25, Block 2743, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 26A through 26F, of the Public Records of Charlotte County, Florida.

AND

Lot 26, Block 2743, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 26A through 26F, of the Public Records of Charlotte County, Florida.

AND

Lots 31 and 32, Block 2743, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 26A through 26F, of the Public Records of Charlotte County, Florida.

AND

Lots 1 and 2, Block 2745, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 5, Block 2745, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 26A through 26F, of the Public Records of Charlotte County, Florida.

AND

Lot 6, Block 2745, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 26A through 26F, of the Public Records of Charlotte County, Florida.

AND

Lot 5, Block 2746, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 26A through 26F, of the Public Records of Charlotte County, Florida.

AND

Lot 12, Block 2746, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 26A through 26F, of the Public Records of Charlotte County, Florida.

AND

Lot 15, Block 2746, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as

recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lots 10, 11, 12 and 13, Block 3398, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 15, Block 3398, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 15, Block 3397, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 18, Block 3397, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 15, Block 3396, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 17, Block 3396, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 2, Block 3394, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 10, Block 3394, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 11, Block 3394, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 9, Block 3391, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 25, Block 3394, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 1, Block 3393, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lots 8 and 9, Block 3393, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 25, Block 3393, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 29, Block 3393, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 5, Block 3392, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 6, Block 3392, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 12, Block 3392, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lots 23, 24 and 25, Block 3392, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 1, Block 3391, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lots 6 and 7, Block 3391, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 21, Block 3394, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 10, Block 3391, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 11, Block 3391, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 32, Block 3391, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 27, Block 3390, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 1, Block 1261, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 16, Block 1261, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 17, Block 1261, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lots 22, 23 and 24, Block 1261, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 7, Block 1262, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 9, Block 1262, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 10, Block 1262, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 11, Block 1262, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 14, Block 1262, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 24, Block 1262, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 4, Block 1264, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 10, Block 1264, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 14, Block 1264, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lots 15 and 16, Block 1264, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 7, Block 1266, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 8, Block 1266, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lots 11 and 12, Block 1266, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 17, Block 1266, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 22, Block 1266, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 1, Block 1268, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 10, Block 1268, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 27, Block 3393, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 22, Block 3395, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 8, Block 1268, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 14, Block 2745, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 1, Block 2744, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 26A through 26F, of the Public Records of Charlotte County, Florida.

AND

Lot 6, Block 3393, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 12, Block 1262, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 23, Block 2742, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lots 17 and 18, Block 3395, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 9, Block 3397, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 14, Block 2746, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 26A through 26F, of the Public Records of Charlotte County, Florida.

AND

Lot 2, Block 1268, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lots 4 and 5, Block 1262, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as

recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 19, Block 3395, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 33, Block 2743, of Port Charlotte Subdivision, Section 31, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 13, Block 3397, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lot 9, Block 1264, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

AND

Lots 2 andn 3, Block 3393, of Port Charlotte Subdivision, Section 46, according to the plat thereof, as recorded in Plat Book 5, Pages 57A through 57D, of the Public Records of Charlotte County, Florida.

Priority Management Schedule for Tippecanoe II Mitigation Area

Project Number: 01-063-FF1
Project Name: Tippecanoe II Mitigation Area
Grant Recipient: Charlotte County Board of County Commissioners

Activity	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Land Management Plan Revision										Nov
Interagency coordination	Continuing and ongoing									
Structures and Improvements										
Wildlife Observation Area/Pavilion	Oct									
Butterfly Garden/Benches/Picnic		Apr								
Key Management Activities										
Habitat Assessment		Nov							Nov	
Prescribed Burning	Ongoing									
Vegetation Monitoring:										
Baseline inventory update		May							May	
Post-burning monitoring	Ongoing									
Post-mechanical monitoring	Ongoing									
Wildlife Monitoring:										
Baseline inventory update			Oct							
Florida scrub jay survey	Feb-Mar	Feb-Mar	Feb-Mar	Feb-Mar	Feb-Mar	Feb-Mar	Feb-Mar	Feb-Mar	Feb-Mar	Feb-Mar
Gopher tortoise survey	Coordinated with prescibed burns, mechnaical treatment and other projects									
Exotic Species Management:										
Exotic vegetation treatment	Ongoing									
Feral animal removal	Ongoing									
Infrastructure Maintenance	Ongoing									
Programming:										
Guided nature walks	Ongoing									
Annual Stewardship Report	Oct	Oct	Oct	Oct	Oct	Oct	Oct	Oct	Oct	Oct

TIPPECANOE ENVIRONMENTAL PARK PHASE II
BASELINE GOPHER TORTOISE SURVEY
January 2007

For:

Charlotte County
Parks, Recreation, and Cultural Resources Department
2300 El Jobean Road
Port Charlotte, FL 33948

By:

Preserving the Environment through Ecological Research (PEER), Inc.
5892 East Fowler Avenue
Tampa, Florida 33617

Tippecanoe Environmental Park Phase II
Baseline Gopher Tortoise Survey 1/2007

Introduction

Tippecanoe Environmental Park Phase II is an approximately 150-acre conservation land parcel owned by Charlotte County. It is located in Sections 14, 23, and 24, Township 40 South, Range 21 East of Charlotte County. The site was purchased by the County in part to serve as a mitigation bank to offset impacts associated with construction of improvements to Flamingo Boulevard. It is managed by the Natural Resources Division (hereinafter, the Division) of the Environmental Services Department.

PEER (Preserving the Environment through Ecological Research) Inc. was contracted in January 2007 to conduct a baseline survey of gopher tortoises on the site. The Division has sought to estimate the size of the existing gopher tortoise population to determine if the site could be a recipient of gopher tortoises needing relocation in advance of County construction projects. The gopher tortoise (*Gopherus polyphemus*) is not only listed with the Florida Fish and Wildlife Conservation Commission (FWC) as a Species of Special Concern, it is considered by some to be a keystone species[1] for Florida's natural mesic and xeric pyrogenic communities. The survey results may be used to develop specific habitat management strategies as well as for tracking the success of management as it relates to this species.

Site Description and Methods

The site was platted in the 1960's as a residential area and was subdivided into five to ten-acre sized blocks. The paved roadways constructed at that time are still present, as can be seen in the attached figures.

The site consists of mesic flatwoods, scrubby flatwoods, and oak scrub natural habitats. The soils on site are predominantly Wabasso sand, limestone substratum, and Isles fine sand, slough, with smaller areas of Boca fine sand, Oldsmar sand, and Oldsmar fine sand, limestone substratum, all soils that are typical of flatwoods habitats (USDA 2007). Over a great majority of the site, these pyrogenic habitats—habitat areas dependent upon periodic fire to maintain their ecological structure and diversity—are moderately to heavily overgrown. Saw palmetto (*Serenoa repens*), and other understory vegetation, is quite thick and tall in many of the blocks, with little herbaceous cover.

In order to most efficiently estimate the gopher tortoise population, the survey was designed to examine only the most suitable potential habitat areas[2]. Blocks were first

[1] A keystone species is a species whose very presence contributes to a diversity of life and whose extinction would consequently lead to the extinction of other forms of life. Keystone species help to support the ecosystem (entire community of life) of which they are a part.

[2] Relative habitat suitability for tortoise has been well documented by Cox and others (Campbell and Christman 1982, Carr 1952, Ernst and Barbour 1972, Mount 1975, Auffenberg and Franz 1982).

assessed and categorized as to general suitability. This brief assessment considered general habitat structure, density of the canopy, and hydrologic factors (i.e., presence of ditching and evidence of hydric conditions). In the interest of efficiency, those blocks or areas dominated by a dense canopy of slash pine (*Pinus elliottii*) and cabbage palm (*Sable palmetto*), exhibiting hydric conditions, and/or vegetated by dense, arborescent saw palmetto were excluded from the survey area.

Surveys were then conducted as per Cox (et al., 1987) over a period of two and one-half days. Parallel transects were established in order to provide the most complete coverage possible. Surveys covered less than 100% of those blocks being surveyed due to the dense vegetation (we estimate between 50% and 70% coverage). Each burrow was classified as active, inactive, or abandoned using the definitions for these terms first described by Cox (et al., 1987). The locations of active and inactive burrows were recorded using a hand-held GPS (geographic positioning system) device.

Results

Eight blocks or approximately 41 acres of the site were surveyed, and a total of 137 active and inactive burrows were documented. Densities (number of burrows per acre) were calculated for each block and for the blocks in total (see Table 1). Survey results are illustrated in Figure 1 (in 3 sheets).

Table 1. Survey Data Summary

Block	Acres Surveyed	A + I Burrows	Density, #/ac
1268	3.5	13	2.28
1266	6.5	26	2.46
1264	5.5	12	1.34
1262	6.5	18	1.70
1261	3.25	4	0.76
2743	9.5	35	2.26
2745	4	13	2.00
3403	2	16	4.91
TOTAL	40.75	137	2.06

Density is calculated by applying a widely used and accepted multiplier developed by Auffenberg and Franz (1982), which estimates that only 61.4% of burrows on a site are occupied:

Density (# burrows/acre) = 0.614 X (# active + inactive burrows) / acres surveyed

Discussion

Large portions of the site were not chosen to be included in the survey at this time due to poor habitat conditions. Blocks 3390 through 3401 are dominated by mesic flatwoods, contain heavily overgrown scrubby flatwoods, or exhibit some hydric condition. However, these factors do not necessarily preclude the areas from being inhabited by gopher tortoises; many burrows were found in heavily overgrown areas. The remaining blocks not surveyed were only excluded due to time constraints, and were assessed as having fair to good potential for being suitable habitat.

The acreage listed for each block surveyed and the resulting densities (Table 1) assume 100% survey coverage. As previously discussed, survey coverage was less than 100% due to poor conditions. Therefore, the calculations of 2.06 tortoises per acre likely underestimate the actual gopher tortoise density over the site. Without a more comprehensive survey over the entire site, we are unable to provide a reasonable estimate of the tortoise population.

While several areas of the site exhibit evidence of wildfire, fire suppression and lack of management combined with the physical alterations created by the roadways have resulted in conditions over large portions of the site unsuitable for gopher tortoises. Tippecanoe II contains valuable scrub, scrubby and mesic flatwoods habitats. Restoration, then regular maintenance—through mechanical vegetation reduction, initiation of a prescribed burning program, and removal of the roadways—is important to increase the suitability of habitats and to sustain the existing populations of gopher tortoise and other wildlife and provide for their long-term viability.

References

Alford, R. 1980. Population structure of *Gopherus polyphemus* in northern Florida. J. Herpetol. 14, pp. 177-182.

Auffenberg, W., and R. Franz. 1982. The status and distribution of the gopher tortoise (*Gopherus polyphemus*). Pp. 95-126 *in* North American tortoises: conservation and ecology. Wildlife Research Report No. 12, U.S. Fish and Wildlife Service, Washington, DC.

Campbell, H.W. and S.P. Christman. 1982. The herpetological components of Florida sandhill and sand pine scrub associations. Pp. 163-171 *in* Scott, N.J., Jr. (ed).

Herpetological communities. Wildlife Research Report No. 13, U.S. Fish and Wildlife Service, Washington, DC.

Carr, A. 1952. Handbook of turtles. Cornell Univ. Press, Ithaca, NY. 542 pp.

Cox, J., D. Inkley, and R. Kautz. 1987. Ecology and habitat protection needs of gopher tortoise (*Gopherus polyphemus*) populations found on lands slated for large-scale development in Florida. Florida Game and Fresh Water Fish Commission Nongame Wildlife Program Technical Report No. 4. Tallahassee, FL.

Ernst, C.H., and R.W. Barbour. 1972. Turtles of the United States. The University Press of Kentucky, Lexington. 347 pp.

Mount, R. 1975. The reptiles and amphibians of Alabama. Auburn Printing Co, Auburn, AL 325 pp.

U. S. Department of Agriculture (USDA). 2007. Natural Resources Conservation Service Web Soil Survey. http://websoilsurvey.nrcs.usda.gov.

FIGURE 1

Tippecanoe Environmental Park Phase II
Gopher Tortoise Survey 1/07

Sheet 1 of 3

1/31/07

PEER
Protecting the Environment through Ecological Research, Inc.

FIGURE 2

Tippecanoe Environmental Park Phase II
Gopher Tortoise Survey 1/07

Sheet 2 of 3

1/31/07

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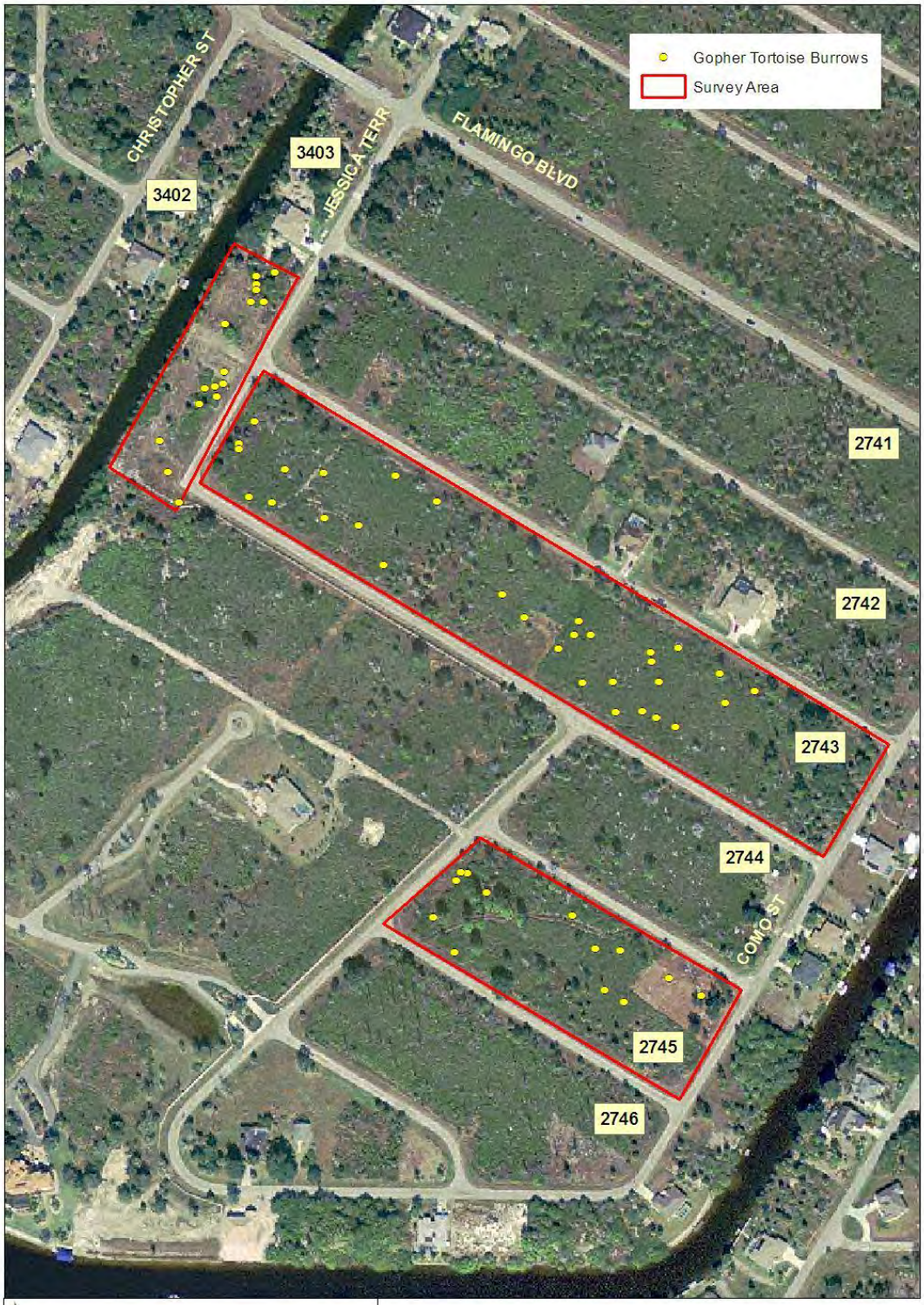
FIGURE 3

Tippecanoe Environmental Park Phase II
Gopher Tortoise Survey 1/07



Sheet 3 of 3

1/31/07

PEER
Protecting the Environment through Ecological Research, Inc.

AN INTENSIVE CULTURAL RESOURCE ASSESSMENT SURVEY OF THE TIPPECANOE II MITIGATION AREA CHARLOTTE COUNTY, FLORIDA

By

Blue Nelson
And
Brent Handley

For

Charlotte County Administration Center
Suite 344
18500 Murdock Circle
Port Charlotte, Florida 33948-1094

ESI Report of Investigations No. 1420

EO08019.01

June 2011

ENVIRONMENTAL SERVICES, INC.
2800 North 5th Street, Suite 302
St. Augustine, Florida 32084
(904) 824-5494

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I. INTRODUCTION

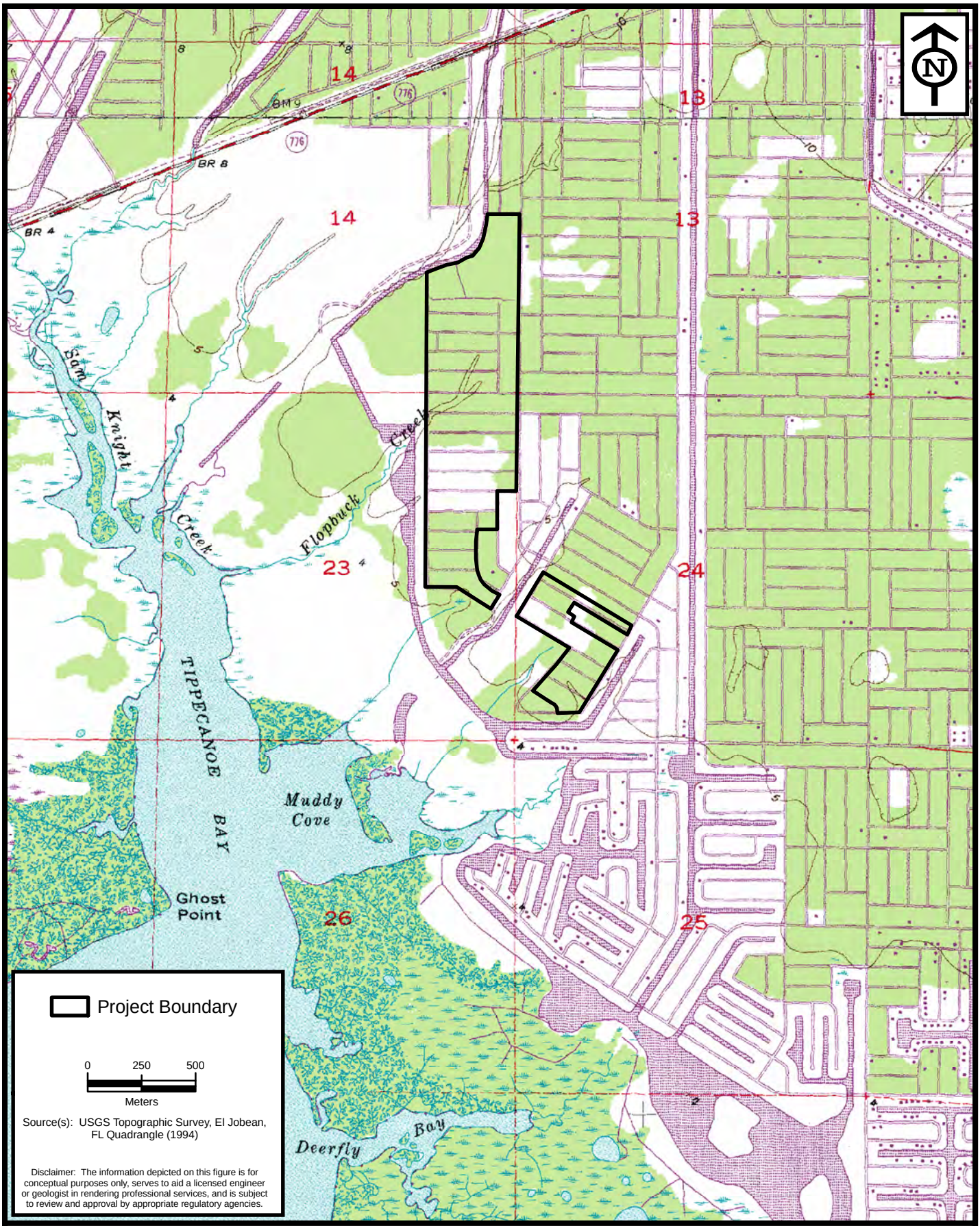
In February 2011, Environmental Services, Inc. (ESI) conducted an intensive cultural resource assessment survey of the Tippecanoe II Mitigation Area located in Charlotte County, Florida. The project area contained approximately one hundred and eighty-two acres of land and is currently a protected parcel that is home to the endangered scrub-jay. Specifically, the area is located on the El Jobean (1994) Florida USGS 7.5 minute quadrangle maps in Sections 14, 23, and 24 of Township 40 South, Range 21 East (Figure 1.1). This archaeological survey was conducted on behalf of the Charlotte County Administration Center.

The goals of the survey were to locate, delineate, identify and evaluate all cultural resources within the proposed project area, and to assess their significance and potential eligibility for listing in the *National Register of Historic Places* in accordance with *National Register Criteria* (36 CFR 60.4). The term "cultural resources" as used herein is meant to refer to sites or objects that are archaeological, architectural, and/or historical in nature.

The investigation included background research that focused on the history of the area, as well as a review of known cultural resources in the vicinity. As a result, no previously recorded cultural resources were documented within the study area. Expanding the search to include a one-mile radius revealed eight previously recorded resource groups and eight previously recorded archaeological sites (see Section 4).

Fieldwork consisted of a pedestrian inspection and subsurface testing. The pedestrian inspection was conducted to locate artifacts and/or historic structural remains in areas of exposed ground surface throughout the area. Shovel tests (n=40) were dug at 50 and 100 meter intervals. The project area was relatively flat and predominately contained poorly drained sandy soils. ESI archaeologist Blue Nelson conducted the field study under the direction of Brent Handley, who served as Principal Investigator.

As a result, no archaeological sites or historic structural remains were encountered within the Tippecanoe II Mitigation Area.



Source(s): USGS Topographic Survey, El Jobean, FL Quadrangle (1994)

Disclaimer: The information depicted on this figure is for conceptual purposes only, serves to aid a licensed engineer or geologist in rendering professional services, and is subject to review and approval by appropriate regulatory agencies.

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www.environmentalservicesinc.com

Project Location Map

Tippecane II Mitigation Area

Charlotte County, Florida

Project:	EO08019.01
Date:	Feb 2011
Drwn/Chkd:	RS
Figure:	**1.1**

X:\GIS (2)\Projects\Port Charlotte\Tippecanoe\mxd\Location.mxd

II. ENVIRONMENTAL SETTING

Environmental variables have always had an important influence on the selection of habitation and special use sites by human groups. The availability of water, dry land, and associated natural resources (i.e., food, material for tools, etc.) has had a pronounced effect on prehistoric technological organization and mobility strategies (Anderson 1990:198). Therefore, knowledge of past environments coupled with archaeological data is critical to the reconstruction of past lifeways and in drawing appropriate conclusions regarding site location and interpretation.

Soils

According to the National Resources Conservation Survey web soil survey (2010), eight soil types are represented in the study area (Figure 2.1). The entire project area exhibits poorly drained soils.

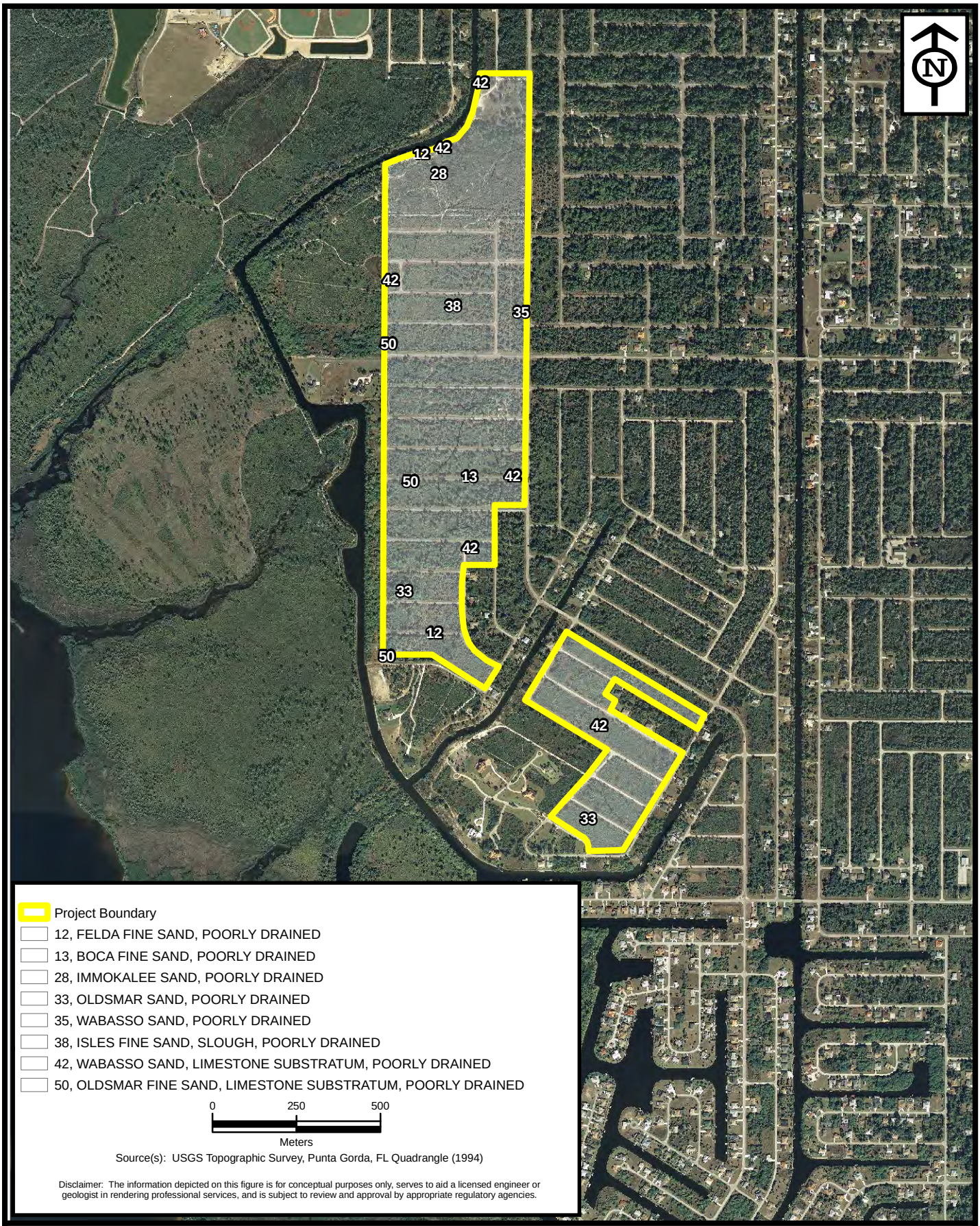
The soils within the project area consist of poorly drained Felda Fine Sand; poorly drained Oldsmar sand; poorly drained Boca Fine Sand; poorly drained Immokalee Sand; poorly drained Wabasso Sand; poorly drained Isles Fine Sand;Wabasso Sand, limestone substratum; and Oldsmar Fine Sand, limestone substratum. These soil types were confirmed during shovel testing.

Hydrology

The central portion of the project area contains a portion of Flop Buck Creek and is situated about one-half mile east of Tippecanoe Bay.

Current Land Use

Currently the land is utilized as a mitigation area protecting two families of the endangered scrub-jay (Figure 2.2). Previously, the parcel was platted and slated for development of residential homes (Figure 2.3). It has since been bought by the county to mitigate impacts to scrub-jay habitats on two County projects.



Project Boundary
12, FELDA FINE SAND, POORLY DRAINED
13, BOCA FINE SAND, POORLY DRAINED
28, IMMOKALEE SAND, POORLY DRAINED
33, OLDSMAR SAND, POORLY DRAINED
35, WABASSO SAND, POORLY DRAINED
38, ISLES FINE SAND, SLOUGH, POORLY DRAINED
42, WABASSO SAND, LIMESTONE SUBSTRATUM, POORLY DRAINED
50, OLDSMAR FINE SAND, LIMESTONE SUBSTRATUM, POORLY DRAINED

0 250 500
Meters

Source(s): USGS Topographic Survey, Punta Gorda, FL Quadrangle (1994)

Disclaimer: The information depicted on this figure is for conceptual purposes only, serves to aid a licensed engineer or geologist in rendering professional services, and is subject to review and approval by appropriate regulatory agencies.

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Soils Map

Tippecane II Mitigation Area

Charlotte County, Florida

Project:	EO08019.01
Date:	Feb 2011
Drwn/Chkd:	RS
Figure:	**2.1**

X:\GIS (2)\Projects\Port Charlotte\Tippecanoe\mxd\soils.mxd

Figure 2.2: Photograph of project area facing south

Figure 2.3: Photograph of existing roadway; facing north.

III. REGIONAL CULTURAL HISTORY

In comparison to other regions of Florida, Charlotte County has not received a lot of attention with regards to archaeological research. The research that has been conducted in the general vicinity of Charlotte County has focused on the excavations of large shell middens and burial mound sites (Willey 1949; Milanich 1994; Leur 2001). This body of work along with that from other portions of the state has led to the formulation of cultural periods that include Paleo-Indian, Early through Late Archaic, Woodland, Mississippian, and Historic. Paleo-Indian through Archaic periods tends to be somewhat universal throughout Florida with little regional variation; however, during the transitional and Woodland periods regional cultural periods become more distinctive (Figure 5.1).

One of the challenges for archaeologists working in the Charlotte County area is the presence of two distinct cultural sequences. Early material cultural and sociological development suggests Charlotte Harbor is the dividing line between the central peninsula Gulf Coast and Caloosahatchee cultural regions (as seen in Figure 2.1).

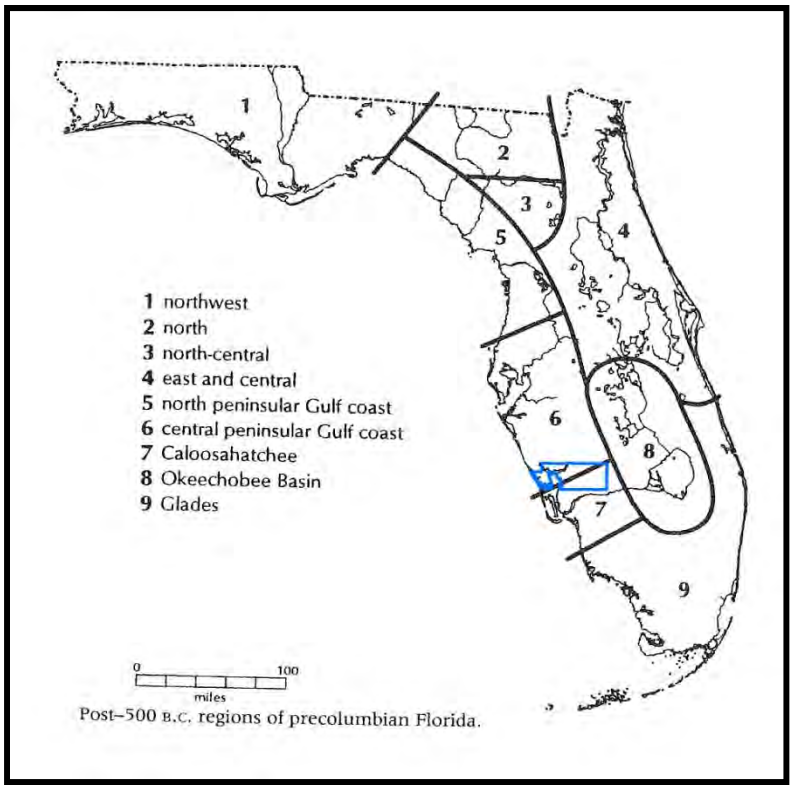


Figure 3.1. Cultural Regions of Florida (Milanich 1994)

While both of these cultural regions share a similar sequence from Paleo-Indian to Late Archaic, the later periods more distinctive. The central peninsula Gulf Coast cultural region has been recognized as the southern extent of the Weeden island/Safety Harbor cultural period, while the Caloosahatchee consists of Glades cultural material. The following review of regional culture history is presented as a framework for understanding human land use in Charlotte County; therefore the discussion will include both cultural sequences mentioned above.

Paleoindian Period

Accepted evidence for the earliest human occupation in the southeastern United States dates to the Paleo-Indian period, which began between 10,000 and 12,000 BC (Austin 2001). Much of the data regarding the Paleo-Indian period have been obtained during underwater excavation of two inland spring sites in Sarasota County. Radiocarbon dates clustering at 10,000 BC have been obtained from Little Salt Spring (8SO18) and Warm Mineral Springs (8SO19) in Sarasota County (Milanich 1994: 44; Cockrell and Murphy 1978; Clausen et al. 1979). The Little Salt Spring site produced a sharpened wooden stake radiocarbon dated to 10,030 BC and an extinct giant tortoise carapace dated to 11,450 BC (Koski et al 2006). In northwest Florida, Paleo-Indian artifact-bearing strata at Page/Ladson (8JE591), located in sinkholes below the floor of the Aucilla River, have yielded radiocarbon dates between 10,000-7,500 BC (Dunbar et al. 1988).

Based on the recovery of diagnostic Paleo-Indian artifacts (i.e., stone projectile points), the major areas of Paleo-Indian site concentration are within the Northern Panhandle and central Gulf Coast regions of Florida (Dunbar and Waller 1983). Most finds have come from sinkholes and riverbeds in localities characterized by areas of exposed Tertiary age limestone. Several researchers have suggested that high quality chert quarries, along with sinkholes, were primary factors influencing Paleo-Indian settlement (Dunbar and Waller 1983; Dunbar 1991).

With regard to Charlotte County, no Paleo-Indian artifacts have been reported to FMSF at the time of writing. The nearest Paleo-Indian sites are located at Warm Mineral Springs and Little Salt Springs, in Sarasota County (Hyde et al 1991). Excavations of these sites have supplied additional information about Paleo-Indian life ways, as they existed in central Florida. As a result of archaeological surveys and test excavations at Harney Flats and other sites in nearby Hillsborough County, it is typically believed that settlements were small and ephemeral, and material possessions light and portable (see Daniel 1985; Daniel and Wisenbaker 1987).

Archaic Period

The environment of the Archaic period was characterized by warmer climatic conditions and higher sea levels, which resulted in the emergence of mixed hardwood forest communities, particularly mesic oak-hickory forests (Milanich and Fairbanks 1980; Smith 1986). The widespread extinction of Pleistocene megafauna species accompanied the environmental changes that marked the onset of the Holocene As a result, Archaic period Indians focused their subsistence strategies on the procurement of smaller game, fish, wild plant foods, and in some cases, shellfish.

There seems to have been a significant increase in population during the Archaic, with groups developing regional habitat-specific adaptations and material assemblages (Smith 1986:10). Over time, populations became increasingly sedentary, and a variety of site types evolved, including base camps or villages, short-term bivouacs, procurement camps, and cemeteries. On the basis of distinct, mostly lithic, artifact assemblages, and the introduction of fired clay pottery late in the period, most archaeologists have partitioned the Archaic into three subperiods, Early, Middle, and Late.

Early Archaic (8,000-6,000 BC)

The earliest Archaic populations seem to exhibit settlement patterns similar to those used by their predecessors, suggesting strong continuity between Early Archaic and previous Paleo-Indian life ways (Milanich 1994:63). With the emergence of more numerous and diversified ecological settings during the Early Archaic, however, regional specialization increased, leading to greater interregional variation. It is generally assumed that Early Holocene populations were composed of small, nomadic bands that made seasonal rounds on the basis of resource abundance, therefore occupying disparate geographic resource extraction locales throughout the year (Hemmings and Kohler 1974; Smith 1986:16-18). Familiarity with a specific region probably resulted in seasonal reuse of the same resource locale.

It has been proposed that while Early Archaic bands were foragers, they occupied "exclusive territories," possibly defined by the region's natural, east-west drainage patterns (Daniel 1985:264-265). Such territories would have incorporated both upland and lowland resource locales. Within this model, bands coalesced along upland borders during the fall and winter, later to disband and roam the lowlands during the warmer months of the year. This scheduled subsistence dichotomy is believed to have initiated during the Archaic when "a more temperate seasonal environment" emerged (Daniel 1985:266).

In Florida, Early Archaic components are generally distinguished through the presence of distinct projectile point types such as Kirk, Greenbriar, Hardee beveled, Sumter, Arredondo, Hamilton, and Wacissa (Bullen 1975; Milanich 1994:63). For the most part, Archaic groups produced a tool assemblage that was not as well produced as those of the Paleo-Indian period. In addition, there is evidence for an increase in the variety of stone tools produced, and observable wear patterns indicate numerous uses of individual tools. Comparatively, Archaic period stone tools are quite different from those of the earlier Paleo-Indian era in that, with some prominent exceptions, they appear to have been much more expediently produced. Paleo-Indian tools, on the other hand, were manufactured for specific tasks, and were repeatedly used until they were lost, broken, or worn out. In addition to stone implements, discoveries at Little Salt Spring in Sarasota County (Clausen et al 1979) and the Windover site (Doran 2002) in Brevard County indicate that bone and wood tools were also manufactured and use for a variety of tasks during the Early to Middle Archaic (Almy et al 2005).

According to the FMSF data, there are four sites in Charlotte County with early Archaic components. These are located along the Myakka River North of El Jobean, and one in the central area of the Rotonda.

Middle Archaic (6,000-2,000 BC)

Middle Archaic cultures continued to exploit upland and riverine terrestrial resources, and apparently added shellfish to their diverse diet. This presumed increased emphasis on the exploitation of aquatic fauna (i.e., fish and shellfish) is generally attributed to climatic change and sea level rise associated with the warmer temperatures of the Middle Holocene Hypsithermal episode (Smith 1986:22; Miller 1991). Freshwater shell middens, dated to the Mt. Taylor Middle Archaic period, are numerous within the middle St. Johns River Valley of Florida (Goggin 1948,

1952; Cumbaa 1976; Milanich and Fairbanks 1980). Submerged evidence indicating possible Paleo-Indian or Early Archaic exploitation of the Gulf coast has been presented, but needs further study (Goodyear 1983). Thus, the remains of Archaic, and possibly Paleolndian, shell middens might exist on the continental shelf beneath ocean waters.

Generally speaking, most upland sites of this period in the region are manifest as lithic scatters, containing abundant debitage and expedient tools, but few finished stone tools. A few sites, e.g., Blackwater Pond (8HE66), have produced a variety of finished tools suggesting use as a base camp (Whitney 1984). The most well known artifacts of the Middle Archaic period in Florida belong to a family of large, stemmed spear point types that are variations of a basic design, and include Hillsborough, Newnan, Alachua, Putnam, and Marion (Bullen 1975). Due to good preservation conditions at some Middle Archaic shell middens, we see that animal bone was an important source of raw material for tool and ornament production (Milanich and Fairbanks 1980:57). Several cemetery sites with human burials in bogs, wetlands, and springs provide the first evidence for mortuary ceremonialism during the Middle Archaic. The Little Salt Midden and Slough, formerly the Hazeltine site (Luer 2002; Koski, et al. 2006), in southern Sarasota County is an example of this type of site.

According to the FMSF, three sites in Charlotte County have Middle Archaic components. All three of these sites are located along the shore in Port Charlotte, south of Punta Gorda, and north of Gasparilla Sound.

Late Archaic (2,500-500 BC)

Occurring about 2,500 BC, the Late Archaic witnessed one of the most revolutionary technological innovations of the Archaic period, fired clay pottery. This ceramic ware was tempered with vegetal fibers, and occasionally sand, and was molded by hand into bowls of various sizes and shapes (Waring 1968; Bullen 1972: Milanich and Fairbanks 1980). Fiber-tempered pottery of the Florida Gulf coast was initially called Norwood, though it has been renamed, Orange, a well known aboriginal ceramic for Florida (Bullen 1972). Ripley Bullen established the cultural history sequence for Orange pottery nearly 50 years ago (1954; 1972). However, based upon new chronometric data from seven sites in northeastern Florida, Bullen's sequence (Orange 1-4) is actually one series (Orange 1) (Sassaman 2003). Surface decorations include incised, simple stamped, and punctated, but plain wares are usually most common. Luer (1989: 251-253) also reported that St. Johns pottery from southwestern Florida is more common than previously believed. Sponge spicules in the paste among Orange incised sherds is prevalent in the St. Johns Valley and suggests that the St. Johns ceramic tradition dates back to the beginning of pottery making in that region (Cordell n.d.; Koski et al 2006).

Late Archaic cultures are known from their middens adjacent to the Gulf and from sites located inland. The largest of these are shell middens (Koski et al 2006). Culbreath, Lafayette, and Clay projectile points, however, are a common artifact at inland and coastal Late Archaic sites (Daniel 1982; Estabrook and Newman 1984; Whitney 1984). In Sarasota County, large coastal and riverine shell middens began to accumulate along the bays, although many others are believed to be presently submerged along the former coastline (Milanich 1994:100). Coastal adaptations focused on the exploitation of vertebrate and invertebrate estuarine fauna, most notably fish and

oysters. The Palmer site, in Sarasota County, is a horsehoe shaped midden cirling a freshwater spring adjacent to Sarasota Bay near Osprey (Bullen and Bullen 1976; Kozuch 1998; Quitmyer 1998, Almy et al 2005).

Manasota (500 BC - AD 1000)

Along the Gulf coast, communities were apparently situated in maritime hammocks along the mainland shore and on islands near tidal marshes, where subsistence centered on the exploitation of estuarine and maritime forest resources (Milanich 1994). In the Central Peninsular Gulf Coast archaeological region, a coastal manifestation, which spanned the period 500 BC - AD 800, has been referred to as the Manasota culture. Artifactually, its assemblage is defined on the basis of undecorated sand tempered pottery of distinct vessel forms, as well as by a variety of shell and bone tools. Based on the distribution of these traits, it seems that Manasota peoples primarily occupied the coast, since only a few Manasota sites have been found in the interior of Florida to date (Hardin and Piper 1984). Recent investigations on Lemon Bay have furthered the understanding of the Manasota Period which persisted during AD 400 – 800 (Ardren et al 2003). Although inconclusive, interior sites that appear to be contemporaneous with coastal Manasota sites have been found along Fox and Salt creeks (Williams et al 1990; ACI 2006). This period is marked by a more diverse regional material culture, as well as more complex political and religious organization (Koski et al 2006).

Mortuary evidence from early Manasota phase sites indicates that interments were placed in shell middens located near living areas, while later burials (ca. AD 300 - 700) have been found in mounds, reflecting Weeden Island influences from the north. The earliest burials are generally primary interments, often in the flexed position. Later burials are usually secondary bundles that, in some instances, may have been cremated. Grave goods of exotic Weeden Island ceramics often accompany the later interments.

Weeden Island was a widespread cultural manifestation among various groups throughout Florida, Georgia and Alabama, that shared similar social, ideological, material and settlement traits. These pre-Mississippian peoples possessed a secular ceramic assemblage that included a wide range of vessel attributes and decorative styles. Revered members of society seemed to have had access to a special use or "cult pottery" that archaeologically is generally restricted to mortuary contexts. Barrier islands like Manasota, Longboat and Siesta Keys were utilized for both habitation as well as burials during this period (Dickel 1991; Luer and Almy 1979).

Technologically and stylistically complex Weeden Island pottery is considered an outstanding achievement and seems to have played an important role in an extensive trade network. In the central peninsular Gulf coast area, a sacred-secular ceramic dichotomy seems to have existed, which involved Weeden Island mortuary ceramics and plain sand tempered utilitarian wares. This extensive trade network of the Weeden Island Culture from the north greatly influenced the people of the region and is currently referred to as Weeden Island-related (Milanich et al.1984 and Milanich 1994). In fact, the type site for Weeden Island, which was first excavated by Fewkes (1924) and later by Sears (1971), is located in St. Petersburg.

Safety Harbor (AD 1000 - 1567)

The last prehistoric cultural manifestation along the central peninsula Gulf coast is the Safety Harbor culture, which extended southward from the mouth of the Withlacoochee River to Charlotte Harbor. This culture emerged around AD 1000 is Sarasota County, and is typified by ceremonial centers with truncated temple mounds and open village plazas that are surrounded by middens (Willey 1949; Milanich 1994; Mitchem 1989). Ethnohistorical and archaeological reconstructions of Safety Harbor suggest a more complex political-ceremonial structure than the preceding Weeden Island culture, with traits similar to those of Mississippian cultures to the north (Fort Walton). Hunting and gathering, especially of marine resources, continued as primary subsistence activities. Horticulture, a hallmark of Mississippian cultures throughout the Southeast, does not appear to have been practiced in the Tampa Bay region.

A phase sequence for the Safety Harbor period was proposed by Mitchem in 1989. He divides the period into four phases on the basis of distinct pottery types and radiocarbon dates in some instances. The first two phases are prehistoric and include Englewood (AD 900-1100) and Pinellas (AD1100-1500). They are followed by two colonial era phases, Tatham (AD 1500-1567) and Bayview (AD 1567-1725), marked by the presence of datable European artifacts. Without radiocarbon dates, it is often difficult to date village and camp sites based solely on ceramics, because of the ubiquity of plain sand tempered pottery and the dearth of decorated wares. In contrast, mound ceramics display finely executed surface designs that help distinguish Safety Harbor wares (Willey 1949; Sears 1973).

Safety Harbor sites are found mostly along the coast and include shell middens and shell and/or sand mounds (Milanich 1994:389). The heartland is centered on the Tampa Bay region, encompassing Hillsborough, Pinellas, Manatee and southern Pasco counties, and identified as the Circum-Tampa Bay variant. Important coastal sites include the Safety Harbor type site (Griffin and Bullen 1950) and Tierra Verde (Sears 1967) in Pinellas County, as well as Buck Island (Bullen 1952) and Picnic Mound (Willey 1949) in Hillsborough County. The latter two sites represent sizable inland manifestations of the Safety Harbor culture.

Historical documents supplement the archaeological record during this period and include the names of the indigenous groups located in the Tampa region. However, the name ‘Tampa’ is misleading and is associated with the Charlotte Harbor, Pine Island Sound, and Estero Bay areas” (Luer 2000). The groups were referred to as the Uzita, Tocabaga, Pohoy, Alafay, and Mocaso by explorers and writers during the sixteenth and seventeenth centuries.

Caloosahatchee 500 BC- AD 1500

The Caloosahatchee region extends west of the Okeechobee region into Charlotte Harbor. The primary site types attributed to the Caloosahatchee culture are shell middens, mounds and canals. The Peace, Myakka and Caloosahatchee rivers and estuary and bay systems of Charlotte Harbor and Pine Island sound provided a variety of marine resources for the Native American inhabitants of the area to exploit. In some Caloosahatchee sites human interments have been found in mounds and shell middens. These burials are often accompanied by Weeden Island or Safety Harbor pottery along with local types. The Caloosahatchee culture has been separated into 5 different periods. The original model for cultural development in the area was developed by Randolph Windmere and was later refined William Marquart. (Milanich 1994) (Table 2.1).

Table 2.1. Chronological Periods of Caloosahatchee Culture.

Period	Dates
Caloosahatchee IV	AD 1350-1500
Caloosahatchee III	AD 1200-1350
Caloosahatchee IIb	AD 800-1200
Caloosahatchee IIa	AD 500(-650)-800
Caloosahatchee I	500 BC-AD 500 (-650)

Caloosahatchee I corresponds with sea levels that were 2-3 feet below the current standard, therefore many of these early site exist below the present water table. During this time of low sea levels the size of shell middens increased and there was a change in pottery types and shell tools. Columbia projectile points, Belle Glade and Weeden Island potter appears in middens at this time (Milanich 1994).

During the Caloosahatchee II period sand mounds were being used for interments and the dead were buried both in bundled secondary deposits and primary flexed burials. This time period may have also seen increased contact with the Gulf Coast as evidenced by increasing amounts of Weeden Island and Safety Harbor pottery. During this period rising sea levels perhaps altered settlement patterns and there was likely a shift in specific site locations (Milanich 1994).

Caloosahatchee III period is marked by the appearance of St. John's II pottery in midden sites. Its appearance may point to Caloosahatchee political influence in the eastern Florida region. Sand burial mounds continued to be used and Safety Harbor pottery is frequently found within them. Due to the widespread presence of Safety Harbor pottery in Caloosahatchee sites, it is difficult to make a precise boundary dividing the Safety Harbor culture found in the central Florida peninsula from Caloosahatchee gulf coast culture (Milanich 1994).

The final Caloosahatchee period, Caloosahatchee IV, is marked by a decline of Belle Glade plain pottery. The pottery inventories from both the Glades region and the Caloosahatchee region during this time period are very similar, which may point to the political influence of the Caloosahatchee chiefs. When Europeans explored the Charlotte County area, they encountered the Calusa Indians. The political system of this tribe, as recorded by early explorers, is remarkably similar to the model presented by archaeologist of the pre-Columbian Caloosahatchee culture (Milanich 1994).

Colonial Era (AD 1539-1725)

The central Tampa Bay shoreline and the area of present day Charlotte County was first mapped and explored by the Spanish in the early 16th century. The first European contact in the Charlotte County area occurred in 1513 when Juan Ponce de Leon landed in an area near Charlotte Harbor. Although the Spanish faced resistance from local Native American groups and an attempt to construct a permanent settlement in 1521 were unsuccessful, Pone de Leon was able to claim the Florida peninsula for the King of Spain (Gannon 1996).

Hernando DeSoto was another early European explorer to visit the Charlotte Harbor Area. According to accounts of his travels, the expedition landed at Ucita or Uzita, an abandoned Indian village. The expedition proceeded northeast along the Myakka River. According to early Spanish documents several native groups, including the Uzita, Mocoso, Pohoy, and Tocobaga, occupied greater Tampa Bay region. Desoto was the first explorer known to have landed on Longboat Key on July 9, 1539.

Following the movement of the De Soto expedition through North Florida in 1539, the Florida natives were forced to adapt to a rapidly changing physical and cultural environment. During the Spanish-Mission period, the native population was ravaged by the introduction of European diseases and fatal conflict (Mitchem 1989). A mission was established in the 1560s in the Charlotte County area by the founder of St. Augustine, Pedro Menendez. The mission was established on Mound Key in Charlotte Harbor, but was short lived, since the Calusa Indians burned their village to the ground and left the area after the Spanish executed their chief in 1570 (Tebeau 1971).

Between 1513 and 1763, Spanish explorers visited the west coast of Florida and introduced the name "Sarasota" into the terminology of the region. The British government occupied the area between 1763 and 1784 and Cuban and Spanish fisherman established communities or "ranchos" during this time (Sarasota County 1997). The earliest of these communities was at Useppa Island and San Carlos Bay (Hammond 1973). These communities supplied fish to Cuban and northern markets until the mid-1830s, when customs control and the onset of the Seminole Indian War closed the fisheries (Almy et al. 2005).

Following destructive raids by the British (1702-1704) on the Spanish Mission system, which stretched from St. Augustine westward to present-day Tallahassee, much of the north Florida region was abandoned. Subsequently, Creek Indian refugees, known today as Seminoles, began to infiltrate northern Florida during the mid-eighteenth century, and some groups settled within the west-central portion of Florida (Grismer 1946). Conflicts arose as homesteaders and Seminoles occupied the same areas. Settlers would take shelter at Branch Fort at Manatee Mineral Springs when hostilities arose to the north of Charlotte County. As an outcome of the Second Seminole War (1832-1840), most Seminoles sought refuge deep within the Everglades of south Florida, where their descendents still reside.

Late Historic Period

In 1821 Spain relinquished control of present-day Florida to the United States, and it remained in U.S. Territory until 1845 when it became a State. Between 1821 -1845, central Florida was the scene of numerous hostilities between transplanted Creek Indians (Seminoles) and white settlers. The First Seminole War erupted in 1817 when Andrew Jackson ordered Major David E. Twiggs to attack the village of Fowltown and remove the Seminoles from American territory. Neamathla of the Red Stick led the villagers to Lake Miccosukee, where they regrouped and ambushed a boat under the command of Lieutenant Robert W. Scott on the Appalachicola River (Covington 1993:41-42). This conflict ended with the occupation of Pensacola by the forces of General Andrew Jackson in 1821. In 1823 the Seminoles signed the Treaty of Moultrie Creek; this treaty mandated the relocation of the Seminoles to a reservation approximately 4 million

acres located in the center of the state (Mahon 1967:50). Over the next decade, two more treaties were forced upon the Seminoles in an attempt to remove their population to Oklahoma. The terms of the treaties were considered unfair by the Seminoles, and its signing led to the Second Seminole War in 1835 (Mahon 1967:75-83).

The Second Seminole War broke out in 1835 due to border tensions, Georgian aggressions against free blacks among the Seminoles, United States Indian agent mismanagement, and the terms of the Treaty of Moultrie Creek (Fairbanks 1978:185-186). The Second Seminole War was marked by several major engagements. On December 28, 1835 a force of Seminoles destroyed a company of men under the command of Major Francis Dade (Covington 1993:79-80). Another engagement occurred in January of 1837 when General Jesup overtook the Seminole stronghold at Lake Tohopekaliga in present day Polk County (Sprague 1964:172, 258).

During the Second Seminole War a trading post was established by Kennedy and Darling on the east bank of Charlotte Harbor. This store traded with the local Seminoles, but was burned by local Native Americans in 1848 (Charlotte County Timeline 2000). The area around this trading post became known as "burnt store" and local informant confirmed that the remains of the trading post were recognizable up until the 1960s (Nancy Lisby Personal Communication 2008). This area eventually lent its named to Burnt Store Road, which runs through the region.

In order to protect against the Seminole threat, a United States fort was established to the north in what is now the modern day city of Sarasota; Fort Armistead. The fort stood between the modern 10th St. and ML King Blvd. Eventually, the fort was closed on May 5, 1841 because of the prominence of diseases such as dysentery and fevers (HSC 2007). General Walker Kieth Armistead was the head of the United States forces in Florida when the fort was abandoned. He became the commander on the 5th of May 1840 and was replaced on the 31st of May 1841 (Mahon 1985).

With the end of Second Seminole War in 1842, the Armed Occupation Act was approved to encourage settlement of central Florida. As a result, any family head or male over the age of 18 was eligible to receive 160 acres provided they agreed to cultivate at least five acres, build a dwelling, and reside there for at least five years (Tebeau 1980:149). Soon settlers, mostly southern Anglo-American farmers, began to infiltrate the central Gulf coastal area.

In 1845, the Union admitted the State of Florida with Tallahassee as the state capital. In December of 1855, the Third Seminole War started as a backlash to increased population pressure and pressure by the government on the few remaining Native Americans in Florida to emigrate west. The Third Seminole War was over by May of 1858 after the U.S. government resorted to monetary persuasion to induce the remaining Seminole to move west.

During the mid-1800s the population of Charlotte County remained small and consisted mostly of relocated Native American Groups and Spanish fisherman from Cuba. These fisherman established "fish ranches", with one of the earliest established in 1832 by Jose Caldez. This subsidiary of the Bardias Wholesale Fish Company of Havana was headquartered at Upessa, and the largest ranch employed 60 individuals (Charlotte County Timeline 2000). In addition to fishing, cattle ranching was established in the region in the years prior to the Civil War. In 1860

two early settlers Jacob Summerlin, a ranchers, and James McCay, a steamboat captain, built a dock on the east side of Charlotte Harbor to ship cattle to Cuba.

In 1861, Florida seceded from the Union. Although during the American Civil War, Florida saw very little military action, the Union blockade extends to Charlotte Harbor. The blockade effectively ends the shipment of cattle of Cuba, although a few blockade runs were successfully able to make it through the Union lines, with cattle and cotton from Georgia and Florida (Charlotte County Timeline 2000)

At the end of the Civil War, Charlotte County was still sparkly populated, and would remain so until the first railroad lines reached the area in 1886. Some of the earliest settlement in Charlotte County occurred in Hickory Bluff (later Charlotte Harbor) and Harborview (Austin et al. 2008). Ziba King blazed one of the first roadways in the region, a cow path from his ranch at Fort Ogden to a dock in Hickory Bluff. The road, now known as Kings Highway, is still in use today. In 1873 the Trinity Methodist Church was established in Hickory Bluff and shortly after a school and post office opened (Charlotte County Timeline 2000).

The arrival of railroad lines to Charlotte County in the 1880's spurred economic development and population growth across the county. In 1886 the first railroad line, originally called the Florida Southern Railroad arrived in the town of Trabue, now Punta Gorda. The town of Trabue had been platted in 1885 by Col. Isaac Trabue who attempted to impose his name on the community; however, the residents favored the name Punta Gorda after the Spanish name for the area (Austin et al. 2008). A dock, called "long dock" was built in Punta Gorda at the end of the Florida Southern Rail line, and connected to the New Orleans-Havana line of the Morgan Steamship Company. This allowed the shipment of fish and cattle to market across the southeast (Charlotte County timeline 2000).

The growth of Charlotte County led to the development of many new communities, of which many were associated with the new railroad construction. The town of Cleveland was platted in 1884, but received a post office and railroad depot in 1886 (Charlotte County timeline 2000). A sawmill and phosphorous mines were also eventually established in this community. The community of Grove City was established on the west coast of Charlotte County and which received a post office in 1887. The community of Solana was platted in 1889 and by 1895 it produced 90% of the pineapple consumed in the US markets. In 1895 the community of Englewood was established and a hotel was constructed in 1896. In 1897 a post office was established at the community of Vineland (Charlotte County Timeline 2000).

In 1902 the Florida Southern Railway declares bankruptcy and is purchased by the Atlantic Coast Line, which extends the railroad tracks southward from Punta Gorda to Gilchrist and Lee County. In 1907 the second railroad in Charlotte County, the Charlotte Harbor and Northern Railroad began operation. This railroad was built by the American Agricultural Chemical Company to transport phosphorus from mines in De Soto County. It traveled across the western side of the county, and had its terminus at Gasparilla Island.

The primary industries in Charlotte County around the turn of the century were commercial fishing, cattle ranching, lumbering and turpentining. Punta Gorda was the center of commercial

fishing at this time, with access to a deep water dock and ice houses for shipping, however there was also a booming fishing community at Placida and Gasparilla Island (Charlotte County Timeline 2000). Lumbering and turpentining were large scale industries in all of Florida at the turn of the 20th century (Austin et al. 2008). In Charlotte County the major areas of activity centers for processing of lumber and distilling of turpentine were at Southland (later El Jobean), Vineland, Placida, Cleveland, Acline, Alligator Creek and McCall (Williams and Cleveland 1992). Some of the largest cattle ranches in the area were owned by Ziba King in the Charlotte Harbor area, but another large cattle ranch was owned by the McQueen family and was located in the area of Jones Loop Road (Nancy Lisby personal communication 2008).

The 1920's Florida Land boom ushered in an increased development in Charlotte County. Land values skyrocketed and the population increased across the state (Gannon 1996). Charlotte County was officially established during this boom time, being designated as Florida's 57th county on April 23, 1921. The communities of El Jobean and McCall were established and Sancassa and Vineland Park grew in population (Austin et al. 2008). The third railroad in Charlotte County, the Seaboard Air Line Fort Ogden to Fort Myers connection was built in 1927. This railroad line ran across the less populated eastern portion of the country and had one station stop in Charlotte County at the community of Gilchrist. This railroad was short-lived and ceased commercial operation c1939. Also during the 1920 there was community wide interest in increased road development and improvement for automobile use. Construction on both US 41/Tamiami Trail and US 17 began in the 1920s, with many major and minor roads completed throughout the county by 1934.

In the 1940s and 50s Charlotte County saw increased population growth and development. The Punta Gorda Army Airbase was built in 1942 was used as an auxiliary field to the 3rd Air Force facility at the Sarasota Army Air base. Flight instruction was taught on P-40 Warhawks, P-47 Thunderbolts, and P-51 Mustangs. At the end of WWII the Army transferred the airport to the county and it became the Charlotte County Airport. Increased community development also occurred in Port Charlotte and Harbor Ridge, with the development of suburban subdivisions in the late 1950s and early 1960s.

IV. PREVIOUS RESEARCH

Prior to fieldwork, the Florida Master Site File (FMSF) was consulted to obtain information on previously recorded sites and surveys pertinent to the present study. As a result, no cultural resources have been documented within the study corridor. Expanding the search to include a one-mile radius revealed eight previously recorded resource groups and eight previously recorded cultural sites (see Tables 4.1 and 4.2 and Figure 4.1)

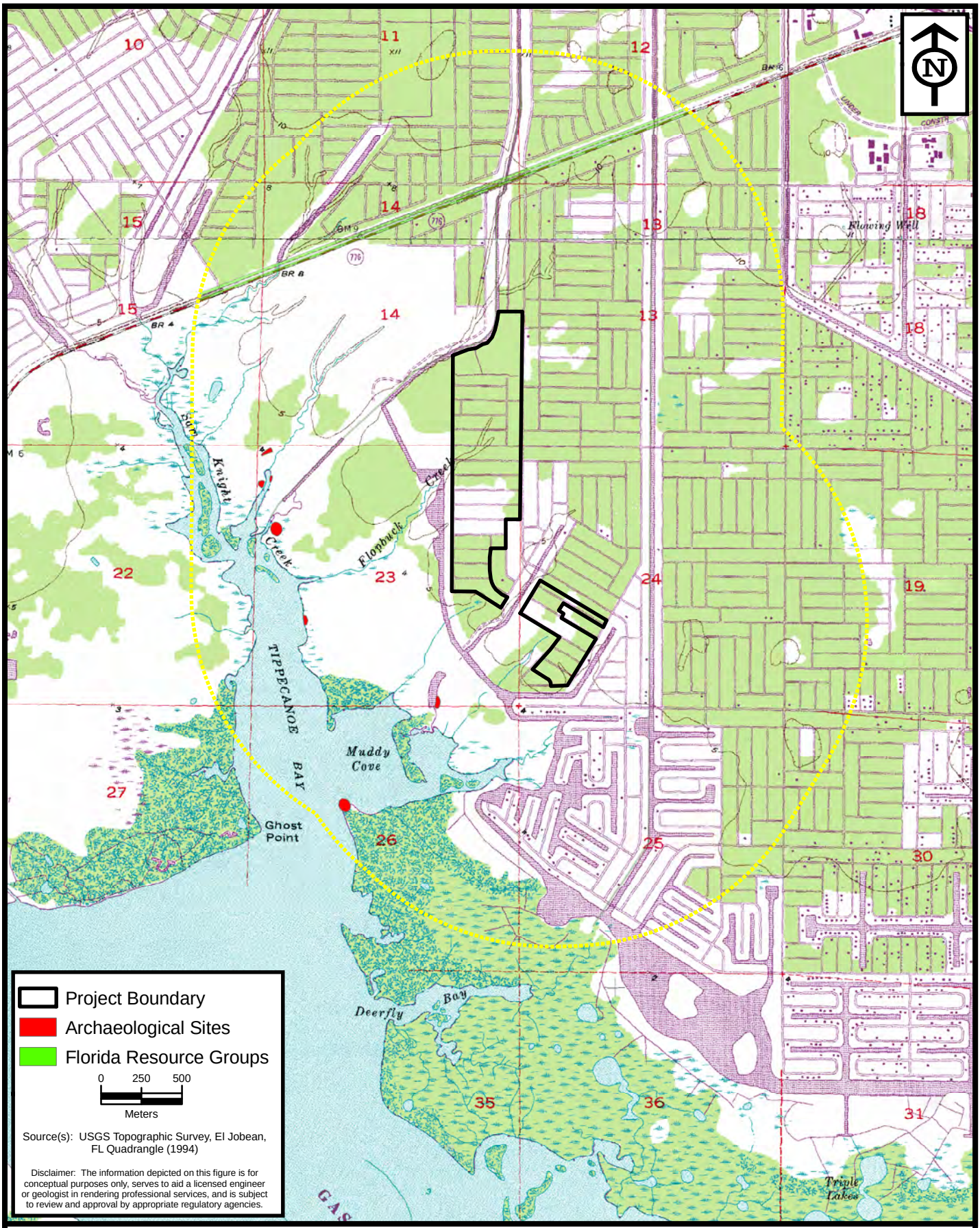
Table 4.1: Previously Recorded Resource Groups within a One-Mile Radius

SITEID	SITENAME	SITETYPE1	SURVEVAL	SHPOEVAL	HUMANREMNS
CH00070	HUCKABY CREEK MOUND	Prehistoric burial mound(s)	More Work Recommended	Not Evaluated	YES
CH00071	MUDDY COVE 1	Destroyed	Not Evaluated by Recorder	Not Evaluated	
CH00072	MUDDY COVE TWO	Prehistoric shell midden	Eligible for NRHP	Not Evaluated	
CH00073A	HUCKABY CREEK WEST	Campsite (prehistoric)	Insufficient Information	Not Evaluated	
CH00073B	HUCKABY CREEK EAST	Campsite (prehistoric)	Insufficient Information	Not Evaluated	YES
CH00087	TIPPCANOE BAY MIDDEN	Campsite (prehistoric)	Insufficient Information	Not Evaluated	
CH00497	CHRISTOPHER WATERWAY MIDDEN	Campsite (prehistoric)	Insufficient Information	Not Evaluated	
CH01937	Tom's Mound	Habitation (prehistoric)	Insufficient Information	Not Evaluated	

Table 4.2: Previously Recorded Cultural Sites within a One-Mile Radius

SITEID	SITENAME	SITETYPE1	CULTURE1	SURVEVAL	SHPOEVAL	HUMANREMNS
CH00070	HUCKABY CREEK MOUND	Prehistoric burial mound(s)	Indeterminate	More Work Recommended	Not Evaluated	YES
CH00071	MUDDY COVE 1	Destroyed	Glades, 1000 B.C.-A.D. 1700	Not Evaluated by Recorder	Not Evaluated	
CH00072	MUDDY COVE TWO	Prehistoric shell midden	Caloosahatchee IIB, A.D. 800-1200	Eligible for NRHP	Not Evaluated	
CH00073A	HUCKABY CREEK WEST	Campsite (prehistoric)	Englewood	Insufficient Information	Not Evaluated	

CH00073B	HUCKABY CREEK EAST	Campsite (prehistoric)	Englewood	Insufficient Information	Not Evaluated	YES
CH00087	TIPPCANOE BAY MIDDEN	Campsite (prehistoric)	Glades II, A.D. 750-1200	Insufficient Information	Not Evaluated	
CH00497	CHRISTOPHER WATERWAY MIDDEN	Campsite (prehistoric)	Glades, 1000 B.C.-A.D. 1700	Insufficient Information	Not Evaluated	
CH01937	Tom's Mound	Habitation (prehistoric)	Orange	Insufficient Information	Not Evaluated	



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Previously Recorded Cultural Resources

Tippecane II Mitigation Area

Charlotte County, Florida

Project:	EO08019.01
Date:	Feb 2011
Drwn/Chkd:	RS
Figure:	**4.1**

X:\GIS (2)\Projects\Port Charlotte\Tippecanoe\mxd\Location.mxd

V. RESEARCH DESIGN AND METHODOLOGY

The fieldwork for this project was preceded by a review of the Florida Master Site File (FMSF) to determine the presence of previously recorded archaeological sites within the study area; an examination of soil maps; the attainment of familiarity with topographic maps of the project area so that elevation data could be utilized, and an investigation of previous archaeological research pertaining to the region. In addition, data regarding past aboriginal settlement and subsistence patterns within Florida were considered. The Charlotte County Property Appraiser website was also consulted to determine if structures were present within the project area.

The goals of the survey were to locate, delineate, identify and evaluate all cultural resources within the proposed project corridor, and to assess their significance and potential eligibility for listing in the *National Register of Historic Places* in accordance with *National Register Criteria* (36 CFR 60.4).

Fieldwork

Fieldwork during the cultural resource assessment survey consisted of a pedestrian inspection coupled with shovel testing (n=40) excavated throughout the project area at 50 and 100 meter intervals. All shovel tests measured 50 cm in diameter and were dug to a maximum depth of 100 cmbs (centimeters below surface) whenever possible. All excavated material was sifted through 6.35 mm (1/4") mesh mounted upon a portable shaker screen. All field notes and maps from this survey were transported to the ESI laboratory for curation.

Informant Interviews

Locating archaeological sites and gaining familiarity with the history of a project corridor is often facilitated through interviewing local citizens that live or spend time within close proximity to the parcel. During fieldwork, local resident Joe Vidulich was consulted regarding his knowledge of the Tippecanoe II Mitigation are. During the interview Mr. Vidulich divulged that there was a possible relic stream bed in the northern portion of the project area.

Unexpected Discoveries

Archaeologists frequently encounter unanticipated features or sites that require efforts that exceed the scope of project expectations. In such cases it is sometimes necessary to reevaluate the research design and/or seek additional funding to address unexpected discoveries. Unexpected findings might occur during project development and could include the discovery of human remains, which would require additional coordination with the state archaeologist in compliance with Chapter 872.05, Florida Statues, or a medical examiner if the remains appear to be less than 75 years old.

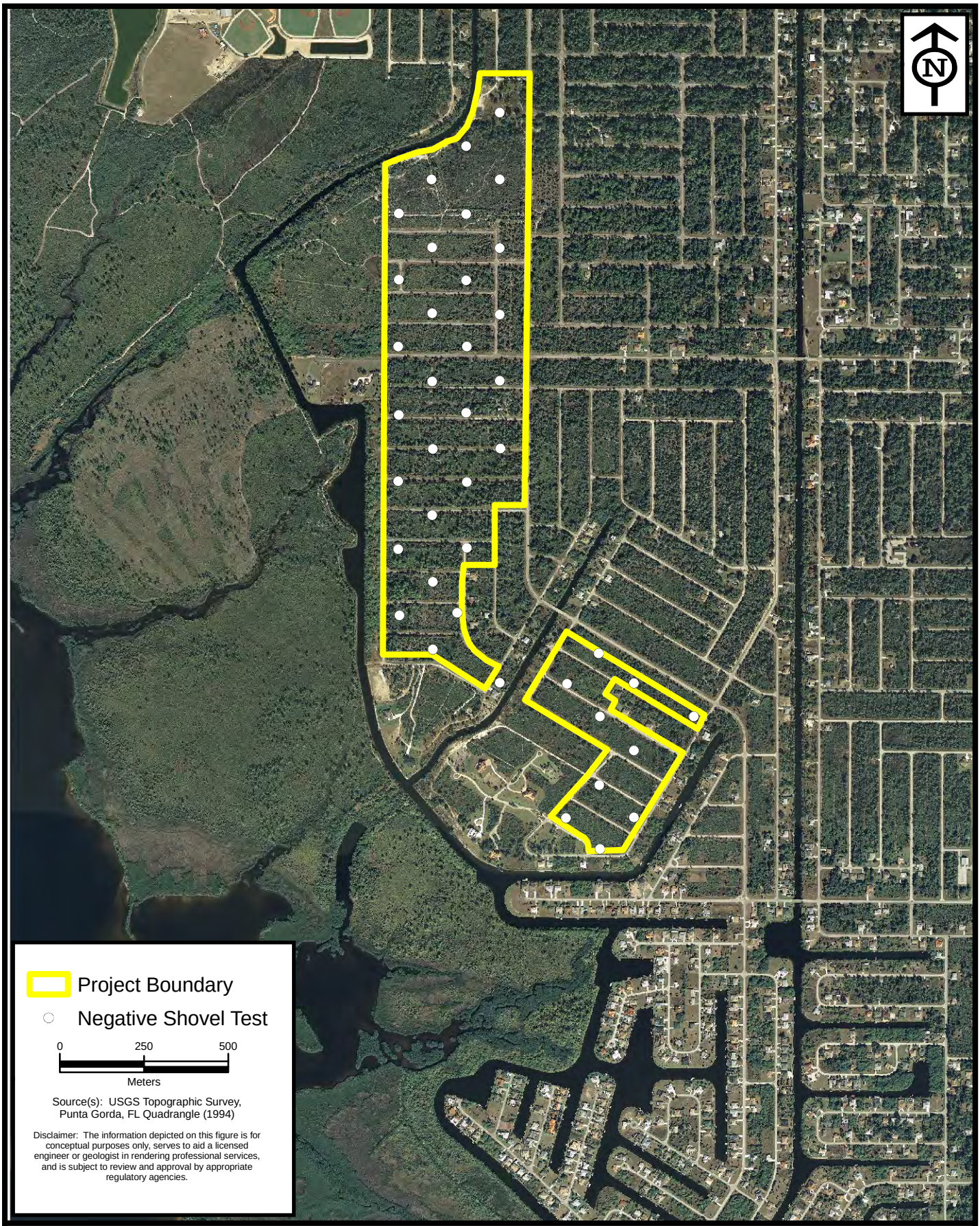
It is our policy to amend a project research design as needed to ensure that proper treatment and evaluation are afforded to unexpected findings. Coordination with the office of the State Archaeologist is a necessary step in such an approach.

VI. RESULTS

In February 2011, Environmental Services, Inc. (ESI) conducted an intensive cultural resource assessment survey of the Tippecanoe II Mitigation Area in Charlotte County, Florida. The approximately 182 acre parcel of land is located along Joppa Avenue, Port Charlotte, Florida. Specifically, the area is located on the El Jobean (1994) Florida USGS 7.5 minute quadrangle maps in Sections 14, 23, and 24 of Township 40 South, Range 21 East (as seen in Figure 1.1). The area is relatively flat poorly drained sandy soil.

The investigation included background research that focused on the history of the area, as well as a review of known cultural resources in the vicinity. Fieldwork consisted of a thorough pedestrian inspection coupled with subsurface testing. The pedestrian inspection was conducted to locate artifacts and/or historic structural remains in areas of exposed ground surface throughout the corridor. Due to dense vegetation, the pedestrian inspection focused primarily along roadways that were partially constructed. Shovel testing (n=40) was conducted at 50 and 100 meter intervals throughout the property. Each test measure 50 cm in diameter and was dug to 100 cmbs whenever possible.

The pedestrian inspection and subsurface testing revealed the property to be relatively leveled and predominately consisting of poorly drained sandy soil. As a result of this study, no archaeological sites or historic structural remains were encountered.



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Shovel Test Results

Tippecane II Mitigation Area

Charlotte County, Florida

Project:	EO08019.01
Date:	Feb 2011
Drwn/Chkd:	RS
Figure:	**6.1**

X:\GIS (2)\Projects\Port Charlotte\Tippecanoe\mxd\Results.mxd

VII. SUMMARY AND CONCLUSIONS

In February 2011, Environmental Services, Inc. (ESI) conducted an intensive cultural resource assessment survey of the Tippecanoe II Mitigation Area in Charlotte County, Florida. The project area contained approximately 182 acres of land situated along Joppa Avenue, Port Charlotte, Florida. Specifically, the area is located on the El Jobean (1994) Florida USGS 7.5 minute quadrangle maps in Sections 14, 23, and 24 of Township 40 South, Range 21 East (as seen in Figure 1.1). This archaeological survey was conducted on behalf of Charlotte County Administration Center.

The investigation included background research that focused on the history of the area, as well as a review of known cultural resources in the vicinity. Fieldwork consisted of a pedestrian inspection and subsurface testing. The pedestrian inspection was conducted to locate artifacts and/or historic structural remains in areas of exposed ground, which consisted of the partially constructed roadways. Shovel testing (n=40) was conducted through the tract, revealing poorly drained sandy soil throughout.

As a result, no archaeological sites or historic structural remains were encountered within the Tippecanoe II Mitigation Area.

REFERENCES CITED

Adams, William,
1989 Historic Properties survey of Charlotte County, Historic Property Associates, Inc., Manuscript on File, Florida DHR

Allen, Kathleen M.S., Green, S.W., and Zubrow, E.B.W. (eds.)
1990 Interpreting Space: GIS and Archaeology, Taylor & Francis, London.

Almy, Marion
1979 The Archaeological Site Potential of Soil Survey Reports. *Florida Anthropologist* 31:75-91.

Almy, Marion, Lee Hutchinson, and Jeff Moates
2005 *Cultural Resource Assessment Survey Hunter Creek Estates, Sarasota, Florida*. Report of Investigations on File at the Division of Archives, History, and Record Management, Tallahassee.

Ancestry.com
2008 http://www.rootsweb.ancestry.com/~flcharlo/cemmain.htm. Accessed on September 25

Archaeological Consultants, Inc.
2006 Cultural Resource Assessment Survey Cattlemen Commerce Center, Sarasota, Florida. On file at the Division of Historical Resources, Tallahassee.

Ardren, Traci, Bill Burger, and Brian Keith Sullivan
2003 Subsurface Soil Exploration (Muck Probing) Analysis and Recommendations for 4.3-Acre and 10-Acre Parcels, Palmer Boulevard and Bell Road, Sarasota County, Florida. Manuscript on File, Ardaman and Associates, Sarasota.

Austin, Robert
2001 Paleoindian and Archaic Archaeology in the Middle Hillsborough River Basin: A Synthetic Overview. Manuscript on File, Florida Division of Historical Resources, Tallahassee.

Austin, Robert J., Travis Fulk, Nick Linville, Jon C. Endonino, and Debra Wells
2008 Survey of Historic Resources, Charlotte County Florida. Manuscript on File, Florida DHR.

Baker, John Milnes
1994 American House Styles. W. W. Norton and Company, New York.

BRW, Inc.
1996 Research Design for the Development of a High Probability Predictive Model for Identifying Archaeological Sites. Report Prepared for: Minnesota Department of Transportation, Minneapolis, MN.

Bullen, Ripley P.
1952 An Archaeological Survey of Amelia Island, Florida. *The Florida Anthropologist* 5:37-64.
1972 The Orange Period of Peninsular Florida. In Fiber Tempered Pottery in Southeastern United States and Northern Columbia: Its Origins, Context, and Significance, edited by Ripley P. Bullen and James Stoltman. *Florida Anthropological Society Publications*, Number 6.
1975 *A Guide to the Identification of Florida Projectile Points*. Gainesville: Kendall Books.

Bullen, Ripley, and Adelaide K. Bullen
1976 *The Palmer Site*. Florida Anthropological Society Pubications 8. Gainesville.

Carley, Rachel
1997 *The Visual Dictionary of American Domestic Architecture*. Henry Holt & Company, New York.

Carr, C. ed.
1985 For Concordance in Archaeological Analysis. Bridging Data Structure, Quantitative Technique, and Theory. Westport Publishers, Kansas City, Mo.

Charlotte County Timeline 2000
http://www.sun-herald.com/2000/hist2.html. accessed on September 29, 2008.

Clausen, Carl J., A. D. Cohen, Cesare Emiliani, J. A. Holman and J. J. Stipp
1979 Little Salt Spring, Florida: A Unique Underwater Site. *Science* 203: 609-614.

Cockrell, W. A. and Larry Murphy
1978 Pleistocene Man in Florida. Archaeology of Eastern North America Vol. 6 *Eastern States Archaeological Federation*, Newark, Delaware.

Cordell, Ann
n.d. Paste Variability and Possible Manufacturing Origins of Late Archaic Fiber-Tempered Pottery Selected Sites in Peninsular Florida. Chapter in *Early Pottery: Technology, Style, and Interaction in the Lower Southeast*, edited by Rebecca Saunders and Christopher Hays. University of Alabama Press, Tuscaloosa.

Covington, James W.
1993 *The Seminoles of Florida*. University Press of Florida, Gainesville.

Cumbaa, Stephen
1976 A Reconsideration of Freshwater Shellfish Exploitation in the Florida Archaic. *Florida Anthropologist* 29:45-59.

Daniel, I. Randolph, Jr.
1982 Test Excavations at the Deerstand Site (8Hi483A) in Hillsborough County, Florida. *Interstate 75 Highway Phase II Archaeological Reports No. 2*. Bureau of Historic Sites and Properties, Florida Division of Archives, History and Records Management, Tallahassee.

1985 A Preliminary Model of Hunter-Gatherer Settlement in Central Florida. *Florida Anthropologist* 38: 261-275.

Daniel, Randy and Michael Wisenbaker
1987 *Harney Flats*. Baywood Publishing Co., Farmingdale.

Della Bona, L.
2000. Protecting Cultural Resources through Forest Management Planning in Ontario Using Archaeological Predictive Modeling. In: Westcott, K.L, and R. J. Brandon 2000. Practical Applications of GIS for Archaeologists: A Predictive Modeling Kit. Taylor & Francis, Philadelphia, Pennsylvania. (pp. 73-99).

Dickel, David N.
1991 Descriptive Analysis of the Skeletal Collection from the Prehistoric Manasota Key Cemetery, Sarasota County, Florida (8SO1292). *Florida Archaeology Reports* Number 22, Florida Department of State, Tallahassee.

Doran, Glen H.
2002 *Windover: Multidisciplinary Investigations of an Early Archaic Florida Cemetery*. University Press of Florida, Gainsville.

Dunbar, James S.
1991 Resource Orientation of Clovis and Suwannee Age Paleoindian Sites in Florida. In *Clovis: Origins and Adaptations*, pp. 185-213, ed. By R. Bonnichsen and K. Turnmier. Center for the First Americans, Oregon State University, Corvallis.

Dunbar, James S. And Ben I. Waller
1983 A Distribution Analysis of the Clovis/Suwannee Paleo-Indian Sites in Florida: A Geographic Approach. *Florida Anthropologist* 36(1-2):18-30.

Duncan, R.B. and K.A. Beckman
2000 "The Application of GIS Predictive Site Location Models within Pennsylvania and West Virginia," in: Practical Applications of GIS for Archaeologists: A Predictive Modeling Toolkit, Taylor & Francis, Inc. Philadelphia, Penn.

Ebert, James
2000 The State of the Art in "Inductive" Predictive Modeling: Seven Big Mistakes (and lots of smaller ones) in: *Practical Applications of GIS for Archaeologists. In: Practical Applications of GIS for Archaeologists*: *A Predictive Modeling Kit*. Wescott and Brandon, eds. Taylor and Francis, London.

Estabrook, Richard W. and Christine Newman
1982 Archaeological Investigations at the Marita and Ranch House Sites, Hillsborough County, Florida. University of South Florida, Department of Anthropology *Archaeological Report* No. 15. Tampa, Florida.

Fairbanks, Charles H.
1978 The Ethnoarchaeology of the Florida Seminole. In *Tachale: Essays on the Indians of Florida and Southeastern Georgia During the Historic Period*. Edited by Jerald T. Milanich and Samuel Proctor, pp. 163-193. University Press of Florida,

Fewkes, Jesse W.
1924 Preliminary Archaeological Investigation at Weeden Island, Florida. *Smithsonian Miscellaneous Collections*, Vol. 76 (13): 1-26. Washington, D.C.

Gannon, Michael, ed.
1996 *The New History of Florida*. University Press of Florida, Gainesville.

Goggin, John M.
1948 Some Pottery Types from Central Florida. *Gainesville Anthropological Association, Bulletin 1*.
1952 *Space and Time Perspectives in Northern St. Johns Archaeology, Florida*, Yale University Publications in Anthropology 47.

Goodyear, Albert C.
1983 The Chronological Position of the Dalton Horizon in the Southeastern United States. *American Antiquity* 47(2): 385-395.

Griffin, John W. and Ripley P. Bullen
1950 The Safety Harbor Site, Pinellas County, Florida. *Florida Anthropological Society Publications* No. 2 University of Florida, Gainesville.

Grismer, Karl H.
1946 The Story of Sarasota. M.E. Russell Publishing, Sarasota, Florida.

Hammond, E.A.
1973 The Spanish Fisheries of Charlotte Harbor. *Florida Historical Quarterly* 51:355-380.

Hardin, Kenneth W. and Harry M. Piper
1984 *Manasota: Which Way to the Border?* Paper presented at the Florida Academy of Science, Boca Raton, Florida, March 1984.

Harris, Cyril
1998 *American Architecture: An Illustrated Encyclopedia*. W. W. Norton Company, New York.

Hemmings, Thomas J. and Tim A. Kohler
1974 The Lake Kanapaha site in north central Florida. *Bureau of Historic Sites and Properties, Division of Archives, History and Records Management Bulletin* 4, pp. 45-64. Tallahassee: Florida Department of State.

Historic Sarasota County 1841-1910 (HSC)
2007 Historic Sarasota County 1841-1910. Electronic Document accessed March 21, 2007. http://scg.co.sarasota.fl.us/Historical_resources/history/index.asp.

Howe, Jeffery
2002 *The Houses We Live In: An Identification Guide to the History and Style of American Domestic Architecture*. Thunder Bay Press, CA

Hyde, Adam G., Wade Hurt, and Carol Wettstein
1991 *USDA Soil Survey of Sarasota County*. Soil Conservation Services. Washington, D.C

Jakle, John, Robert Bastian, and Douglas Meyer
1989 Common Houses in America's Small Towns: The Atlantic Seaboard to the Mississippi Valley. University of Georgia Press, Athens, Georgia.

Jenkins, N.J., C. B. Currin, and M. DeLeon
1975 Archaeological Site Survey of the Demopolis and Gainesville Lake Navigation Channels and Construction Areas. Report submitted to the National Park Service, Atlanta, GA.

Judge, William J., and Sebastian, L. (eds).
1988 *Quantifying the Present and Predicting the Past: Theory, Method and Application of Archaeological Predictive Modeling.* U.S. Department of the Interior, Bureau of Land Management Center, Denver, CO.

King, Anthony
1982 Buildings and Society: Essays on the Social Development of the Built Environment**.** Author of Review: Roy Lubove *Journal of Social History,* Vol. 15, No. 4 (Summer 1982), pp. 726-727

Koski, Steve, Leslie E. Raymer, and Greg C. Smith
2006 Archaeological Survey of the Little Salt Midden and Slough Site (8SO79) Surrounding the Little Salt Spring Basin, Sarasota County, Florida. *New South Associates, Stone Mountain. New South Associates Technical Report #1390. Submitted to the University of Miami, Miami.*

Kozuch, Laura
1998 Faunal Remains from the Palmer Site (8SO02), with a Focus on Shark Remains. *The Florida Anthropologist* 51:177-192.

Kohler, T.A. and S.C. Parker.
1986 "Predictive Models for Archaeological Resources Location". In: Advances in Archaeological Method and Theory, Vol. 9., 397-452. Edited by M. B. Schiffer. Academic Press, Inc. Orlando.

Kvamme, Kenneth T.
1985 "Determining empirical relationships between the natural environment and prehistoric site locations: a hunter gatherer example." In: For concordance in Archaeological Analysis. Bridging Data Structure, Quantitative Technique, and Theory. (C. Carr, ed.) Westport Publishers, Kansas City, pp. 208-238.

Kvamme, Kenneth T.
1988 Development and Testing of Quantitative Models. in: *Quantifying the Present and Predicting the Past: Theory, Method and Application of Archaeological Predictive Modeling.* U.S. Department of the Interior, Bureau of Land Management Center, Denver, CO. pp. 325-428

Longstreth, Richard
2000 *The Buildings of Main Street: A Guide to American Commercial Architecture,* Preservation Press, Washington DC 1987; rev. ed. AltaMira Press, Walnut Creek CA.

Luer, George M.
2002 The Aqui Esta Mound: Ceramic and Shell Vessels of the Early Mississippian-Influenced Englewood Phase. In *Archaeology of upper Charlotte harbor, Florida,* edited by George M. Luer, pp. 111-181. Florida Anthropological Society Publication Number 15. Tallahassee, Florida.

Luer, George M. and Marion M. Almy
1979 Three Aboriginal Shell Middens on Longboat Key, Florida. Manasota Period Sites of Barrier Island Exploitation. *The Florida Anthropologist* 32:34-45.
1989a Calusa Canals in Southwestern Florida: Routes of Tribute and Exchange. *The Florida Anthropologist* 42:89-130
1989b A Seminole Burial on Indian Field (8LL39), Lee County, Southwestern Florida. *The Florida Anthropologist* 42:237-240
2000

Lock, G. and Stancic, Z. (eds).
1995, *Archaeology and Geographical Information Systems.* Taylor & Francis, London.

Madry, Scott, B. Resnick, D. Landers, and M. Wilkerson
2000 A GIS-based Archaeological Predictive Model for the NCDOT. Forthcoming in: GIS and Archaeological Predictive Modeling: Large-scale Approaches to Establish a Baseline for Site Location Models. Argonne National Laboratory, Argonne, IL.
2001 Archaeological Survey and Development of a GIS-Based Site Probability Model, St. Johns County, Florida. Report of Investigations No. 249.

2002 Duval County Florida Archaeological Plan – Phase I. Development of a GIS-Based Archaeological Site Probability Model. Report of Investigations No. 309.

Maddex, Diane, Ed.
1985 *Built in the U.S.A.: American Buildings from Airports to Zoos*, National Trust for Historic Preservation

Mahon, John K.
1967 *History of the Second Seminole War*. University of Florida Press, Gainesville.
1985 *History of the Second Seminole War 1835-1842*. Revised Edition. University of Florida Press, Gainesville.

Maschner, Herbert D.G. (ed.)
1996 *New Methods, Old Problems: Geographic Information Systems in Modern Archaeological Research.* Center for Archaeological Investigations, Southern Illinois University at Carbondale. Occasional Paper No. 23.

McAlester, Virginia and Lee McAlester
1995 *A Field Guide to American Houses*. New York.

Milanich, Jerald T.
1994 *The Archaeology of Precolumbian Florida*. University of Florida Press. Gainesville, Florida.

Milanich, J. T. and C. H. Fairbanks
1980 *Florida Archeology*. Gainesville: University Presses of Florida.

Miller, James J.
1991 *The Fairest, Frutefullest and Pleasantest of all the World: An Environmental History of the Northeast Part of Florida*. Ph.D. diss., University of Pennsylvania.

Mitchem, Jeffrey M.
1989 *Redefining Safety Harbor: Late Prehistoric/Protohistoric Archaeology in West Peninsular Florida*. Ph.D. Dissertation. Department of Anthropology, University of Florida. Ann Arbor: University Microfilms.

Quitmyer, Irvy R.
1998 Zoological Indicators of Habitat Exploitation and Seasonality from the Shell Ridge Midden, Palmer Site (8SO2), Osprey, Florida. *The Florida Anthropologist* 51:193-205.

Railroad Chronology
nd Compiled By Charlotte County Division of Parks, Recreation, and Cultural Resources. Referenced from Canter, Brown, Jr. *Florida's Peace River Frontier*, 1991. Vernon Peeples *Punta Gorda and the Charlotte Harbor Area: A Pictorial History, 1986*. Lindsey Williams and U.S. Cleveland. *Our Fascinating Past Charlotte Harbor: The Later Years, 1996*

Rifkin, Carole
1980 *A Field Guide to American Architecture*. New American Library Inc

Sassaman, Kenneth E.
2003 New AMS Dates on Orange Fiber-Tempered Pottery from the Middle St. Johns Valley and Their Implications for Culture History in Northeast Florida. *Florida Anthropologist* 56(1):5-13.

Sears, William H.
1967 The Tierra Verde Burial Mound. *Florida Anthropologist* 29(1-2): 25-73.
1971 The Weeden Island Site, St. Petersburg, Florida. *Florida Anthropologist* 24(2): 51-60.
1973 The Sacred and Secular in Prehistoric Ceramics. In *Variant in Anthropology: Essays in Honor of John McGregor*, edited by D. Lathrop and J. Douglas, pp. 31-42. Urbana: Illinois Anthropological Survey.

Smith, Bruce D.
1986 The Archeology of the Southeastern United States: From Dalton to deSoto (10,500 B.P. – 500 B.P.). In *Advances in World Archaeology*, Volume 5, edited by Fred Wendorf and Angela E. Close, pp. 1-92. Academic Press, New York.

Sprague, John T.
1964 *The Origin, Progress, and Conclusion of the Florida War*. Quadricentennial Edition of the Floridiana Facsimile and Reprint Series, University of Florida Press, Gainesville.

Tebeau, Charles
1971 *A History of Florida*. Coral Gables, University of Miami Press.

Walker, Lester
1996 *American Homes: Illustrated Encyclopedia of Domestic Architecture*. Black Dog & Levanthal Publishers, New York.

Warren, Robert E.
1990 "Predictive Modeling in Archaeology: A Primer". in: Allen, K.M.S., Green, S.W., and Zubrow, E.B.W. (eds.), *Interpreting Space: GIS and Archaeology*, Taylor & Francis, London, pp. 90-111.

Westcott, Kathryn L, and R. J. Brandon
2000. Practical Applications of GIS for Archaeologists: A Predictive Modeling Kit. Taylor & Francis, Philadelphia, Penn., January 2000

Westcott, Kathryn L, and J. Kuiper
2000. "Using GIS to Model Prehistoric Site Distributions in the Upper Chesapeake Bay," in: Practical Applications of GIS for Archaeologists: A Predictive Modeling Toolkit, Taylor & Francis, Inc. Philadelphia, Penn., January 2000

Whiffen, Marcus and Frederick Koeper
1981 American Architecture, 1607-1976. London, Routledge and Kegan Paul

Willey, Gordon R.
1949 Archaeology of the Florida Gulf Coast, University Press of Florida, Gainesville

Williams, Lindsey and U.S. Cleveland
1992 Cemetery Discovery spurs memories of convict labor. *Sun Herald.* 7 June. Punta Gorda.

Whitney, Theodore
1984 The Blackwater Pond (8He66) Site, Hernando County, Florida. *Florida Anthropologist* 39 (3 Pt. 1): 194-207.

Willey, Gordon R.
1949 The Archaeology of the Florida Gulf Coast. Smithsonian Institution Misc. Collections Vol. 113. Washington, D.C.

Williams, J. Raymond, Joan Deming, Rebecca Spain-Schwarz, Patricia Carender, and Daniel Delahaye
1990 A Historic Resources Survey of the Coastal Zone of Sarasota County, Florida. Manuscript on File, Sarasota County History Center, Sarasota.

APPENDIX A

Survey Log Sheet

Ent D (FMSF only)_____

Survey Log Sheet

Florida Master Site File
Version 4.1 1/07

Survey # (FMSF only) _____

Consult *Guide to the Survey Log Sheet* for detailed instructions.

Identification and Bibliographic Information

Survey Project (name and project phase) Phase I; Charlotte County Survey of Historical Resources

Report Title (exactly as on title page) AN INTENSIVE CULTURAL RESOURCE ASSESSMENT SURVEY OF THE TIPPECANOE II MITIGATION AREA, PORT CHARLOTTE, FLORIDA

Report Authors (as on title page, last names first) 1. Brent Handley 2. Blue Nelson 3. _____ 4. _____

Publication Date (year) 2011 **Total Number of Pages in Report** (count text, figures, tables, not site forms) 37

Publication Information (Give series, number in series, publisher and city. For article or chapter, cite page numbers. Use the style of *American Antiquity*.)

Supervisors of Fieldwork (even if same as author) Names Brent Handley

Affiliation of Fieldworkers: Organization Environmental Services, Inc. City Jacksonville

Key Words/Phrases (Don't use county name, or common words like *archaeology*, *structure*, *survey, architecture, etc.*)

1. Tippecanoe II 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____

Survey Sponsors (corporation, government unit, organization or person directly funding fieldwork)

Name Environmental Services Inc. Organization YSMM

Address/Phone/E-mail 7220 Financial Services Way Ste 100 Jacksonville FL 32256 904.470.2200

Recorder of Log Sheet Blue Nelson **Date Log Sheet Completed** 3-2-2011

Is this survey or project a continuation of a previous project? ☒ No ☐ Yes: **Previous survey #s (FMSF only)** _____

Mapping

Clear Mapping Values

Counties (List each one in which field survey was done; attach additional sheet if necessary)

1. Charlotte 2. N/A 3. N/A 4. N/A 5. N/A 6. N/A

USGS 1:24,000 Map Names/Year of Latest Revision (attach additional sheet if necessary)

1. Name EL JOBEAN Year 1994
2. Name ZOLF Year _____
3. Name ZOLF Year _____
4. Name ZOLF Year _____
5. Name ZOLF Year _____
6. Name ZOLF Year _____

Description of Survey Area

Dates for Fieldwork: Start 2-1-2011 End 3-3-2011 **Total Area Surveyed** (fill in one) _____ hectares 182 acres

Number of Distinct Tracts or Areas Surveyed 2

If Corridor (fill in one for each) **Width:** _____ meters _____ feet **Length:** _____ kilometers _____ miles

Survey Log Sheet

Survey #_____

Research and Field Methods

Types of Survey (check all that apply): ☒archaeological ☐architectural ☐historical/archival ☐underwater ☐damage assessment ☐monitoring report ☐other(describe): _____

Scope/Intensity/Procedures Prior to field work a pedestrian survey was conducted to locate artifacts or possible structural remains. Shovel testing (n=40) was at 100 meter intervals that were offset which ensured that the testing did not exceed 70 meters of each other.

Preliminary Methods (check as many as apply to the project as a whole)

☐Florida Archives (Gray Building)	☐library research- *local public*	☐local property or tax records	☒other historic maps
☐Florida Photo Archives (Gray Building)	☐library-special collection - *nonlocal*	☐newspaper files	☒soils maps or data
☒Site File property search	☐Public Lands Survey (maps at DEP)	☐literature search	☒windshield survey
☒Site File survey search	☒local informant(s)	☐Sanborn Insurance maps	☒aerial photography

☐other (describe): _____

Archaeological Methods (check as many as apply to the project as a whole)

☐Check here if **NO** archaeological methods were used.

☐surface collection, controlled	☐shovel test-other screen size	☐block excavation (at least 2x2 m)
☐surface collection, **un**controlled	☐water screen	☐soil resistivity
☒shovel test-1/4"screen	☐posthole tests	☐magnetometer
☐shovel test-1/8" screen	☐auger tests	☐side scan sonar
☐shovel test 1/16"screen	☐coring	☒pedestrian survey
☐shovel test-unscreened	☐test excavation (at least 1x2 m)	☐unknown

☐other (describe): _____

Historical/Architectural Methods (check as many as apply to the project as a whole)

☒Check here if **NO** historical/architectural methods were used.

☐building permits	☐demolition permits	☐neighbor interview	☐subdivision maps
☐commercial permits	☐exposed ground inspected	☐occupant interview	☐tax records
☐interior documentation	☐local property records	☐occupation permits	☐unknown

☐other (describe): _____

Survey Results (cultural resources recorded)

Site Significance Evaluated? ☐Yes ☐No Clear Check Boxes

Count of Previously Recorded Sites 0 **Count of Newly Recorded Sites** 0

Previously Recorded Site #'s with Site File Update Forms (List site #'s without "8". Attach additional pages if necessary.) _____

Newly Recorded Site #'s (Are all originals and not updates? List site #'s without "8". Attach additional pages if necessary.) _____

Site Forms Used: ☐Site File Paper Form ☐Site File Electronic Recording Form

*****REQUIRED: ATTACH PLOT OF SURVEY AREA ON PHOTOCOPY OF USGS 1:24,000 MAP(S)*****

SHPO USE ONLY	SHPO USE ONLY	SHPO USE ONLY

Origin of Report: ☐872 ☐CARL ☐UW ☐1A32 # _____ ☐Academic ☐Contract ☐Avocational ☐Grant Project # _____ ☐Compliance Review: CRAT # _____

Type of Document: ☐Archaeological Survey ☐Historical/Architectural Survey ☐Marine Survey ☐Cell Tower CRAS ☐Monitoring Report ☐Overview ☐Excavation Report ☐Multi-Site Excavation Report ☐Structure Detailed Report ☐Library, Hist. or Archival Doc ☐MPS ☐MRA ☐TG ☐Other: _____

Document Destination: RPTD **Plotability:** NOPL

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List of Figures (located after text)

Figures (continued)

List of Tables (located within text)

List of Appendices (located after text and figures)

List of Acronyms and Abbreviations

BCC	Board of County Commissioners
CAC	Center for Avian Conservation
CIP	Capital Improvement Projects
DOQQ	Digital Ortho Quarter-Quadrangles
DEP	Florida Department of Environmental Protection
DOF	Florida Division of Forestry
DRI	Development of Regional Impact
ESA	Endangered Species Act
ESRI	Environmental System Research Institute
FAC	Florida Administrative Code
FDACS	Florida Depratment of Agriculture and Community Services
FCT	Florida Communities Trust
FWC	Florida Fish and Wildlife Conservation Commission
FWS	United States Fish and Wildlife Service
GIS	Geographical Information System
HCP	Habitat Conservation Plan
ITP	Incidental Take Permit
M5	Sarasota-Western Charlotte Metapopulation
M6W	Northwestern Charlotte Metapopulation
M6E	Deep Creek/Harbour Heights Metapopulation
M7	Central Charlotte Metapopulation
M21	Lake Wales Ridge Metapopulation

Acronyms and Abbreviations (continued)

NMFS	National Marine Fisheries Service
NRD	Natural Resource Division
NRPS	Natural Resource Planning Section
SMP	Statewide Mapping Project
SWFWMD	Southwest Florida Water Management District
USFWS	United States Fish and Wildlife Service

EXECUTIVE SUMMARY

The Charlotte County Board of County Commissioners (Applicant) submits this Habitat Conservation Plan which addresses impacts to the state and federally threatened Florida Scrub-Jay (*Aphelocoma coerulescens*), for four county-initiated projects (Winchester Boulevard South, Edgewater Drive, Murdock Village, and Solomon Drive) over a twenty-year period. The principal objectives of this HCP are to streamline permitting requirements for Florida Scrub-Jays for the four covered projects and to provide adequate compensation to ensure the protection of the state and federally threatened Florida Scrub-Jay within Charlotte County. A total of 111.3 hectares (275 acres) of compensation will be provided within Charlotte County. Compensation areas are proposed for each of the Florida Scrub-Jay metapopulations that are likely to be affected during the development of the four county-initiated projects. Compensation areas will be managed in perpetuity according to the habitat requirements of Florida Scrub-Jays. The state and federally threatened bald eagle (*Haliaeetus leucocephalus*) and Eastern indigo snake (*Drymarchon corais couperi*) will also be covered for projects covered under this HCP.

Table 1. Summary

Project	Hectares of Scrub Impacted (acres)	Area Occupied ha (acres)	No. of Scrub-jay Families	Proposed Mitigation Hectares (acres)
Winchester Blvd.	15.3 (37.9)	7.2 (17.9)	3	30.3 (75)
Edgewater Drive	35.2 (87.2)	13.9 (34.4)	6	60.7 (150)
Murdock Village	444.3 (1098)	4.9 (12.0)	1	10.1 (25)
Solomon Drive	7.4 (18.3)	8.1 (19.9)	1	10.1 (25)
Total	502.8 (1241.4)	34.1 (84.2)	11	111.2(275)

Note: the area impacted by Solomon Drive is less than the area occupied. For area impacted we calculated Type I, II, II scrub that is impacted- but we did not include areas that have already been built on- and thus mitigated for (see Figure 4). We did not have mapped territories for the impacted Scrub-jays. The area occupied was determined by estimating the project impacted area within 259 m of known scrub-jay locations as occupied.

1.0 Introduction

The Charlotte County five year Capital Improvement Programs (CIP) Florida Scrub-Jay Habitat Conservation Plan (Charlotte County Capital Improvements HCP) is a countywide effort to resolve conflict between county sponsored development and conservation of the federally and state threatened Florida Scrub-Jay (*Aphelocoma coerulescens*). The Charlotte County Board of County Commissioners ("Applicant") is initiating this effort in accordance with Policy 1.10.3 of the Natural Resources and Coastal Planning Element of the 1997-2010 Charlotte County Comprehensive Plan. The Charlotte County Capital Improvements HCP will also help address many of the Goals, Policies, and Objectives of the 1997-2010 Charlotte Comprehensive Plan by preserving, restoring and managing Florida Scrub-Jay habitat (Appendix A). The state and federally threatened bald eagle (*Haliaeetus leucocephalus*) and Eastern indigo snake (*Drymarchon corais couperi*) will also be covered under the HCP for the four covered projects.

The Applicant is seeking an Incidental Take Permit (ITP) from the United States Fish and Wildlife Service (FWS) pursuant to section 10 (a) (1) (B) of the Endangered Species Act (ESA) of 1973, as amended. The Applicant is requesting that the ITP authorize, for a period of 20 years, the take of the threatened Florida Scrub-Jay, bald eagle and Eastern indigo snake incidental to four county-initiated development projects within Charlotte County. The twenty-year time period is adequate to complete the four covered projects. We are asking for the twenty-year time frame in order to include some leeway in case there are funding or construction delays.

The Applicant recognizes that development in occupied Florida Scrub-Jay habitat requires Habitat Conservation Plans and Incidental Take Permits from the United States Fish and Wildlife Service and consultation and approval from the Florida Fish and Wildlife Conservation Commission (FWC).

The Charlotte County Capital Improvements HCP proposes for each of the affected metapopulations within the county, compensatory mitigation measures for compliance with the conservation requirements of section 10 (a) (2) of the ESA. These mitigation measures include:

> Conservation, restoration, and in perpetuity management of optimal Florida Scrub-Jay conditions within each of the metapopulations, including 50.6 ha (125 acres) of the Cape Haze Peninsula for the Sarasota Western Charlotte Metapopulation (M5), 70.8 hectares (175 acres) east of the Myakka River for the western part of the Northwestern Charlotte Metapopulation (M6W), and 10.1 hectares (25 acres) west of the Peace River for the eastern part of the Northwestern Charlotte Metapopulation (M6E).

The Charlotte County Capital Improvements HCP will focus on the long-term restoration and management of scrub, scrubby flatwoods, and mesic flatwoods within the Scrub-Jay compensation areas, to optimize Florida Scrub-Jay habitat.

1.1 Purpose and Need of the Proposed Action

The purpose of the Charlotte County Capital Improvements HCP is to:

a. *Provide the Applicant greater regulatory certainty during currently planned county-initiated development in Charlotte County.*

b. *Enhance the recovery and long term viability of the Florida Scrub-Jay within the Sarasota-West Charlotte (M5)* and *Northwest Charlotte (M6) Metapopulations ranked 13th* and *6th respectively, in statewide priority (Stith 1999). The Northwest Charlotte Metapopulation has since been split into two metapopulations: Northwest Charlotte (M6W)* and *Deep Creek/Harbour Heights (M6E).*

This will be accomplished by obtaining, restoring and actively managing land specifically for the Florida Scrub-Jay. Proposed compensation areas include 30.6 hectares (75 acres) of suitable Scrub-Jay habitat in the Sarasota-West Charlotte Metapopulation, 70.8 hectares (175 acres) of suitable Scrub-Jay habitat in the Northwest Charlotte Metapopulation, and 10.1 hectares (25 acres) of suitable Scrub-Jay habitat in the Deep Creek/Harbour Heights Metapopulation.

c. *Protect indigenous species characteristic of Florida scrub (including xeric oak scrub and scrubby flatwoods).*

Florida Scrub-Jay habitat requirements will set habitat management goals and methodologies on the Scrub-Jay preserves, acting as an "umbrella" for other species. Other species are likely to benefit from these preserves as well, including listed species such as gopher tortoise (*Gopherus polyphemus*), Eastern indigo snake, Florida mouse (*Podomys floridana*), gopher frog (*Rana capito*), and non-listed animals characteristic of scrub including white-eyed vireo (*Vireo griseus*), rufous-sided towhee (*Pipilo erythrophthalmus*), migratory and nonmigratory birds, and other local wildlife.

d. Follow current guidelines (at time of project construction) for Bald Eagle nests in the vicinity of the four covered projects.

Each of the four covered projects will protect bald eagle nests according to the standards in place at the time of construction.

e. *Follow current standard protection measures for (at time of project construction) for Eastern indigo snakes in the vicinity of the four covered projects.*

Each of the four covered projects will protect Eastern indigo snakes according to the standards in place at the time of construction. Currently, standard Eastern indigo snake protection measures include education of construction workers about the eastern indigo snake and what to do if one is observed on the project site.

The principal factors endangering the long-term persistence of Florida Scrub-Jays in Charlotte County are habitat loss and fragmentation due to development and degradation of habitat quality; primarily due to fire suppression. The Charlotte County Capital Improvements HCP is designed to address these factors within portions of two of the four metapopulations described by Stith (1999) located within the county borders. No county-initiated projects are currently proposed within M7, Central Charlotte Metapopulation or M21, Lake Wales Ridge Metapopulation. M21 is only peripherally within the Charlotte County and much of the suitable habitat is located outside of Charlotte County and has been acquired or is in the process of being acquired for preservation (Stith 1999).

In 1991, Charlotte County received a letter from the FWS stating that Charlotte County hosts scrub that may be occupied by the federally threatened Florida Scrub-Jay (Appendix B). The letter stated "As a governmental entity which issues permits allowing private landowners to develop their property, you are responsible for ensuring that activities authorized by the county will not be harmful to the scrub jay or any other listed species" (FWS 1991). It continued to explain the legal ways to develop Scrub-Jay occupied scrub and concluded with a request to contact the FWS regarding HCPs.

Much of the remaining scrub in Charlotte County is privately owned and occurs as platted 0.1 hectare (0.25 acre) residentially zoned lots, particularly within M5 and M6W and M6E (Charlotte County Natural Resources Division (NRD) data). Other privately owned areas, particularly within M7, are located outside the urban service area, and have agricultural and agriculture estates zoning designations. Occupied scrub also occurs on privately owned commercially zoned property throughout the county. Development of individual HCPs on each of the Florida Scrub-Jay occupied parcels will be required for individual property owners, separately from this HCP.

Charlotte County has four currently planned county-initiated projects which are likely to negatively affect Florida Scrub-Jays and may affect nesting bald eagles and eastern indigo snakes. Projects include Winchester Boulevard South, Edgewater Drive, Murdock Village, and Solomon Drive (Figures 1-4). These proposed roads are anticipated to negatively affect Florida Scrub-Jays by developing occupied habitat along the proposed corridor, further reducing and fragmenting occupied Florida Scrub-Jay habitat. This development may also increase Florida Scrub-Jay mortality as more vehicles use the roads at higher speeds. Mortality has been documented along roads, where Florida Scrub-Jays are killed as a result of collisions with vehicles (Dreschel et al. 1990, Fitzpatrick et al. 1991). This mortality is believed to increase with road width and vehicle speed. A fourth county-initiated project, Murdock Village, is a large scale planning and development efforts which is likely to impact occupied Florida Scrub-Jay habitat over the course of development.

The implementation of the Charlotte County Capital Improvements HCP is needed to address the long-term habitat requirements of the threatened Florida Scrub-Jay likely to be affected during county-initiated projects and to reduce the regulatory burden placed upon Charlotte County. Current construction guidelines for bald eagles and Eastern indigo snakes will be followed so as

to address these threatened species and negate the need for additional HCPs covering these two species.

1.2 Permit Duration

A twenty year time frame is being requested in order to address the varied time frames for the four covered county-initiated projects. Several projects will be started immediately or shortly after issuance of the ITP, particularly the three road projects. The construction of Murdock Village will not necessarily occur immediately upon the issuance of the ITP. The twenty year time frame should give this redevelopment area ample time for construction and associated Florida Scrub-Jay impacts.

Table 2. Permit Schedule

Project	**Anticipated Clearing and Construction Start Date**	**Projected Duration**
Winchester Blvd.	October 2008	24-30 months (April 2011)
Edgewater Drive	2010	18-24 months (2012)
Murdock Village	July 2006	7-10 year build out (2016)
Solomon Road	As soon as ITP is issued.	6-12 months (2007)

1.3 Government Regulations Pertaining to the Charlotte County Capital Improvements HCP

The Florida Scrub-Jay was federally listed as a threatened species in 1987. The bald eagle was federally listed as threatened in 1967 and the Eastern indigo snake was federally listed as threatened in 1978. The federal listings granted protection to the Florida Scrub-Jay, bald eagle and Eastern indigo snake according to Section 4 (d) and 9 of the ESA. These regulations prohibit the take of a federally listed species. "Take" is defined as harass, harm, pursue, hunt, shoot, wound, trap, kill, capture, or collect, or attempt to engage in any such behavior (Section 3(19) of the ESA). "Harm" is interpreted to include significant habitat modification or degradation that results in death or injury to a listed species to such an extent as to significantly disrupt normal behavioral patterns that include, but are not limited to breeding, feeding, or sheltering. "Harass" is defined as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to disrupt normal behavioral patterns which include, but are not limited to breeding, feeding, or sheltering. Any activity as described above may constitute a violation of Section 9 of the ESA. Section 9 prohibitions against "take" apply to actions conducted by "any person subject to the jurisdiction of the United States..." The term "person" was further interpreted in a 1988 amendment to the ESA to include actions carried out by states, counties or municipalities. This includes the issuance of land clearing and development permits by local governments, such as Charlotte County.

The ESA provides two regulatory methods to the "person" who wishes to develop land hosting federally endangered species. The regulatory method used is based on whether the development is a federal or non-federal project. Federal projects include, but are not limited to, the issuance of federal permits, federal authorization, or federal funding. Both types of permitted "take" require an incidental take permit. Incidental take is defined as any take of a listed species that results from, but is not the purpose of, carrying out an otherwise lawful activity (Section 10(a) (1) (B), ESA).

Federal activities, as defined above, require an "incidental take statement" authorized by Section 7 of the ESA, Interagency Cooperation. Section 7(a)(2) of the ESA requires all federal agencies to consult with the FWS to ensure that any action that it authorizes, funds, or carries out, is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse habitat determined to be critical to such species.

Non federal activities, such as the developments included within this HCP, require an "incidental take permit" according to Section 10(a)(1)(B) of the ESA. This method requires the applicant to submit a HCP. The goal of the HCP program is to ensure that the effects of authorized incidental take will be adequately minimized and mitigated to the maximum extent practical (FWS and National Marine Fisheries Service (NMFS) 1996). The intent of the program is to institute "... a process that, at its best, would integrate non-federal development and land use activities with conservation goals, resolve conflicts with endangered species protection and economic activities on non-Federal lands, and create a climate of partnership and cooperation" (FWS and NMFS 1996). The Charlotte County Capital Improvements HCP is designed to comply with the HCP goals and intent.

The Florida Scrub-Jay, bald eagle and eastern indigo snake are also listed as a threatened species by the Florida Fish and Wildlife Conservation Commission (FWC) and protected by the Wildlife Code of the State of Florida (Chapter 39, Florida Administrative Code (FAC)). The state of Florida defines "take" in a similar manner, except that the protection of occupied habitat is not specifically included in the definition. The Applicant requests that the FWC will comment on the Charlotte County Capital Improvements HCP during the public review process.

Policy 1.10.3 of the Natural Resources and Coastal Planning Element of the 1997-2010 Charlotte County Comprehensive Plan identifies HCPs as methodology, which will expedite the development review process for county-initiated projects while ensuring the long-term viability of listed species. The policy further directs Charlotte County to develop species specific HCPs beginning with the Florida Scrub-Jay. Policy 1.10.5 of the Natural Resources and Coastal Planning Element of the 1997-2010 Charlotte County Comprehensive Plan directs Charlotte County to work for the establishment of mitigation parks and banks within the county to ensure that local impacts to listed wildlife and native communities are mitigated locally (Charlotte County 1997).

In accordance with the Section 10 (a) (2) (A) of the ESA, this document assesses the effects of the proposed take on portions of three Florida Scrub-Jay metapopulations in Charlotte County and provides conservation strategies that minimize and mitigate these potential adverse effects.

1.4 Plan Area Overview

The Charlotte County Capital Improvements HCP ITP impact area is defined as Scrub-Jay habitat within four proposed county-initiated projects including the Winchester Boulevard South, Edgewater Drive, Murdock Village, and Solomon Drive (Figures 1-4). Scrub polygon labels used below and throughout this HCP, follow those established during the Countywide Florida scrub and Scrub-Jay survey (Miller and Stith 2002). The HCP ITP will also cover bald eagles nesting in proximity to scrub polygons and Eastern indigo snakes utilizing the project areas.

Winchester Boulevard South is an existing road that will be extended and widened within the Sarasota-Western Charlotte Metapopulation (M5). The road is a hurricane evacuation route which will join state-road 775 to state-road 776 and continue north to I-75. The portion of the road considered for this ITP links state-road 776 to state-road 775 along the current Winchester Boulevard alignment. The 4.7 km (2.9 mile) road occurs with Sections 3, 10, 15, 21, and 22, Township 41S and Range 20E. The proposed road project is likely to affect portions of the territories for three family groups within polygon EE4, a highly urbanized scrub polygon.

Edgewater Drive is an existing road that will be widened along the Flamingo Boulevard corridor in the Northwestern Charlotte Metapopulation (M6W). Edgewater Drive is likely to impact Florida Scrub-Jay habitat in scrub polygons TS3, TS4, TS5, and TS6 located in Sections 13 and 19, and 24, Township 40S, and Range 21E. Four Florida Scrub-Jay family groups were identified by the Center for Avian Conservation Inc. (CAC) and an additional two family groups have been discovered since banding began in 2003. Each of these six family groups has been observed crossing sections of the proposed road by USFWS, FWC, and Charlotte County NRD staff since the planning and technical assistance for Tippecanoe Scrub Environmental Park Phase II began.

Murdock Village is a 445.2 hectare (1,100 acres) Community Redevelopment Area located within the Northwestern Charlotte Metapopulation (M6W) in Sections 11 and 12, Township 40S and Range 21E. One family group of Scrub-Jays (identified in the CAC survey) is likely to be affected by the proposed redevelopment within TN1.

Solomon Drive is located in Harbour Heights in the Northwestern Charlotte Metapopulation (M6E). A portion of the road is currently paved and will be extended to the southeast. The unpaved portion of the road is to be built along an existing unpaved right-of-way. The project is likely to affect at least one family group of Florida Scrub-Jays located in and between scrub polygons DC8 and DC10. The road is located in Section 10 Township 40S, Range 23E.

1.5 Species Covered

Three federally and state listed species are covered under this Charlotte County Capital Improvements HCP including the Florida Scrub-Jay, bald eagle and eastern indigo snake. Take is only requested for the Florida Scrub-Jay. Other federally listed species impacts will be avoided and minimized to reduce the likelihood of take to an insignificant and discountable level.

2.0 Project Description and Impacts

2.1 General Environmental Setting

Charlotte County is located in southwest Florida on the Gulf Coast and is bordered to the north by Sarasota County, to the northeast by DeSoto County, to the east by Glades County, to the south by Lee County, and the west by the Gulf of Mexico. The county encompasses approximately 2154 square kilometers (832 square miles); 334 square kilometers (129 square miles) of which are inland surface waters including the Charlotte Harbor, Peace and Myakka Rivers (Charlotte County 1997). Approximately 40% of the available land within the urban service area boundary has been developed (Dennis Murphy, Manager of Charlotte County GIS Division; Personal Communication).

Charlotte County is composed of four physiographic provinces; Gulf Barrier Chain, Gulf Coastal Lowlands, Caloosahatchee Incline, and DeSoto Plain. The climate is described as humid, subtropical with a mean annual temperature of 23.3 degrees Celsius (74 degrees Fahrenheit). Annual rainfall is approximately 127 cm (50 in), the majority of which occurs during the summer (Charlotte County 1997).

Vegetation communities within Charlotte County are typical of those found in southwest Florida including, but not limited to, pine flatwoods, dry prairies, oak-palm hammocks, depressional marshes, forested wetlands, freshwater tidal swamps, tidal marsh, coastal strand, scrubby flatwoods, and scrub.

Some of the state and federally listed species that have been documented within Charlotte County include bald eagle, red-cockaded woodpecker (*Picoides borealis*), wood stork (*Mycteria americana*), Florida Scrub-Jay, crested caracara (*Caracara cheriway*), piping plover (*Charadrius melodus*), roseate tern (*Sterna dougallii*), Eastern indigo snake, American crocodile (*Crocodylus acutus*), green sea turtle (*Chelonia mydas*), loggerhead sea turtle (*Caretta caretta*), Florida panther (*Puma concolor coryi*), and Florida manatee (*Trichecus manatus latirostris*). Additional species that are listed only by the FWC and have been documented within Charlotte County include white ibis (*Eudocimus albus*), roseate spoonbill (*Platalea ajaja*), little blue heron (*Egretta caerulea*), tricolored heron (*Egretta tricolor*), reddish egret (*Egretta rufescens*), Florida sandhill crane (*Grus canadensis pratensis*), American oystercatcher (*Haematopus palliatus*), least tern (*Sterna antillarum*), black skimmer (*Rynchops niger*), Florida burrowing owl (*Athene cunicularia*), gopher tortoise (*Gopherus polyphemus*), gopher frog (*Rano capito*), Florida mouse (*Podomys floridanus*), Sherman's fox squirrel (*Sciurus niger shermani*), and Florida black bear (*Ursus americanus floridanus*).

2.2 Biological Reviews

2.2.1 Biological Review of the Florida Scrub-Jay

Description

The Florida Scrub-Jay is a blue and gray bird, that is 25-30 centimeters (9 ¾ - 11 7/10 inches) in length and weighs 77 grams (2.68 ounces) (FWS 1999a). The head, neck, nape, and tail are blue while the back and breast are pale gray. They are similar in appearance to the non-listed blue jay (*Cyanocitta cristata*), but lack the crest, white- tipped feathers and black bars. There is no sexual dimorphism. For the first five months, juveniles lack the blue on the crown and nape; these areas are instead gray or brown. Immature Scrub-Jays molt in the late summer or early fall, losing their juvenile plumage, thus becoming indistinguishable from the adults (Woolfenden 1996). Florida Scrub-Jays are a long-lived species; the longest lived was documented at 15.5 years (Woolfenden and Fitzpatrick 1996, FWS 1999a).

General Habitat Requirements

The Florida Scrub-Jay occurs, almost exclusively, within several distinct pyrogenic vegetation communities, collectively called scrub. Scrub includes xeric oak scrub, scrubby flatwoods, sand pine scrub, rosemary scrub, sand scrub, turkey oak scrub, sandhill, and palmetto scrub. These vegetation communities are characterized by well drained, often nutrient poor, sandy soils with an abundance of low growing scrub oaks. These scrub oaks include sand live oak (*Quercus geminata*), Chapman oak (*Q. chapmanii*), myrtle oak (*Q. myrtifolia*), and scrub oak (*Q. inopina*). The overstory varies depending on the vegetation community but may include slash pine (*Pinus elliottii*), longleaf pine (*P. palustris*), sand pine (*P. clausa*), and turkey oak (*Q. laevis*). The midstory also varies with the vegetation community but often includes saw palmetto (*Serenoa repens*), rosemary (*Ceratiolea ericoides*), rusty lyonia (*Lyonia ferruginea*), crookedwood (*L. ferruginea*), tarflower (*Befaria racemosa*), wax myrtle (*Myrica cerifera*), and gallberry (*Ilex glabra*). The ground cover is usually sparse, but often includes runner oak (*Q. minima*), gopher apple (*Licania michauxxii*), milk peas (*Galactia* spp.), lichens (*Cladonia* spp.), scrub St. John's wort (*Hypericum reductum*), pennyroyal (*Piloblephis rigida*), beak rush (*Rhynchospora* spp.) and a variety of grasses (Poaceae) (Meyers 1990, Fitzpatrick et al. 1991, FWS 1999b).

Range and Status

The Florida Scrub-Jay is the only avian species endemic to peninsular Florida. Historically, Scrub-Jays occurred in 39 of the 40 peninsular counties south of and including Levy, Gilchrist, Alachua, Clay, and Duval, with the exception of Monroe County (Woolfenden 1996). They have since been extirpated from nine counties, including Gilchrist, Alachua, Clay, Duval, St. Johns, Pinellas, Hendry, Broward, and Dade (Stith 1999). By 1993, 10 or fewer pairs were reported in six additional counties, including Levy, Putnam, Flagler, Orange, Hernando, and Hardee (Woolfenden 1996, Pranty et al. 1997, Stith 1999). Woolfenden (1996) asserts that Scrub-Jay populations along the Gulf Coast (Levy south through Collier County) are perilously close to extirpation due to extensive clearing. Florida Scrub-Jays were listed as threatened in 1975 by the

Florida Game and Freshwater Commission, now the Florida Fish and Wildlife Conservation Commission (FWC) and in 1987 by the United States Fish and Wildlife Service (Woolfenden 1996, FWS 1999a).

As of 1992, all major Scrub-Jay populations were known to be declining, and none is known to be increasing (Fitzpatrick et al. 1994, Woolfenden 1996, Stith 1999). The largest decline in Florida Scrub-Jays throughout the state occurred in the 1980s – 1990s which correlates with habitat loss through conversion to development (Toland 1999). Estimates of the statewide decline from the original level range from 50% (Cox 1987) to 90% (Woolfenden 1996, Pranty et al. 1997, Stith 1999). The overall population decline can be attributed to habitat loss, degradation and modification. Habitat loss is primarily due to conversion to agriculture or urban-suburban development. Florida Scrub-Jay populations within suburban areas are expected to decline further as residential build-out occurs (Stith et al. 1999). Fire suppression and nonindigenous plant encroachment have further contributed to habitat degradation and modification (Woolfenden 1996).

Metapopulations

Florida Scrub-Jays are believed to occur within 21 distinct metapopulations separated from one another by at least 12 km (7.4 miles) or hard boundaries not typically crossed by Florida Scrub-Jays (Stith et al. 1996, Stith 1999). Each metapopulation is composed of a group of interbreeding subpopulations that occur within 3.5 km (2.2 miles) of each other (Stith et al. 1996). Interbreeding among metapopulations is not believed to occur, except in rare situations.

Social System

Florida Scrub-Jays are non-migratory, territorial birds that generally live in groups varying in size from two to twelve individuals. Large groups, however, are not common; the average group size is three. The groups generally consist of a mated pair plus adults, called helpers, and juveniles that are usually related to the dominant breeders. A well-defined dominance hierarchy exists within the group. The breeding male is the most dominant followed by non-breeding adult males, the breeding female, non-breeding females, and lastly the juveniles (Woolfenden and Fitzpatrick 1984 , FWS 1999a). All individuals participate in the rearing of young, territorial defense, and predator mobbing.

This social system within Florida Scrub-Jay family groups is believed to exist in part because of patchy distribution where all suitable habitat is occupied (Woolfenden and Fitzpatrick 1984), permanently defended territories with an adequate food base (DeGange et al. 1989), enhanced reproductive success with the aide of helpers (McGowan and Woolfenden 1990, Stith et al. 1999), and decreased mortality because of an active sentinel system (McGowan and Woolfenden 1989, Koenig et al. 1992).

Florida Scrub-Jays occupy territories year-round, although the boundaries are less vigorously defended in the summer. Territories are maintained, although slight boundary shifts occur seasonally and over time. Once the adults become breeders they usually spend the rest of their life within the single patch of scrub (Breininger et al. 1999). Territories average 9-10 hectares

(22-25 acres) in size, with a minimum size of 5 hectares (12 acres) (Woolfenden 1996, FWS 1999a). The size of the territory varies with the quality and patchiness of the habitat and how saturated the area is with other Scrub-Jay groups (Woolfenden and Fitzpatrick 1984, Woolfenden and Fitzpatrick 1991).

Sentinel System and Predators

Predators of Florida Scrub-Jays include Eastern coachwhip (*Masticophis flagellum*), Eastern indigo snake, rat snake (*Elaphe obsoleta*), corn snake (*Elaphe guttata*), bobcat (*Lynx rufus*), raccoon (*Procyon lotor*), domestic cat (*Felis catus*), cotton rat (*Sigmodon hispidus*), great horned owl (*Bubo virginianus*), Eastern screech owl (*Otus asio*), red-tailed hawk (*Buteo jamaicensis*), Northern harrier (*Circus cyaneus*), sharp-shinned hawk (Accipiter striatus), cooper's hawk (*A. cooperii*), merlin (*Falco columbarius*), American crow (*Corvus brachyrhynchos*), fish crow (*C. ossifragus*), and blue jay (Fitzpatrick et al. 1991, Woolfenden 1996, FWS 1999a).

Predation, accounts for 67% of the egg loss and 85% of the nestling loss (Woolfenden and Fitzpatrick 1984). Diurnal snakes and birds are the most common nest predators, although nocturnal mammals may take eggs and nestlings occasionally (Schaub et al. 1992). Helpers may decrease predation on eggs and nestlings by mobbing potential predators (Woolfenden and Fitzpatrick 1984, Schaub et al. 1992, Mumme 1992, Stith et al. 1996).

Florida Scrub-Jays have a well-developed sentinel system, which is believed to be an adaptation in part, to predation (McGowan and Woolfenden 1989). Most Florida Scrub–Jays die from predation (Woolfenden and Fitzpatrick 1984). One member of the group usually sits on an exposed perch while the other members forage. If an aerial predator is observed, the sentinel sounds an alarm cry and cover is sought within dense vegetation. If a terrestrial predator or perched raptor is observed, a scolding alarm is given and the group responds to mob the predator (McGowan and Woolfenden 1989).

Helpers

Helpers are the adult non-breeding Scrub-Jays within the territorial group. These helpers are at least yearlings who help the group in territorial defense, sentinel duties, predator and intruder mobbing, and the feeding of nestlings and fledglings (McGowan and Woolfenden 1989, McGowan and Woolfenden 1990, Woolfenden and Fitzpatrick 1991, Schaub et al. 1992). Helpers may be the offspring of the breeding pair, or may be nonbreeders who have immigrated into a new family group. It has been widely hypothesized that helper birds are learning behaviors that will benefit them when they are eventually breeders and that their genes will be represented in future generation since the young produced are usually siblings or part siblings (Lack 1968, Woolfenden and Fitzpatrick 1991, Koenig et al. 1992).

Reproduction

Florida Scrub-Jays are monogamous, cooperative breeders. The dominant male and female are the only breeders within the group. Typically, Scrub-Jays breed for the first time when they are between 2 and 4 years of age, but it ranges between 1 - 7 years (Woolfenden and Fitzpatrick

1991). Breeding occurs in the spring, usually between March 1 and the end of July (FWS 1999a), although suburban Scrub-Jays often breed earlier (Breininger et al. 1996, Karl Miller, Florida Fish and Wildlife Conservation Commission, Personal Communication). Three or four eggs (range 1-6) are laid in an open cup nest, usually built at a height of 1-2 meters (3-6 ½ feet) in scrub oaks (Fitzpatrick et al. 1991). Successful nests are generally in trees adjacent to openings (Fitzpatrick et al. 1991, Breininger et al. 1996, Toland 1999).

Incubation occurs for 17-18 days, and is only done by the dominant female. The parent birds and the helpers feed the nestlings. Young are fledged 16-21 days post hatching. Fledglings are dependent on the breeding pair and helpers for food for about 10 weeks (Woolfenden and Fitzpatrick 1984).

An average of two fledglings is produced annually in stable populations (Woolfenden and Fitzpatrick 1990). Mortality of fledglings is high; 65% of the fledglings do not survive one year (Woolfenden and Fitzpatrick 1991). Helpers may increase hatching success, nestling survival (Schaub et al. 1992), but see (Mumme 1992) and fledgling success (Mumme 1992). Overall, breeding pairs have higher reproductive success and survival than pairs without helpers (Woolfenden and Fitzpatrick 1984).

Nest success and fledgling survivability are correlated with optimal habitat (Schaub et al. 1992, Stith et al. 1996, Breininger et al. 1996, FWS 1999a). Successful nesting attempts and number of young fledged are higher in regularly burned scrub than in overgrown, unburned scrub, suburban areas, or suboptimal habitat (i.e. edges adjacent to scrub) (Schaub et al. 1992, Thaxton and Hingtgen 1996, Breininger et al. 1996). Nest failure is most often due to predation of nestlings and eggs (Woolfenden and Fitzpatrick 1984, Woolfenden and Fitzpatrick 1991). Most nests are lost to diurnal snakes and birds (Schaub et al. 1992).

For a population to remain viable over the long term; mortality must be less than production. A twenty-year study at Archbold Biological Station, in central Florida, revealed that half of the breeding pairs had helpers within optimal habitat (Woolfenden and Fitzpatrick 1984). Breininger et al. (1999) found similar results in a ten-year study at the Kennedy Space Center, on the Atlantic Coast. However, in moderately suitable and unburned habitat, Florida Scrub-Jays bred at younger ages and fewer than half the pairs had helpers (Breininger et al. 1999). The absence of helpers and inexperienced breeders in suboptimal and poor habitats may decrease the demographic success enough so that production is less than mortality, potentially leading to localized extirpation.

Territories

The average Florida Scrub-Jay territory is 9-10 hectares (22-25 acres). Suburban Scrub-Jays however, often have smaller territories (Toland 1999, Karl Miller, Florida Fish and Wildlife Conservation Commission, Personal Communication). Territories with a single mated pair (no helpers) tend to be smaller than territories with helpers (Fitzpatrick et al. 1991, Breininger et al. 1996). Territories are generally larger in high quality habitat and tend to be larger when family groups have helpers (Woolfenden and Fitzpatrick 1984, Woolfenden and Fitzpatrick 1991).

All suitable habitat within the landscape is usually saturated with Scrub-Jay territories; few territorial vacancies occur within suitable habitat. This habitat saturation is believed to have led to the cooperative breeding system that Florida Scrub-Jays utilize (Woolfenden and Fitzpatrick 1984). The territories are passed to succeeding generations if the habitat remains suitable. This social system creates an excess of birds that could become breeders, if territories were available. It allows the non-breeding adults, without territories of their own, to live within and help defend the territories of breeding adult birds (Woolfenden and Fitzpatrick 1984, Fitzpatrick et al. 1991).

New territories are generally established through territorial budding, breeder replacement on the natal or neighboring territory, or establishing new territories between existing territories or in unoccupied restored habitat (Woolfenden and Fitzpatrick 1984, Thaxton and Hingtgen 1996). As family groups increase in size the territory size generally increases since more birds are better able to defend the territory against and usurp territory from neighboring family groups. After the territory is expanded, the dominant son usually acquires both a mate and a portion of his expanded natal territory. This territorial budding is almost exclusively a male behavior and inheritance. Boundaries between the former natal territory and the new territory are established over time. (Woolfenden and Fitzpatrick 1984, Fitzpatrick et al. 1991).

Dispersal

Florida Scrub–Jays are extremely sedentary. Dispersal for both sexes generally occurs within one to four territories of their natal territory, except when subject to habitat fragmentation (Woolfenden and Fitzpatrick 1984, Breininger et al. 1996). Both sexes monitor neighboring Florida Scrub-Jay territories for vacancies among the breeders. Female Scrub-Jays generally leave the family group after having been helpers for one or two years. Males generally stay within the family group as helpers for up to five years before dispersing (Breininger et al. 1991, Thaxton and Hingtgen 1996). In general, dispersal distance for males is shorter than for females; typically 300 meters (984 feet) for males and 1000 meters (3280 feet) for females in optimal habitat (Woolfenden and Fitzpatrick 1984, Breininger et al. 1995). Mortality during dispersal is generally higher among female Scrub-Jays than males; most likely because of the increased distances (Woolfenden and Fitzpatrick 1984, Thaxton and Hingtgen 1996).

Florida Scrub-Jays are reluctant to disperse through large habitat gaps, large expanses of open water, closed canopy forests, or through cities (Stith et al. 1996, Root 1998). Dispersing Scrub-Jays are thought to cue on other resident jays more strongly than habitat, so suitable unoccupied scrub may not be reoccupied. Maximum dispersal within natural, undeveloped habitat is believed to be approximately 8 km (5 miles) and is not thought to occur regularly (Stith et al. 1996). Suburban Scrub-Jay dispersals, however, can be much longer than the 8 km (5 miles) distance in natural, undeveloped areas, where unnatural barriers are present. Recolonization of scrub beyond 12 km (7.4 miles) from occupied scrub is believed to be a rare event (Stith et al. 1996).

In a Gulf Coast Scrub-Jay dispersal study Thaxton and Hingtgen (1996) showed that both male and female dispersal distances are significantly longer in suburban areas than they are in undeveloped, natural areas. Female suburban Scrub-Jays dispersed and average of 8.1 km (5 miles) while suburban males dispersed an average of 1.9 km (1.2 miles). These Gulf Coast

dispersals observed by Thaxton and Hingten (1996) are much higher than the dispersal distances in more natural landscapes. Breininger (1999) found similar results in urban areas in Brevard County. Long distance dispersals tend to occur when individuals must cross through a suburban or agricultural landscape without patches of suitable scrub. These longer dispersal distances in fragmented landscapes may increase mortality (Thaxton and Hingten 1996, Stith 1999).

More recently, in Charlotte County, color-banded Florida Scrub-Jays have dispersed from an suburban population in Deep Creek (M6W) to M6E and across the Peace River to M7 (Karl Miller, Florida Fish and Wildlife Conservation Commission, Personal Communication). The dispersal from Deep Creek (M6E) to Tippecanoe II (M6W) is interesting in that the distance across unsuitable habitat was great, supporting Thaxton and Hingten's (1996) research. The dispersal is also noteworthy since the dispersing individual went to proposed compensation land (this HCP) that was already occupied by Florida Scrub-Jays. The dispersals across the river are also of interest since Jim Beever, FWC, has asserted for years that he believes that Florida Scrub-Jays disperse across the narrower portion of the Peace River (Jim Beever, Florida Fish and Wildlife Conservation Commission, Personal Communication).

Food and Foraging Habits

Florida Scrub-Jays are omnivorous, feeding on a wide range of animals and plants (DeGange et al. 1989, McGowan and Woolfenden 1990). Insects and other arthropods comprise the majority of the animal matter throughout the year, especially orthopterans (grasshoppers and crickets) and lepidopteran larvae (butterflies and moths) (Fitzpatrick et al. 1991, Woolfenden 1996, FWS 1999a). Small vertebrates weighing up to 25 grams (0.9 ounces) including anoles (*Anolis* spp.), treefrogs (*Hyla* spp.), Florida scrub lizard (*Sceloporous woodi*), six-lined racerunner (*Cnemidophorus sexlineatus*), black racer (*Coluber constrictor*), peninsula crowned snake (*Tantilla relicta relicta*), rough green snake (*Opheodrys aestivus*), house mouse (*Mus musculus*), Florida mouse (*Podomys floridanus*), cotton mouse (*Peromyscus gossypinus*), and oldfield mouse (*P. polionotus*) have been identified, but are eaten infrequently (FWS 1999a).

Acorns are the most important vegetative item in their diet. In the fall, thousands of acorns are collected and cached 1-2 centimeters (0.33-0.75 inches) beneath the sand. DeGange et al. (1989) estimated that each Florida Scrub-Jay caches 6000 - 8000 acorns per year. These cached acorns are retrieved and eaten throughout the year. The cached acorns are especially important in the winter and early spring, when arthropod and vertebrate prey are less abundant. Other vegetative items occasionally eaten by Florida Scrub-Jays include seeds, nuts, and berries from slash pine, sand pine, saw palmetto, blueberries (*Vaccinium* spp.), hickories (*Carya* spp.), greenbrier (*Smilax* spp.), and rosemary.

In suburban areas Florida Scrub-Jays will forage at bird feeders and will accept peanuts, corn, sunflower seeds, mealworms, and other food items provided by humans.

Florida Scrub-Jays forage on or near the ground in openings within the vegetation, or along edges. They visually search for food by hopping or running on the ground or hopping among the shrubs (McGowan and Fitzpatrick 1990, FWS 1999a). Prey is taken from the leaves of shrubs or

from the leaf litter. Florida Scrub-Jays do not dig extensively or catch many flying insects and tend to avoid heavy leaf litter and dense herbaceous cover (Woolfenden and Fitzpatrick 1984).

Specific Habitat Requirements

Florida Scrub-Jays are early successional specialists. The optimal habitat for Florida Scrub-Jays is scrub that contains early successional scrub oaks that are between 1-3 meters (3 – 10 feet) in height, where the oak canopy cover exceeds 50%, and open sandy patches cover approximately 10 % of the area (Cox 1987, Fitzpatrick et al. 1991). Canopy trees are scattered and in quality habitat rarely represent more than 15-20% of the cover and the herbaceous layer is sparse (Cox 1987, Woolfenden 1996). This optimal scrub is often surrounded by secondary habitat which may not be characterized as scrub or scrubby flatwoods. This secondary habitat is often within a Florida Scrub-Jay family group's territory (Breininger et al. 1991). The optimal habitat occurs in scrub that burns every 10 – 20 years (Fitzpatrick et al. 1991, Woolfenden 1996).

Overgrown scrub is often the result of the lack of fire. Without fire, the scrub oaks grow too tall and dense for optimal use by Florida Scrub-Jays. Unburned scrub does not support viable Scrub-Jay populations and can even impede dispersal (Breininger and Schmalzer 1990, Breininger 1999, Breininger et al. 1999). The tall dense oaks tend to decrease the Florida Scrub-Jay's ability to nest and to adequately survey territory for intruders and predators. Nest predation is more common in shrubby pastures and overgrown scrub than in recently burned scrub (i.e. burned within twenty years) (Fitzpatrick et al. 1991, Schaub et al. 1992). The bare sandy patches shrink as the understory and leaf litter continue to grow and accumulate, thus reducing the areas available for foraging and acorn caching.

Historically, scrub burned every 10-100 years (Meyers 1990). Optimal Scrub-Jay habitat on the Lake Wales Ridge occurs with burning cycles averaging every 10-20 years. In more mesic scrub, such as the scrubby flatwoods on the Gulf Coast, fire intervals between 6-12 years is required to maintain suitable Scrub-Jay habitat (FWS 1999a).

Scrub Loss and Population Decline

The primary reason for the Florida Scrub-Jay's threatened status is loss of habitat. The Florida Scrub-Jay, for all practical purposes, is restricted to scrub communities, which are now often fragmented, isolated, and overgrown (Duncan et al. 1999). These communities contain the upland soils that humans prefer for citrus production, housing and commercial development. It has been estimated that 70-80% of Florida's scrub (Woolfenden 1996) has been converted from its natural state.

Additionally, scrub that is not allowed to burn at regular intervals becomes too overgrown for the Scrub-Jay to persist. The overgrown scrub makes it difficult for the birds to carryout their typical behaviors. Acorn caching areas become covered in vegetation and the scrub gets too thick for Florida Scrub-Jays to detect predators. These factors lead to a lowered demographic success and may reduce a population below the replacement threshold. Dispersal is also hindered by overgrown scrub (Breininger et al. 1999). The overgrown scrub is also more suitable for the blue jay, an avian competitor and predator.

Nonindigenous species such as Brazilian pepper (*Schinus terebinthifolius*) and cogon grass (*Imperata cylindrica*) out compete native plants and can cause fire cycles to occur at times of the year when they are not natural within the system, and at high fire intensities (Lippincott 1997).

Scrub-Jays in Residential Landscapes

The habitat structure and landscape matrix utilized by suburban Florida Scrub-Jays differs from Scrub-Jays within native scrub landscapes. Scrub within suburban areas is often fragmented and isolated by houses and the associated infrastructure. The patches of scrub are also frequently overgrown because of fire suppression and may host a high percentage of nonindigenous vegetation. The overgrown scrub inhibits the Scrub-Jay's ability to detect hawks, increasing predation and lowering reproductive success (Breininger et al. 1991). This decrease in size and suitability of the habitat frequently leads to a decrease in demographic success in suburban areas (Breininger et al. 1995, Breininger et al. 1996, Breininger 1999, Mumme et al. 2000, Bowman 2001).

Other threats within suburban areas include predation by free-ranging cats, competition and predation by blue jays, collisions with cars, and the consumption of pesticide-laden insects (Breininger et al. 1991, Fitzpatrick et al. 1991, Breininger 1999, FWS 1999, Stith 1999).

Suburban Scrub-Jays often occupy smaller territories than jays in more natural landscapes (Toland 1999). The highest densities of Florida Scrub-Jays in Central Florida, occurred in suburban areas where less than 33% of the area was developed (FWS 1999a). This initial increase in density may be due in part to supplemental feedings. However, populations generally decline after the initial increase in density as residential buildout occurs. These suburban populations generally have lower adult and juvenile survivability than populations in more natural landscapes, which may lead to higher mortality than recruitment and eventual extirpation (FWS 1999a, Stith 1999, Bowman 2001).

Population Modeling

Several population viability analysis models have been designed to investigate extinction probabilities based on demographic information within varying habitats, and with various stochastic events (Duncan et al. 1995, Breininger et al. 1995, Root 1998, Breininger 1999,Stith 1999). In general, extinction probabilities increase over time and are especially pronounced in small populations. Predictions vary with the robustness of the model. In one of the first Florida Scrub-Jay models Fitzpatrick et al. (1991) concluded that populations with 1-5 breeding pairs are highly subject to extirpation, those with 15-30 breeding pairs are marginally protected, barring stochastic events such as epizootics, and may exhibit a 90% probability of surviving 100 years, and populations with 30 or more breeding pairs have a 90% probability of surviving beyond 100 years. Fitzpatrick et al. (1991) cautioned that populations with only 15-30 breeding pairs may be influenced by reductions in genetic variability.

The Breininger et al. (1999) model determined that in optimal habitat without catastrophes, populations of 20-50 breeding pairs had great persistence probabilities. Few populations,

however, are in optimal habitat and catastrophes cannot be predicted, nor eliminated as a potential threat. Woolfenden and Fitzpatrick (1991) were in agreement, stating that a population with 20-40 breeding pairs had a 90% probability of lasting 100 years, but think that a population of 30 breeding pairs is more realistic for lasting persistence. Fitzpatrick et al. 1991 and Stith (1996) concluded that populations with fewer than 10 pairs have a 50% probability of extinction within 100 years.

Conservation Implications

Florida Scrub-Jay reserves must be based on the demographic and habitat requirements of the species. Reserves within each of the metapopulations should be planned so that the subpopulations are as large as possible and connected with the other subpopulations within the metapopulation.

Planning for the long-term persistence of Florida Scrub-Jays will require protection and management of optimal habitat. The protection of the core populations (those greater than 400 breeding pairs) is of paramount importance. The core populations are located in the Ocala National Forest, Merritt Island and Cape Canaveral, and the Lake Wales Ridge. The preservation of all metapopulations with more than 10 breeding pairs is of secondary importance. None of these metapopulations should be permitted to decrease by more than a third from the levels of the Statewide Mapping Project, nor should any metapopulation be allowed to be reduced to fewer than 10 breeding pairs. Gaps between subpopulations should not be allowed to increase further than 12 km (7.4 miles) and gaps between habitat patches should not be farther than 8 km (5 miles) (Stith et al 1996). As important as preservation of scrub according to the above guidelines, is management of the scrub. The scrub must be managed for optimal Scrub-Jay habitat.

With the above guidelines in mind, preservation priority should be given to occupied scrub with experienced breeding pairs (Root 1998). Restorable unoccupied scrub adjacent to existing preserves or within easy dispersal distance should be given a second priority. Connectivity between subpopulations should be addressed in reserve design as well.

Whenever possible, existing preserves should be expanded so that there is a larger contiguous parcel. Larger contiguous parcels can be better maintained (i.e. prescribed burning) and allow the Scrub-Jays to function in a more ideal situation (i.e. neighboring territories, ability to have territorial budding, etc.). Preserve sites should be sited as far as possible from roads, to reduce the potential for collisions with vehicles (Mumme et al. 2000).

Reserve Design in Charlotte County

Reserves shall be designed based on the biological requirements of the Florida Scrub-Jay. Occupied scrub surrounding existing preserves should be targeted first. This will allow dispersal among parcels and will better enable populations to maintain a viable size. For example, in M6W the occupied area known as Tippecanoe Scrub Environmental Park Phase II has been targeted as an expansion of the existing Tippecanoe Scrub Environmental Park Phase I. Phase I has recently been reoccupied, now that conditions have been restored to an early successional state. Published reports from modeling done for the United States Fish and Wildlife Service by Dr. Brad Stith (1999) were also consulted for each of the proposed compensation areas.

2.2.2 Biological Review of the Bald Eagle

Description

The bald eagle is the largest raptor that breeds in Florida. Their wing span can reach lengths of 2.1 m (7 feet) (FWS 1999c). The adult bald eagle is easily recognizable with a white head and tail, coffee brown wings and body and yellow eyes, bill, and feet. Juvenile eagles are more uniformly brown with some white mottling on the underside of the wings. The bald eagle has been listed since 1967 by the United States Fish and Wildlife Service. The bald eagle is currently listed as threatened by both the United States Fish and Wildlife Service and the Florida Fish and Wildlife Conservation Commission.

General Habitat Requirements

Bald eagles typically roost and nest within close proximity to large bodies of water; a high water to land edge ratio is preferable to aid in hunting efforts (FWS 1999c). Eagles choose the tallest trees, typically conifers, near water and foraging areas to provide a clear view of the surrounding area and clear flights paths. In southern Florida where there are few tall conifers, bald eagles will roost and nest in the crowns of mangrove trees. Typically, nesting areas in Florida are found in ecotonal areas. Provided suitable roosting, nesting and perching sites are available, bald eagles can tolerate a variety of disturbances within their habitats (FWS 1999c).

Range and Status

Historic ally, the range of the bald eagle was from western Alaska to the Maritime Provinces of Canada and south to the Florida Keys and into Baja California. Presently, most nesting eagles are found in Alaska, Florida, the Chesapeake Bay region, and the Great Lakes region (FWS 1999c). The bald eagle is currently threatened in all of the lower 48 states.

Social System

Bald eagles typically mate as life long monogamous pairs. A nesting pair will defend their territory, which they use to nest year after year (Curnutt, 1996). In attracting a mate and defending their territories, eagles will engage in dramatic flight pursuits, swooping, talon locking, and cart-wheeling. Bald eagles reach sexual maturity around 4-5 years and have a life span of up to 40 years in captivity. Little is known about their life span in the wild.

Reproduction

Nesting occurs in September with 2-3 eggs laid in late October. There is a thirty-five day incubation period and within 10-12 weeks after hatching fledglings will have acquired the

feathers necessary for flight. Parental care may continue for another 4-6 weeks while the fledgling is learning to hunt (Curnutt1996).

Territories/Home Range

Many bald eagles are migratory due to seasonal food availability (Curnutt 1996). Eagles in the northern states tend to change their use of habitat during the non-breeding season, unlike those in southern peninsular Florida. Though some adults may defend their territories, those who disperse are not believed to leave the state (FWS 1999c). Juveniles migrate to northern areas and may take up to 3 years to return.

Food and Foraging Habits

Bald eagles are opportunistic feeders and have diverse foraging habits. In Florida, the bulk of their diet is fish, but eagles will also eat birds, small mammals, and carrion. The foraging habits of the bald eagle range from soaring over food areas and swooping, sitting and waiting, to the piracy of prey from gulls and osprey. Eagles forage more actively in the morning and may feed again, less vigorously, in the late afternoon (Curnutt 1996).

Conservation implications

Bald eagle populations have declined due to a variety of factors including: habitat conversion, shooting, and environmental contamination. Significant environmental contaminants include lead and organochlorine compounds, specifically DDT. DDT was responsible for reducing reproductive success by prevented calcium deposition, thus thinning egg shells (FWS 1999c). Since the ban on DDT in 1972 the reproductive success in bald eagles has rebounded swiftly from a 30 year decline (Curnutt 1996). Bald eagles have responded dramatically to conservation measures and are now being considered for delisting (FWS 2006). The bald eagle's greatest current threats are habitat conversion, habitat fragmentation, coastal development, power line and car collisions, pollutants, over fishing and habitat modification of prey species.

2.2.3 Biological Review of the Eastern Indigo Snake

Description

The eastern indigo snake is the largest non-venomous snake in North America. They can reach lengths of 2.65 m (8.4 feet) (Moler 1992). The smoothed scaled snake is iridescent blue black and often has red under its chin and throat. Young snakes are less iridescent and may have a patterned dorsum. The Eastern indigo snake has been listed as threatened by the state of Florida Fish and Wildlife Conservation Commission since 1971 and since 1978 by the United States Fish and Wildlife Service.

General Habitat Requirements

The eastern indigo snake is a habitat generalist, but it needs a mosaic of vegetation communities, including wetlands in order to complete their annual cycle. Gopher tortoise burrows are often utilized by this species, especially in the northern part of its range. The burrows are important retreats during freezing temperatures as well as to avoid desiccation in xeric communities. In more hydric areas where tortoise burrows are less frequent, the indigo snake seeks shelter in hollow logs, the burrows of other animals (armadillos (*Dasypus novemcinctus*) etc.) or in shallow root channels. Farther to the south in subtropical Florida, the indigo snake is found in most terrestrial and wetland communities that have not been heavily impacted by development (FWS 1999d).

Range and Status

The historical range of the eastern indigo snake included all of Florida and in the coastal plain of Georgia, Alabama and Mississippi. The snake is now rare in Georgia and the Florida panhandle, but still occurs in peninsular and south Florida (FWS 1999d).

Reproduction

Little is known about reproduction in the wild, however in northern Florida, breeding occurs between November and April. Four to 12 eggs are laid in May or June (Moler 1992). In the southern part of its range breeding occurs from June to January and eggs are laid from April to July (Layne and Steiner 1996 in Moler 1992). Male eastern indigo snakes can be territorial during the breeding season and may lead to confrontations or cannibalism (Moler 1992).

Home Range

Indigo snakes have large home ranges which include many vegetation communities. Home ranges vary seasonally and are smaller in the winter and larger in the summer, particularly in the northern portion of their range. Adult males have larger home ranges than adult females and juveniles. Summer home ranges for adult males can be 224 hectares (553.5 acres) and can be 158 hectares (390.4 acres) for females. Gravid females tend to have smaller home ranges than non gravid females (FWS 1999d).

Food and Foraging Habits

Food includes any vertebrate which can be overpowered including amphibians, small mammals, birds and reptiles. Indigo snakes can consume venomous snakes, such as rattlesnakes and other pit vipers, because they are immune to the venom (FWS 1999d). Rat snakes are frequently

eaten. Neither constriction nor venom is used to subdue prey. Juvenile indigo snakes eat invertebrates. Hunting is primarily diurnal and is terrestrial or fossorial.

Conservation implications

The Eastern indigo snake was listed due to a combination of factors including habitat conversion, over collection for the pet trade and gassing gopher tortoise burrows to collect rattlesnakes. Collection for the pet trade and gassing rattlesnake burrows has declined. In agricultural areas, pesticide and insecticide poisoning may be a cause of snake mortality. Reptiles have been found to have a greater sensitivity than birds and mammals to some pesticides (FWS 1999d). The Eastern indigo snake's greatest current threat is habitat conversion, habitat fragmentation, landowner induced mortality and road kill.

Eastern Indigo Snakes and Charlotte County

The Eastern indigo snake is now rare throughout its range. No County-wide survey has been conducted. No Eastern indigo snakes have been observed within project areas or proposed compensation areas. The restoration of compensation areas for scrub-jays will also provide habitat that can be utilized by eastern indigo snakes.

2.3 Countywide Florida Scrub-Jay surveys

Charlotte County has been included in two statewide Florida Scrub-Jay surveys. The first survey was conducted in 1981 by Jeffery A. Cox (Cox 1987). The Cox survey, which was based on the investigation of previous reports (literature review, museum collections, Breeding Bird Survey, FWS data, Florida Ornithological Society data and select field reviews), only identified sixteen Florida Scrub-Jays at five sites in Charlotte County. An additional two sites were reported, but were not investigated (Cox 1987). In Charlotte County, the 1991-1992 Statewide Mapping Project (SMP), the second statewide population estimate, identified 296 Florida Scrub-Jays in 128, groups, in eighteen populations. The mean group size was 2.31 (Fitzpatrick et al. 1994). The statewide mapping project was an effort to inventory Florida Scrub-Jays and Scrub-Jay habitat on large parcels throughout the state. Eight compilers surveyed the state. Mr. Jon Thaxton surveyed Charlotte, Collier, DeSoto, Hardee, Lee, Manatee and Sarasota Counties. Bill Pranty updated the SMP from 1992-1996; identifying 303 Florida Scrub-Jays in 134 groups (from Miller and Stith 2002).

The most recent countywide survey was conducted in 2001-2002 by Dr. Karl Miller and Dr. Bradley Stith, Center for Avian Conservation, Inc. They identified 419 Florida Scrub-Jays, in 135 family groups, in fifteen populations. The mean group size within Charlotte County was 3.1 with a mode of 2 and a range of 1-8 (Miller and Stith 2002).

The increase in the total number of Florida Scrub-Jays over time is most likely due to an increase in survey effort and does not reflect an actual increase in Florida Scrub-Jays. In fact, individual populations of Florida Scrub-Jays decreased within all three metapopulations. The initial survey by Cox in the 1980s was an attempt by one person to document Florida Scrub-Jays throughout the state. The Statewide Mapping Project in the early 1990s increased the number of surveyors to eight, but individuals had multiple counties to survey. The 2001 survey was conducted by two surveyors in a single county. Similar results were found in the Florida Scrub-Jay survey in Sarasota County in 2000, where 466 Scrub-Jays were observed in 180 groups (Christman 2000). This represents an increase from 41 birds in twelve groups during the 1981 Cox survey (Cox 1987) and 413 birds, in 145 groups in the 1991-1992 Statewide Mapping Project (Fitzpatrick et al. 1994). The Sarasota County survey is similar to the Charlotte County survey in that the numbers of populations and subpopulations declined over time. Similar decreases have been documented in Indian River and Brevard Counties (Breininger 2001).

In addition to more effort (more surveyors per area), more data were available over time as well. Pranty et al. (1997) further updated the Statewide Mapping Project in 1997 in an unpublished manuscript. In this manuscript, three additional sites hosting Florida Scrub-Jays were identified in Charlotte County. The 2001 Charlotte County Florida Scrub-Jay survey had the benefits of the two previous surveys, Pranty's Statewide Mapping Project update, as well as more citizen, county, state, and federal observational data.

Population declines are occurring in Charlotte County, despite the overall increase in Florida Scrub-Jay family groups that were identified during the 2001 Center for Avian Conservation Inc. countywide survey. Throughout Charlotte County, seventeen of the Florida Scrub-Jay family groups identified in the SMP are no longer present in the 2001 survey. These include the eleven

family groups that were found where the present day Tippecanoe Environmental Park (Phase I), Charlotte Harbor Buffer Preserve State Park and Charlotte County Sports Complex are located, the two family groups on Harborview Road southwest of Interstate 75 in M6, the one family group northeast of US 17, the one family group southeast of Washington Loop Road, and the two family groups southwest of Washington Loop Road in M7.

The majority of the Scrub-Jay groups in each of the metapopulations occur on privately owned land that is not under any type of conservation easement, leaving the majority of the Scrub-Jay family groups vulnerable to habitat loss during development. Throughout the county, only seven of the 135 (5.2%) identified Florida Scrub-Jay family groups occur on publicly-owned land that will be preserved in its natural state. Three of the family groups occur on the SWFWMD's "Burchers Tract", two on the Cape Haze Management Unit of the Charlotte Harbor Buffer Preserve State Park, and two in the Amberjack area. An additional portion of two territories occur on public land in the Rotonda area. Partial territories occur on conservation easements on private land in the Harborview DRI, Riverwood DRI, and Oyster Creek Golf and Country Club and other scattered private preserves. However, due to their small size and isolation, these "postage stamp preserves" are not likely to persist into the future without additional acquisitions.

2.4 Charlotte County Florida Scrub-Jay Metapopulation Boundaries

Charlotte County has four distinct metapopulations (Figure 5), which are believed to be discrete from one another (Stith 1999). The Sarasota-Western Charlotte Metapopulation (M5) occurs along the Gulf Coast in Sarasota County and the Cape Haze Peninsula in Charlotte County. The Myakka River separates M5 from the Northwestern Charlotte Metapopulation (M6). M6 contains the area between the Myakka and Peace Rivers including greater Port Charlotte, and the Riverwood, Deep Creek, Harbour Heights, and Heron's Cove subdivisions. The Central Charlotte Metapopulation (M7) is located east of the Peace River and includes Scrub-Jays within Charlotte, DeSoto, and Lee Counties. The final Florida Scrub-Jay metapopulation within Charlotte County is part of the Lake Wales Ridge Metapopulation (M21). The majority of this metapopulation is located in Orange, Polk, Highlands and Glades Counties. In Charlotte County, these Florida Scrub-Jays were located east of The Babcock Ranch, along the border of Glades County during the SMP.

2.4.1 Sarasota-Western Charlotte Metapopulation (M5); statewide mapping project data

The Sarasota-Western Charlotte Metapopulation (M5) occurs in Sarasota and Charlotte Counties. The majority of the Scrub-Jay populations in Charlotte County occur east of County Road 775 and south of County Road 776. An additional population occurs west of the Myakka River in Gulf Cove (Figure 6). The Statewide Mapping Project identified approximately 64 territories, excluding suburban jays, within the entire metapopulation (Stith 1999). Thirty-five family groups occurred in eleven populations in Sarasota County. In Charlotte County, 29 family groups (excluding suburban birds) occurred in six populations. When suburban birds are included, Charlotte County had 51 family groups with 117 individuals in six populations (Miller and Stith 2002). The six populations (Figure 6b), within Charlotte County, included three family groups in Char1 (Charlotte Harbor Buffer Preserve State Park), 21 family groups in Char2 (Cape

Haze and vicinity), seven family groups in Char3 and Char4 (Rotonda area), thirteen groups in Char5 (East Englewood), and five groups in Char 6 (East Englewood area).

Stith (1999) argued that the best opportunity for acquisition included populations Char2 (Amberjack area), Char3 and Char4 the Rotonda area. M5 ranked 13th in terms of statewide importance and is the second lowest ranking of the four Florida Scrub-Jay metapopulations within Charlotte County.

2.4.2 Northwestern Charlotte Metapopulation (M6); statewide mapping project data

The Northwestern Charlotte Metapopulation (M6) occurs in Sarasota and Charlotte Counties. Scrub-Jay populations are in close proximity to the Myakka River, Tippecanoe Bay, and the Peace River (Figure 7). The SMP identified approximately 44 territories composed of ten populations, excluding suburban birds, within this metapopulation (Stith 1999). Five family groups occurred in Sarasota County in three populations. The remaining 39 family groups occurred in Charlotte County, in seven populations. When considering suburban birds, the Charlotte County portion of the metapopulation contained 54 families in five populations (Miller and Stith 2002). The five populations (Figure 7b) contained eleven family groups in Char 7 (Riverwood/ Eleanor Avenue), five family groups in Char 8 (area north of Tippecanoe Scrub Environmental Park Phase I), seventeen family groups in Char9 and Char10 (Tippecanoe Scrub Environmental Park Phase I and Southern Suburbs), two groups in Char11a (Harborview Road southwest of I-75), and nineteen family groups in the combination of Char11 and Char12 (Heron's Cove/ Deep Creek).

Stith (1999) identified populations Char8 and Char7 as priorities in terms of acquisition. The Char8 population is located north of SR 776, across from Tippecanoe Scrub Environmental ParkPhase I. The Char7 population is located northwest of Char8, around the Riverwood subdivision. This metapopulation is ranked 6th in statewide importance, the second highest ranking of the four metapopulations.

2.4.3 Central Charlotte Metapopulation (M7); statewide mapping project data

The majority of the Scrub-Jay populations within the Central Charlotte Metapopulation (M7) occur along Shell and Prairie Creek in the Washington Loop Road area (Figure 8). Additional groups occur south of County Road 74, just east of US17, in the Jones Loop Road area, and farther south into Lee County. The SMP identified 31 Scrub-Jay family groups in eleven populations, excluding suburban birds (from Stith 1999). Ten of the eleven populations occur within Charlotte County. The eleventh population occurs in Lee County. The ten Charlotte County populations (figure 8b) included one family group in Char13 (northeast of US 17), two family groups in Char14 (south of US 17 and west of Washington Loop Road), seven family groups in Char15 (north prong of Washington Loop Road), five family groups in Char16 (north of Shell Creek), two groups in Char17 (west of Prairie Creek), five groups in Char18 (east of Prairie Creek), one group Char19 (eastern Washington Loop), one group in Char20 (southeastern Washington Loop), two family groups Char21 (southwestern Washington Loop Road), and four family groups in Char22 (Jones Loop).

Stith (1999) identified Char 15, Char16, Char17, and Char18 as priorities for land acquisition. Char15 is divided by the north prong of Washington Loop Road. Char16 is located south of Char15 between the north prong of Washington Loop Road and Shell Creek. Char17 is located on the western side of Prairie Creek and Char18 is on the eastern side of Prairie Creek. M7 ranks 3rd in statewide priority and is the highest ranking of the four Charlotte County metapopulations.

2.4.4 Lake Wales Ridge Metapopulation (M21); statewide mapping project data

This metapopulation occurs in Polk, Highlands, Glades, and Charlotte Counties. In Charlotte County, only two family groups of Florida Scrub-Jays (Char22) were identified along the eastern County line during the SMP (from Stith 1999) (Figure 5). This group is part of the largest metapopulation in the state, both in terms of Scrub-Jay numbers and geographic area. M21 is ranked 21st in statewide priority, due to previous land acquisition efforts. No scrub jays were documented in this metapopulation during the 2001-2002 Survey.

2.5 Florida Scrub-Jay Consultation in Charlotte County

Although the Florida Scrub-Jay was listed as a threatened species in 1987, FWS involvement was not common until 1991 when the FWS informed all state, county, and local municipalities that they were potentially liable for third party Section 9 take violations that may result from issuance of land clearing and development permits within areas occupied by Florida Scrub-Jays.

Currently, there is one completed Florida Scrub-Jay HCP in Charlotte County. This HCP and ITP were issued in 1998 for the Heron's Cove Subdivision, located within M6E (Figure 9). Other mitigation, habitat enhancement, or conservation easement measures for Florida Scrub-Jays have been established during development or proposed development of occupied Florida Scrub-Jay habitat. These measures have been established for private developers and Charlotte County under the direction of the FWS and FWC. Existing or future developments with these mitigation efforts include Sanctuary at Golden Tee, Oyster Creek Golf and Country Club, Cape Haze Village, Cape Haze Commons (Nelson-Liberati), Winchester Boulevard North, Rotonda Community Park, Bridgebrook Shores, Riverwood DRI, Harborview DRI, East Port Waste Water Treatment Plant, Charlotte Crossing Apartments, Pine View Villas (formally Browne Apartments), and for multiple individual single residential lots or tracts. Charlotte County has purchased 13.8 hectares (34 acres) on the eastern border of Amberjack Environmental Park, as mitigation for an ITP on a family group located in the alignment of Winchester Boulevard in Sarasota County. This parcel links the county-owned Amberjack Environmental Park with the state-owned Charlotte Harbor Buffer Preserve State Park. This proposed Charlotte County Capital Improvements HCP and ITP will not negate any of the previous conservation agreements or ITP requirements that were previously instituted. Future county projects without mitigation plans that may affect Florida Scrub-Jays include the widening and extension of Winchester Boulevard (southern extension), the widening of Edgewater Drive, the extension of Solomon Drive, the construction of the Harbour Heights fire vehicle maintenance station (separate HCP), and the development of Murdock Village. Future county-initiated projects and private projects that may affect Florida Scrub-Jays will have to prepare separate HCPs.
In 2001, in accordance with Policy 1.10.3 of the Natural Resources and Coastal Planning Element of the 1997-2010 Charlotte County Comprehensive Plan, the Applicant directed Natural

Resources Planning Section (NRPS) (now Natural Resource Division [NRD]) staff to begin a countywide Florida Scrub-Jay HCP that would lessen the conflict between development and this threatened species. Charlotte County Natural Resources staff consulted with Michael Jennings, FWS, and James Beever, FWC, early in the process to ensure that the data that were collected would be appropriate for the Habitat Conservation Plan. Required criteria for the countywide survey included an inventory of all scrub and Florida Scrub-Jays by knowledgeable biologists without Scrub-Jay mitigation projects within the county. Center for Avian Conservation Inc. was selected in 2001 to conduct a countywide scrub and Scrub-Jay survey as the first step toward the HCP. The countywide survey was conducted from September 2001- December 2002.

Once the countywide survey was completed, Charlotte County Natural Resources staff again consulted with Michael Jennings, FWS, and James Beever, FWC, to determine the methodologies for developing the Countywide HCP. The following components were agreed upon by all parties and were used to design the County's HCP. Each of the metapopulations within Charlotte County was to be addressed separately with the exception of M6E (Deep Creek/Harbour Heights populations. Acreage to offset the "take" for jays within M6E could be preserved within M7 since it is believed that the birds can disperse across the narrow portions of the Peace River. (Banded birds from M6b have dispersed east across the Peace River to M7 ([DR, Karl Miller, personal communication 2005]). Florida Scrub-Jays were to be preserved in place throughout all metapopulations wherever possible and biologically practical, and existing preserves would be expanded wherever possible to increase connectivity and dispersal opportunities. Florida Scrub-Jays within highly fragmented habitat or isolated areas could be taken in lieu of preserving habitat more likely to be biologically valuable in the long term. Since territory boundaries were not identified within the survey and a precise determination of 2:1 mitigation could not accurately be determined, a total of 25 acres (based on average territory size) of scrub would be required as adequate mitigation for each family group that was proposed for take. Currently unoccupied scrub could be utilized as preserve areas if adjacent to existing or proposed preserves at the same ratio. Existing preservation areas could not be included within the required HCP preservation areas unless the areas were approved by the agencies before the acquisition (i.e. Amberjack Environmental Park). All existing mitigation areas would remain according to the approved plans and would not factor into the overall preservation acreage under this HCP. A PVA model would not be required of this HCP.

In 2001, the Charlotte County NRPS began preparing the Countywide Florida Scrub-Jay Habitat Conservation Plan with guidance from the United States Fish and Wildlife Service, the Florida Fish and Wildlife Conservation Commission and with input from Charlotte County citizens. In May 2004, the Board of County Commissioners directed NRD staff to scale back the countywide plan to a county-initiated Project HCP.

Since 2000, the FWS and FWC have consulted on private and public development projects regarding Florida Scrub-Jays within Charlotte County. The county projects include the development of Winchester Boulevard North, Edgewater Drive and Tippecanoe Scrub Environmental Park Phase II, Charlotte County Environmental Campus, Amberjack Environmental Park, Oyster Creek Park, and Rotonda Community Park. Private development projects include Cape Haze Commons (Nelson-Liberati), Cape Haze Village, Bridgebrook Shores, Charlotte Crossing Apartments, Pine View Villas, and individual lots or parcels within

the Port Charlotte subdivision, Deep Creek subdivision, on Washington Loop Road and within the Prairie Creek and Prairie Creek West subdivisions.

2.6 Charlotte County 2002 Florida Scrub-Jay and Scrub Survey

In July 2001, Charlotte County contracted with the Center for Avian Conservation, Inc. (CAC) to conduct a scrub and Scrub-Jay survey of Charlotte County. The Charlotte County NRPS and the Community Development Department provided all recent records of Florida Scrub-Jay sightings and locations of scrub and scrubby flatwoods and current and historical developments involving impacts to Florida Scrub-Jays in an effort to provide all local knowledge. The CAC also contacted local birders, environmental consultants, and other people knowledgeable about Charlotte County Scrub-Jays in an effort to document all scrub polygons and Florida Scrub-Jays within Charlotte County. The 2001-2002 scrub and Florida Scrub-Jay survey was conducted by two ornithologists who started their survey efforts based on historical information. Scrub polygons documented in the current survey were identified within the SMP, identified within the Soil Survey of Charlotte County (Henderson 1984), or were located based on other local information. The information presented herein is based primarily on the CAC report provided to Charlotte County in final form in December 2002.

Florida Scrub-Jay habitat was inventoried based on the State-wide Mapping Project (SMP) soil polygons, soil maps, and aerial photographs. The CAC investigated all habitat polygons that were identified during the SMP as well as additional areas that were not identified during the SMP. Scrub polygons were ground-truth and described based on bare sand coverage, percent cover of scrub oaks, scrub oak height, pine canopy coverage, species composition and the presence of non-native species. Successional condition of the scrub was described qualitatively as prime, somewhat overgrown, moderately overgrown, and heavily overgrown. The degree of disturbance was described as undisturbed, rarely used trails or dirt roads, low density housing / light land use, high density housing/ heavy traffic, and cleared for agriculture or other land use. The current land use and potential for restoration were also described (Miller and Stith 2002).

Florida Scrub-Jay surveys were conducted by CAC according to standard survey methodologies outlined in Fitzpatrick et al. (1991) and Fitzpatrick et al. (1994). Transects, 100-200 meters apart were walked while playing tape recordings of Florida Scrub-Jay calls for 3-5 minutes per station (see Miller and Stith 2002 for further details). In suburban areas some of the surveys were conducted from roads. Parcels posted with “No Trespassing” signs were not surveyed except from the public right-of-ways.

The CAC created digital files in ESRI “shape” file format containing Florida Scrub-Jay habitat polygons and Florida Scrub-Jay groups using ArcView 3.2a (Miller and Stith 2002). Background digital data files were assembled from the 1992-1993 SMP, Charlotte County NRPS data, 1999 Digital Ortho Quarter-Quadrangles (DOQQs), Digital Line Graph vector data, Charlotte County Community Development and GIS Department land use files, road coverage, and land ownership coverage, and Charlotte County Soil Survey (Henderson 1984).

Maps produced by the CAC were projected to the UTM projection; zone 17 NAD83, measurement units in meters. Survey data were mouse-digitized in ArcView using the DOQQs

for background display. Habitat polygons were split along ownership boundaries of publicly and privately owned lands (Miller and Stith 2002).

Each of the populations within the four existing metapopulations was described according to existing scrub, Florida Scrub-Jay family groups, land ownership (public or private), vegetation community, and restoration potential. Proposed acquisitions are based on proximity to existing publicly owned land, occupation by Florida Scrub-Jays, vegetation community characteristics, and restoration potential.

The Center for Avian Conservation Inc. identified and mapped 160 scrub polygons, totaling 4519.5 hectares (11,167.8 acres). This area represents approximately 1% of Charlotte County's land area. Scrub polygons were only mapped if they were larger than 1 hectare (2.47 acres) or within 500 meters (1640 ft) of other, larger scrub polygons. Most of the scrub polygons (50%) were ranked as "heavily overgrown" and only two were ranked as "prime" in terms of optimal Florida Scrub-Jay habitat. Only 10% of the current or restorable Florida Scrub-Jay habitat is publicly owned. More than 90% of the Florida Scrub-Jay habitat is privately owned, including the two areas that were ranked "prime" (Miller and Stith 2002).

The Center for Avian Conservation Inc. identified and mapped the locations of 135 Florida Scrub-Jay groups containing 419 individual jays. Of these, 128 (94.8%) family groups occurred primarily on private land, 1 (0.7%) family group occurred primarily on county-owned preservation land, and 6 (4.4%) occurred primarily on state-owned preservation land. Several other family groups are located within county or state proposed acquisitions (Appendix C).

2.7 2001-2002 Charlotte County Survey

2.7.1 Sarasota-Western Charlotte Metapopulation (M5)

Current Status of M5

The 2001 countywide survey identified 35 family groups with 89 Scrub-Jays in six distinct populations (Appendix D). A population, for the purpose of this report, is defined as family groups that are separated by more than 2 km (1.2 miles) from their nearest neighbors (Miller and Stith 2002, Stith 1999, Stith et al. 1996). The six populations include five family groups on Cape Haze and vicinity (including Amberjack), three family groups in Rotonda, ten family groups in East Englewood, one family group split between the Sarasota-Charlotte County line (Winchester North), fifteen family groups in Gulf Cove, and two family groups in the Cape Haze Management Unit of the Charlotte Harbor Buffer Preserve State Park. The family group labels have been altered from those used in Stith (1999) to better reflect populations within each of the metapopulations.

Changes between the SMP (1991-1992) and the Countywide survey (2001-2002) in M5

In Charlotte County, the number of family groups within M5 changed from 51 family groups in six populations (SMP) to 35 family groups in six populations (Miller and Stith 2002). Five of the original six populations (83%) in the SMP declined and one population within M5 showed an increase in family groups as follows:

- The three family groups within the Charlotte Harbor Buffer Preserve State Park (Char1) decreased from three family groups to two family groups.

- The 21 family groups within the Cape Haze vicinity (Char2) and (Char3) decreased to five family groups during the current survey.

- The seven family groups in the Rotonda area (Char4) decreased to three family groups in the current survey.

- The Lemon Bay population decreased from five family groups to zero.

- The thirteen family groups in East Englewood (Char5 and Char6) decreased to eleven groups during the current survey.

- The Gulf Cove population, increased from two family groups during the SMP to fifteen family groups.

It is important to note that the populations that increased over time are suburban populations that were not adequately surveyed during the SMP.

In Charlotte County, public preservation areas for this metapopulation containing Scrub-Jay habitat include Charlotte County's 74 hectares (183 acres) Amberjack Environmental Park, a 5.0 hectares (12.4 acres) mitigation/conservation easement for Rotonda Community Park, a county-owned 13.8 hectares (34 acres) Scrub-Jay mitigation/conservation easement (for an Incidental Take Permit for a family group within the Winchester alignment in Sarasota County), the State of Florida's 8,178 hectares (20,200 acres) Charlotte Harbor Buffer Preserve State Park (Cape Haze Management Unit), 0.58 hectares (1.43 acres) Scrub-Jay mitigation/conservation easement at the Sanctuary at Golden Tee, and the 11.01 hectares (27.2 acres) Scrub-Jay mitigation/conservation easement at Oyster Creek Golf and Country Club. Not all of the acreage within these preservation areas is Scrub-Jay habitat. For example, only 42.7 hectares (117.3 acres) of Amberjack Environmental Park (including the conservation easement for Winchester Boulevard north) is scrub or scrubby flatwoods (Table 3 and Figure 10).

Table 3. Current Florida Scrub-Jay Preservation Areas in M5

Name [Appendix]	**Total Hectares** (Acres)	**Hectares of Scrub** (Acres)	**Ownership**	**Reason for Preservation**	**Occupied by Scrub-jays - 2006**
Amberjack Environmental Park	74 (183)	42.7 (117.3)	Charlotte County	Habitat Preservation FCT	yes
Amberjack Conservation Easement	13.8 (34)	9.8 (27)	Charlotte County	Mitigation for Winchester Blvd.	no
Cape Haze Village	9.8 (24.2)	0.31 (0.85)	private	(non-finalized development plans)	no
Charlotte Harbor Buffer Preserve State Park (Cape Haze Management Unit)	817.8 (20,200)	29.6 (81.4) 201 acres at 3 sites	State of Florida	Preservation and protection of Charlotte Harbor	yes
Sanctuary at Golden Tee [H]	0.58 (1.43)	<0.52 (<1.43)	private	Mitigation for development	yes
Oyster Creek Golf and Country Club [I]	27.7 (68.5)	9.9 (27.2)	private	Mitigation for development	yes
West County Regional Park	66.5 (183)	6.6 (18.1)	Charlotte County	Habitat Preservation FCT	no
Rotonda Community Park	13.0 (32)	5.0 (12.4)	Charlotte County	Mitigation for development	yes

Scrub polygons shown in Figure 10 are approximations, particularly for the private developments. The conservation areas were mapped without the benefit of legal descriptions and are not intended to replace existing maps. The complete boundary of the Charlotte Harbor Buffer Preserve State Park is not shown; only those portions of the state park that contain designated scrub are depicted.

Additional county-owned parcels hosting Scrub-Jay habitat and Scrub-Jays include 7.3 hectares (18.1 acres) of West County Regional Park which will be developed into a passive use park by the Charlotte County Parks, Recreation, and Cultural Resources Department. Development of the passive use portion of the park, as currently proposed, is not likely to affect the designated

Florida Scrub-Jay habitat. Listed species permitting and approval, including for Florida Scrub-Jays, will be obtained separately from this HCP.

Florida Scrub-Jays on Preserved Land in Charlotte County's M5

Currently, eight family groups are located at least partially on preservation land within M5 (Figure 10 and Appendix D). These include the two family groups located in the Charlotte Harbor Buffer Preserve State Park population (BP), three family groups in the Cape Haze population (CH), two family groups in the Rotonda population (RO), and one family group in the East Englewood (EE) population. The two family groups on preservation land within the Cape Haze population include one family group located on the northern edge of Amberjack Environmental Park, one family group located west of Amberjack Environmental Park on the Cape Haze Management Unit of the Charlotte Harbor Buffer Preserve State Park, and a small portion of a territory farther west. Most of the family group's territory occurs on privately owned land and non preservation public land (CH13 and CH14). The Rotonda family group is located partially on state, county, and private land (RO9). An additional family group uses a small part of the eastern part of the Rotonda Community Park (RO3). A small 0.1 hectares (0.26 acres) conservation easement was established in 2002 for this family group. The East Englewood family group is under partial protection at Oyster Creek on a conservation easement required during development of the golf course community.

2.7.2 Northwestern Charlotte Metapopulation (M6).

Current Status within M6

The 2001 countywide survey identified 64 family groups with 200 Scrub-Jays in four distinct populations (Appendices E and F). A population, for the purpose of this report, is defined as family groups that are separated by more than 2 km (1.2 miles) from their nearest neighbors (Stith et al. 1996, Stith 1999, Miller and Stith 2002). The populations include five family groups in the Riverwood/Eleanor Avenue (EA) vicinity, one family group in the northern Tippecanoe suburbs (TN), four family groups in the Tippecanoe Scrub Environmental Park Phase II area (TS), and 54 family groups in the Deep Creek/Harbour Heights (DC) population. An additional two family groups were found in May 2003 in TS5 and TS6 (Appendix J) The family group labels have been altered from those used in Stith (1999) to better reflect populations within each of the metapopulations.

Changes between the SMP (1991-1992) and the Countywide survey (2001-2002) in M6

In Charlotte County, the number of family groups within M6 changed from 54 family groups (excluding suburban populations) in five populations (SMP) to 64 family groups (including suburban populations) in four populations (current survey). Four of the five original populations (80%) in the SMP declined as follows:

- The Riverwood/Eleanor Avenue (EA) population (Char7) decreased from eleven family groups to five family groups.

- The five family groups north of Tippecanoe Scrub Environmental Park (TN; Char8) decreased to one family group in the current survey.

- The South Tippecanoe and Suburbs (TS) population decreased from 17 to four family groups.

- None of the groups (identified as Char9 during the SMP) that occurred on the Port Charlotte Management Unit of the Charlotte Harbor Buffer Preserve State Park, Tippecanoe Scrub Environmental Park Phase I and the Charlotte County Sports Complex (formerly the Ranger Stadium) persisted in the 2001 survey. (Tippecanoe Scrub Environmental Park Phase I has recently been recolonized by a family group; the Buffer Preserve also currently has scrub jays).

- The three family groups east of Tippecanoe Scrub Environmental Park Phase I (Char10) have expanded to four family groups within the CAC survey and six family groups more recently (Appendix J).

- The two groups on Harborview Road southwest of I-75 (WP; Char11a), no longer exist.

- The eighteen groups in Deep Creek, Heron's Cove and Harbour Heights (DC; Char11 and Char 12) increased to 54 family groups.

It is important to note that the populations that increased over time are suburban populations that were not adequately surveyed during the SMP.

Results from the 2001-2002 countywide survey necessitate a change in the boundary of the Northwestern Charlotte Metapopulation (M6). The three populations closest to the Myakka River (western part of the metapopulation) are located more than 12 km (7.4 miles) from the populations closest to the Peace River (eastern part of the metapopulation). This distance is greater than the twelve kilometers that the metapopulation definition allows (Stith et al. 1996, Stith 1999). For the purpose of this HCP, the Northwestern Charlotte Metapopulation will be divided as follows. The Northwestern Charlotte Metapopulation (M6W) will include the ten family groups in the EA, TN, and TS populations. The 54 family groups within the Deep Creek/ Harbour Heights population will be identified as M6E and called the Deep Creek/Harbour Heights Metapopulation (Figure 7).

In Charlotte County, preservation areas for the Northwestern Charlotte Metapopulation (M6W) containing Scrub-Jay habitat include Charlotte County's 143.3 hectares (354 acres) Tippecanoe Scrub Environmental Park Phase I, the State of Florida's 2,388 hectares (5,900 acres) Port Charlotte Management Unit of the Charlotte Harbor Buffer Preserve State Park (section between the Myakka and Peace Rivers only), the 23.5 hectares (58.11 acres) Scrub-Jay mitigation /conservation easement within the Riverwood Development of Regional Impact (DRI), and the 2.8 hectares (7.0 acres) Scrub-Jay mitigation/conservation easement for the Bridgebrook Shores subdivision (Figure 11 and Table 4). Not all of the acreage within these preservation areas is suitable Scrub-Jay habitat. For example, only 76.5 hectares (189.0 acres) of the Port Charlotte

Management Unit of the Charlotte Harbor Buffer Preserve State Park is scrub or scrubby flatwoods.

Table 4. Current Florida Scrub-Jay Preservation Areas in M6W

Name [Appendix]	**Total Hectares (Acres)**	**Hectares of Scrub (Acres)**	**Ownership**	**Reason for Preservation**	**Occupied by Scrub-jays in 2006**
Tippecanoe Scrub Environmental Park Phase I	143.3 (354)	110.2 (272.4)	Charlotte County	Habitat Preservation FCT	yes
Charlotte Harbor Buffer Preserve (Port Charlotte Management Area)	2,388 (5,900)	121.4 (300)	State of Florida	Preservation and protection of Charlotte Harbor	yes
Bridgebrook Shores [L]	2.8 (7.0)	2.8 (7.0)	private	Mitigation for development	yes
Riverwood DRI (proposed) [M]	24.3 (60)	22.7 (56)	private	Mitigation for development	yes

Scrub polygons shown in Figure 11 are approximations, particularly for the private developments. The conservation areas were mapped without the benefit of legal descriptions and are not intended to replace existing maps. The complete boundary of the Charlotte Harbor Buffer Preserve State Park is not shown; only those portions of the state park that contain designated scrub are depicted.

Partial funding, with the aid of a Florida Communities Trust (FCT) grant, has been secured for the acquisition of 60.7 hectares (150 acres) east of the existing Tippecanoe Scrub Environmental Park, Phase I. The acquisition of Tippecanoe Scrub Environmental Park Phase II is almost complete, and will serve as the mitigation area for Edgewater Drive. This project will provide habitat protection for six Florida Scrub-Jay groups, adjacent to the Port Charlotte Management Unit of the Charlotte Harbor Buffer Preserve State Park and Tippecanoe Scrub Environmental Park Phase I. The FCT grant application was written specifically to acquire scrub for the HCP, as mitigation for Edgewater Drive (Appendix W).The acquisition of this park has allowed us to add acreage onto two existing preserves; FCT funds have purchased 42 acres of the 150 acre site.

In Charlotte County, preservation areas for the Deep Creek/Harbour Heights Metapopulation (M6E) containing Scrub-Jay habitat include the 10.9 hectares (26.9 acres) Scrub-Jay mitigation/ conservation easement within the Harborview DRI (Appendix S). Charlotte County's 20.65 hectares (51 acres) preserve at East Port Waste Water Treatment Plant, the 0.49 hectares (1.2 acres) upland preservation area at the Charlotte County Environmental Campus, a 2.77 hectares

(6.85 acres) conservation easement is planned in DC4 as part of Charlotte Crossing Apartments. In addition a0.09 hectares (0.23 acres) conservation easement is planned in DC5 for Pine View Villas. Currently, development rights have been removed from a total of 462 lots (22.9 hectares (25.8 acres)) within DC7, DC8, DC9, DC10, and DC11 (Figure 12). Additional lots are likely to have the development rights removed as part of the County's Transfer of Development Rights (Units) Ordinance. Heron's Cove has 8.0 h hectares (19.7 acres) of onsite mitigation in addition to the offsite mitigation. The onsite mitigation is scattered throughout the project area (Table 5 and Figure 9).

Scrub polygons shown in Figure 12 are approximations, particularly for the private developments. The conservation areas were mapped without the benefit of legal descriptions and are not intended to replace existing maps. Individual development agreements can be found in Appendices N - S.

Table 5. Current Florida Scrub-Jay Preservation Areas in M6E

Name [Appendix]	**Total Hectares** (Acres)	**Hectares of Scrub** (Acres)	**Ownership**	**Reason for Preservation**	**Occupied by Scrub-jays - 2006**
Heron's Cove (on site) [N]	70 (173)	8 (19.7)	private	Mitigation for development (ITP)	yes
East Port Water Treatment Plant [O]	281.7 (696)	20.6 (51)	Charlotte Co.	Mitigation for development	no
Charlotte County Environmental Campus [P]		0.49 (1.2)	Charlotte Co.	Mitigation for development	no
Pine View Villas (Browne Apartments) Apartments [Q]		0.09 (0.23)	private	Mitigation for development	yes
Charlotte Crossing Apartments (proposed) [R]		2.8 (6.8)	private	Mitigation for development	yes
Harborview DRI (proposed) [S]	165.1 (408)	10.9 (26.8)	private	Mitigation for development	yes

Florida Scrub-Jays on Preserved Land in Charlotte County's M6W

Currently, several family groups in M6W are completely on land that is under permanent preservation. One family group is on mitigation land within the Riverwood DRI. The 23.5 hectares (58.1 acres) preserve has a conservation easement that will be dedicated to the Florida Fish and Wildlife Conservation Commission during future development within the DRI. County and park staff have observed scrub jays at the Charlotte Harbor Buffer Preserve (Port Charlotte

Management Area), though no formal surveys have been conducted. One family group of scrub jays is currently utilizing Tippecanoe Scrub Environmental Park Phase I (Appendix A-1). The Charlotte County Parks and Recreation Department has been actively managing the park for scrub jays. Protection and preservation for an additional six Scrub-Jay family groups will occur with the successful acquisition of the Tippecanoe Scrub Environmental Park Phase II.

Florida Scrub-Jays on Preserved Land in Charlotte County's M6E

Currently, there are four areas of preserved scrub occupied by Florida Scrub-Jays. A total of 8.0 hectares (19.7 acres) of scrub in DC1 is in preservation as part of an ITP issued in 1998, 6.8 hectares (16.8 acres) of which is managed specifically for Florida Scrub-Jays. One family group has its territory center in this area; however, further clearing of the scrub will likely occur as part of the Heron's Cove Incidental Take Permit. The land is not contiguous; rather it occurs in patches throughout the project area. Florida Scrub-Jays occur on two proposed private conservation easements (Charlotte Crossing Apartments and Pine View Villas) and on some of the land used in the Transfer of Development Rights conservation easements, but these areas are not likely to be sustainable in the long term due to their small sizes and isolation unless additional areas are preserved. While Florida Scrub-Jays occur on portions of the Harborview DRI, they are not on the designated preserve, likely because the habitat is overgrown. Florida Scrub-Jays do not currently occur on the East Port or Environmental Campus scrub preserves.

Eastport scrub is a conservation easement that was required during the development of the Charlotte County Utility spray fields. The conservation easement is monitored and managed by the Charlotte Harbor Environmental Center. Annual reports are submitted to the United States Fish and Wildlife and the Florida Fish and Wildlife Conservation Commission. The majority of the conservation easement was mechanically managed in the winter of 2003. No Florida Scrub-Jays have been recently observed on the conservation easement.

The Environmental campus conservation easement is an upland easement that was required by the Southwest Florida Water Management District during permitting of the new building (current Environmental and Extension Services Department). It is important to note that no Florida Scrub-Jays were observed during the pre construction surveys so no Scrub-Jay mitigation was required. As such, no jay enhancement or management procedures were required in the easement conditions. The easement, however, is scrub. One banded Florida Scrub-Jay was observed by Natural Resources Division staff after Hurricane Charley in the fall of 2004. The band color sequences were provided to Dr. Karl Miller who had banded the bird previously in Deep Creek. The bird remained in the conservation easement for several days and then disappeared. Dr. Miller has not seen the bird in subsequent surveys.

2.7.3 Central Charlotte Metapopulation (M7)

Current Status of M7

The 2001 countywide survey identified 36 family groups with 130 Scrub-Jays in five distinct populations (Appendix G). Populations, for the purpose of this report, are defined as family groups that are separated by more than 2 km from their nearest neighbors (Miller and Stith 2002, Stith 1999, Stith et al. 1996). The five populations include one Scrub-Jay east of Burnt Store Road, one family group on the north side of Jones Loop Road, five family groups in Tee and Green Estates, thirteen family groups in the US 17 – Washington Loop Road area and sixteen family groups in the Prairie Creek population.

Changes between the SMP (1991-1992) and the Countywide survey (2001-2002) in M7

In Charlotte County, the number of family groups within M7 changed from 29 family groups (excluding suburban populations) in ten populations (SMP) to 36 family groups (including suburban populations) in five populations (current survey). Six of the original SMP populations were merged into two populations because of the proximity of family groups. After this merge, a decline was observed in two populations, two populations were extirpated, one population increased, and a single jay was identified in an area not noted in the SMP.

- The sixteen family groups in the four populations west of US 17 and along the northern prong of Washington Loop Road (Char14, Char15, Char16, and Char17) decreased to thirteen family groups.

- The three family groups along the southern prong of Washington Loop Road (Char20 and Char21) disappeared in the current survey.

- The four family groups in the Jones Loop Road decreased to one family group in the current survey.

- The six family groups east of Prairie Creek and along the eastern edge of Washington Loop Road (Char18 and Char19) increased to sixteen family groups in the current survey.

- An additional single bird was located east of Burnt Store Road. This jay's location was not observed in the SMP.

The family group labels have been altered from those used in Stith (1999) to better reflect populations within each of the metapopulations. It is important to note that the populations that increased over time are suburban populations that were not adequately surveyed during the SMP.

In Charlotte County, preservation areas for this metapopulation containing Scrub-Jay habitat include a recently purchased parcel between the Peace River and US 17, north of Shell Creek, totaling 166.8 hectares (412 acres). The Southwest Florida Water Management District (SWFWMD) purchased the area with Save Our Rivers funding. Charlotte County holds a conservation easement (Biscayne Trust) on 20.7 hectares (51.3 acres) of scrub in WL9, as part of a transfer of development rights ordinance (Appendix T). Charlotte County owns the 6.7 hectares (16.6 acres) John Hathaway Park, which contains approximately 4.9 hectares (12 acres) of unoccupied scrub (Table 6 and Figure 13). An unoccupied 8.1 hectares (20 acres) offsite mitigation tract for the Heron's Cove subdivision, located within M6, occurs within the Serene Estates subdivision, located south of Washington Loop Road on the northern prong of Washington Loop Road (Appendix U)

Table 6. Current Scrub Jay Preservation Areas in M7.

Name [Appendix]	Total Hectares (Acres)	Hectares of Scrub (Acres)	Ownership	Reason for Preservation	Occupied by Scrub-Jays - 2006
Biscayne Trust Easement [T]	79.4 (196.2)	20.7 (51.3)	private County-held easement	transfer of devlopment rights	yes
Burcher's Tract	166.8 (412)	60.7 (100)	SWFWMD	water quality protection	yes
Heron's Cove Off –site Mitigation [U]	8.1 (20)	8.1 (20)	private NGO-held easement	Mitigation (ITP)	yes
John Hathaway Park	6.7 (16.6)	4.8 (11.9)	Charlotte Co.	passive park	no

Florida Scrub-Jays on Preserved Land in Charlotte County's M7

Currently, three of the sixteen family groups within the Washington Loop population are at least partially on publicly owned preservation land. These three family groups are on the SWFWMD's recent Save Our Rivers purchase, locally known as the "Burchers Tract." This metapopulation will not be considered within this HCP and ITP since no county-initiated projects are currently planned within this metapopulation. This metapopulation is included in the text of this HCP in order to provide a complete description of scrub and Florida Scrub-Jays within the county at the present time.

2.7.4 Lake Wales Ridge Metapopulation (M21)

Current Status in M22

No Florida Scrub-Jays were identified during the 2001 countywide survey (Miller and Stith 2002). There are no public preservation areas containing Scrub-Jay habitat for this

metapopulation in Charlotte County, however large portions of scrub are preserved for this metapopulation outside of Charlotte County. This metapopulation ranked lowest in vulnerability of the four metapopulations in Charlotte County due to its size and the amount of land that is already in protection. This metapopulation will not be considered within this HCP and ITP since no county-initiated projects are currently planned within the historical boundaries of this metapopulation.

2.8 Charlotte County Capital Improvements HCP Boundaries

The Charlotte County Capital Improvements HCP ITP impact area is defined as Scrub-Jay, bald eagle, and Eastern indigo snake habitat within the vicinity of four proposed projects including the Winchester Boulevard South, Edgewater Drive, Murdock Village, and Solomon Drive in purple on Figures 1 through 4.

Winchester Boulevard South is an existing road that will be extended and widened within the Sarasota-Western Charlotte Metapopulation (M5). The road is a planned hurricane evacuation route which will join state-road 775 to state-road 776 and continue north to I-75. The portion of the road considered for this ITP links state-road 776 to state-road 775 along the current Winchester Boulevard alignment. The 4.7 km (2.9 mile) road occurs with Sections 3, 10, 15, 21, and 22, Township 41S, and Range 20E. The proposed road project is likely to affect portions of the territories for three family groups within polygon EE4, a highly urbanized scrub polygon.

The Florida Scrub-Jays likely to be affected by the development of Winchester Boulevard South occur in and within the vicinity of EE4 and EE5. EE4 is a 116 hectares (286.5 acres) scrub polygon located east of Winchester Boulevard. EE5 is a 9.1 hectares (22.5 acres) scrub polygon located west of Winchester Boulevard and south of Oyster Creek Golf and County Club. The Winchester project will impact a total of 15.3 hectares (37.9 acres) of Type I, II and III scrub habitat. A total area of 174 parcels of 26.1 hectares (64.7 acres) will be impacted (Figure 1). Three family groups are likely to be affected by the development of the road. EE4 is described as remnant scrubby flatwoods and oak hammock within a suburban matrix. Currently, approximately 48% of the polygon has been developed (houses, roads and other developments). The scrub polygon has moderate habitat potential but is given a low priority for acquisition effort given the degree of suburban infill. EE5 is described as a disturbed site with extensive land clearing with low habitat potential (Miller and Stith 2002).

Edgewater Drive is an existing road which will be widened along the Flamingo Boulevard corridor in the Northwestern Charlotte Metapopulation (M6W). Edgewater Drive is likely to impact occupied Florida Scrub-Jay habitat in scrub polygons TS3, TS4, TS5, and TS6 located in Sections 13 and 19, and 24, Township 40S, and Range 21E. Four Florida Scrub-Jay family groups were identified by the Center for Avian Conservation Inc. as part of the countywide survey, and an additional two family groups have been discovered since banding began. Each of these six family groups has been observed crossing sections of the proposed road by FWS, FWC, and NRD staff since the planning and technical assistance for Tippecanoe Scrub Environmental Park Phase II began (Appendices U-W).

The road alignment will go through portions of scrub polygons TS4, TS5 and TS6. TS4 is the northeastern most polygon within this population. It consists of 121.5 hectares (300.3 acres) of heavily overgrown xeric oak scrub, approaching hammock conditions. The polygon has moderate to high habitat potential, especially west of Flamingo Boulevard. TS5 is an 82.7 hectare (204.4 acres) polygon located south of Wintergarden Avenue with scrubby flatwoods and xeric oak scrub. The polygon has moderate to high habitat potential. TS6 is a 73.6 hectare (181.9 acres) polygon of scrubby flatwoods and xeric oak scrub with moderate habitat potential. Higher housing density occurs within this polygon than in polygons TS4 and TS5. The Edgewater Drive project will impact a total of 35.2 hectares (87.2 acres) of Type I, II and III scrub habitat. A total area of 367 parcels of 39.4 hectares (95.7 acres) will be impacted (Figure 2).

Murdock Village is a 445 hectare (1,100 acre) Community Redevelopment Area located within the Northwestern Charlotte Metapopulation (M6W) in Sections 11 and 12, Township 40S, and Range 21E. One family group of Scrub-Jays (identified in the CAC survey) is likely to be affected by the proposed redevelopment within TN1. The county-initiated redevelopment area will consist of a mixture of residential and commercial uses, and is considered by the county to be vital to the planned growth of the area.

Murdock Village contains two scrub polygons (Figure 3). TN1 is a 347.5 hectares (858.7 acres) scrub polygon composed of heavily overgrown xeric oak hammock with a mixture of more mesic vegetation. One Scrub-Jay family group was identified in the northwestern portion of the polygon in a recently burned patch. A total of 77.1 hectares (190.6 acres) of this polygon is located within the proposed development. The polygon has moderate restoration potential. TN2 is a 111.2 hectare polygon (274.7 acres) of heavily overgrown xeric oak hammock with a mixture of more mesic vegetation. The entire polygon is included within Murdock Village. The polygon was unoccupied during the CAC survey and has moderate restoration potential (Miller and Stith 2002). The Murdock Village project will impact a total of 444.3 hectares (1098 acres) of Type I, II and III scrub habitat. A total area of 2592 parcels of 445.1 hectares (1,100 acres) will be impacted (Figure 3).

Solomon Drive is located in Harbour Heights in the Northwestern Charlotte Metapopulation (M6E) (Figure 4). A portion of the road is currently paved and will be extended. The unpaved portion of the road is to be built along an existing unpaved right of way. The project is likely to affect at least one family group of Florida Scrub-Jays located in and between scrub polygons DC8 and DC10. The 1.4 km (0.9 mile) road is proposed in Section 10 Township 40S, Range 23E.

Solomon Drive is located outside designated scrub between polygons DC8 and DC10. The proposed road bisects at least two Florida Scrub-Jay family groups. The existing paved road bisects the territory of at least one family group. The proposed road improvement (unpaved portion of the road) bisects the territory of at least one additional family group. Although the road alignment is not within designated scrub, Florida Scrub-Jays are utilizing the area. A nest was observed in 2004 (coordinates: 27.00524, -82.00283) and in 2005 (coordinates: 27.00514, 82.00285) along the road right of way (Karl Miller, Florida Fish and Wildlife Conservation Commission, Personal Communication). DC8 is a 31.3 hectare (77.3 acres) polygon of

overgrown scrubby flatwoods with patches of oak scrub. DC8 has high habitat potential and few developed houses. DC10 is a 26.3 hectares (64.8 acres) polygon of scrubby flatwoods and scrub with moderate to good habitat potential (Miller and Stith 2002). The Solomon Drive project will impact a total of 113 parcels of XX hectares (18.3 acres) of Type I, II and III scrub habitat, which encompasses the entire project area. (Figure 4).

2.9 Property Ownership Status of the Scrub-Jay Habitat Compensation Areas

A total of 111.3 hectares (275 acres) will be considered as Scrub-Jay habitat compensation areas under this HCP. These areas will be purchased and managed in perpetuity in order to offset anticipated impacts to Florida Scrub-Jays during development of the four county-initiated projects. Ownership is currently divided between the county and the private sector. The county will acquire additional scrub as compensation areas. Although existing conservation and mitigation areas are, in general, not eligible for credit under the proposed Habitat Conservation Plan, they are discussed below in order to give an overview of the existing and proposed scrub that will be preserved within Charlotte County.

Two compensation areas are described for each metapopulation included in this HCP; the preferred compensation areas and the backup compensation areas. The preferred compensation areas will be targeted for acquisition by Charlotte County; acquisition of the entire area is considered to be a top priority. The county will pursue all available options to acquire the preferred compensation areas. If, however, the preferred compensation areas cannot be acquired in their entirety, the remaining mitigation will be acquired from the backup areas. We expect to pursue every available means to acquire the preferred areas in full. The acquisition of a backup compensation area will only be pursued if we are unable to acquire the entire preferred area. Both compensation areas are discussed below.

2.9.1 Sarasota-Western Charlotte Metapopulation (M5)

Scrub conservation areas within the Sarasota-Western Metapopulation (M5) that are currently under public ownership and preservation include the state of Florida's Cape Haze Management Unit of the Charlotte Harbor Buffer Preserve State Park (BP1- BP4, BP6, CH4, CH8, CH15, CH16, portions of CH6 and CH10, RO10-RO12), Amberjack Environmental Park (CH2, CH7, and CH11), a portion of Rotonda Regional Park (RO8 and a portion of RO3), and West County Regional Park (EE8). A private conservation area, established in 1996, exists north of Amberjack Environmental Park at the Sanctuary at Golden Tee (CH1). An additional private conservation area occurs in EE6 at the Oyster Creek Golf Club (Figure 10 and Appendices H-K).

A total of 22.2 hectares (54.89 acres) of Scrub-Jay mitigation area remains at Amberjack Environmental Park (portions of CH2, CH7, and CH10), as part of the original acquisition agreement between Charlotte County (Commissioner Mac Horton and Elliot Kampert), FWS (Michael Jennings), and FWC (James Beever and Kim Dryden). (Amberjack Environmental Park was purchased by Charlotte County with aid from Florida Communities Trust.. The Charlotte County Board of County Commissioners purchased the property with the understanding from the United States Fish and Wildlife Service, the Florida Fish and Wildlife Conservation Commission and the Florida Communities Trust that the property could be used as

Florida Scrub-Jay mitigation when the need arose. State-owned land currently under preservation is ineligible for compensation area credit. County-owned portions of RO3 and RO8 were used as Scrub-Jay mitigation during the development of Rotonda Community Park and are not eligible for use as additional compensation areas. The scrub at West County Regional Park is ineligible for mitigation credit since it was purchased with the aid of state funds and was not negotiated for use as mitigation credit during acquisition. The scrub polygon is also being proposed to be used for onsite enhancement for the impacts to Florida Scrub-Jays during the development of the active use portion of the park.

The preferred and backup compensation areas are described below (Figures 14 - 17).

Table 7. Preferred Compensation and Backup Areas for M5

Preferred Compensation Areas

Polygon label	Hectares (acres)	Figure	Notes
CH2, CH7, CH11	22.2 (54.9)	14	Remainder of mitigation credit, Amberjack
RO9	8.4 (20.8)	15	Remainder of polygon in private ownership

Backup Compensation Areas

Polygon label	Hectares (acres)	Figure	Notes
CH5	3.5 (8.6)	16	Balance of preferred areas after subtracting Amberjack credit.
RO3	6.2 (15.2)	17	Balance of preferred areas after subtracting Amberjack credit.

Proposed compensation areas

Amberjack Environmental Park (portions of CH2, CH7 and CH11) contains 22.2 hectares (54.9 acres) of land eligible to be used as mitigation credit (Figure 14) (Appendix K). The 87.8 hectares (217 acres) park, including the recently acquired 13.8 hectares (34 acres) parcel, contains scrubby flatwoods and xeric oak scrub that was identified as moderately overgrown with high restoration potential. One family group of Florida Scrub-Jays occurred on the property during the CAC survey.

RO9 is a privately-owned 8.4 hectare (20.8 acres) polygon of moderately overgrown scrub and scrubby flatwoods immediately adjacent to Rotonda Community Park and state preservation land (Figure 15). This polygon is targeted for acquisition under the preferred plan because it was occupied by Florida Scrub-Jays during the CAC survey and because of its proximity to existing state and county preservation land. This proximity to preservation land will allow further Florida Scrub-Jay dispersal. The remainder of RO3 under private ownership is a 6.2 hectare (15.2 acre) polygon of scrubby flatwoods adjacent to Rotonda Community Park and state preservation land. The remainder of this polygon is targeted for acquisition under the backup compensation plan (Figure 17). A portion of RO3 was developed as the Rotonda Community Park by Charlotte County and no longer exists as scrub.

Under the preferred plan, the acquisition of 18.1 hectares (20.4 acres) of scrub (RO9) adjacent to existing preserves and the management of CH2, CH7, and CH11 (22.2 hectares (54.9 acres)) according to optimal Florida Scrub-Jay habitat requirements, will provide additional suitable habitat for the ten family groups in the southern part of this metapopulation (Buffer Preserve, Charlotte Harbor and Rotonda populations). Currently, at least six family groups (BP2, BP3, CH2, CH4, RO3, and RO9) are at least partially located on state or county preservation land. These proposed acquisitions will allow additional portions of their territories to be preserved and

managed. Once this land is acquired and managed, Scrub-Jay family groups that are currently on privately owned land (CH12, CH13, CH17, and the group located between RO3 and RO4) may move into these more suitably managed areas. The preferred plan would bring a total of 156.2 hectares (385.9 acres) under public ownership in the southern portion of this metapopulation. These public lands could support 15 family groups (based on an average territory of 25 acres) if managed according to optimal Florida Scrub-Jay requirements. These proposed acquisitions are supported by Stith (1999) who in his population viability analysis argued that Char2 (Amberjack area), Char3 and Char4 (Rotonda area) represent the best areas of acquisition for this metapopulation (within Charlotte County).

Scrub polygon CH5 is a 3.5 hectares (8.6 acres) portion of moderately overgrown scrub located between the County's Amberjack Environmental Park and the Cape Haze Management Unit of the Charlotte Harbor Buffer Preserve State Park (Figure 16). Although the polygon was unoccupied during the CAC survey it is of high acquisition priority since it links state and county-owned land and was identified as having high restoration potential. Gopher tortoises were observed during the CAC survey. This polygon, along with RO3, comprises the backup compensation areas for this metapopulation.

Preferred and backup compensation areas CH2, CH5, CH7, CH11, RO3 and RO9 are parcels of land without existing roads. Once acquired, easements and platted unbuilt roads will be vacated wherever possible. Existing water, sewer and utility lines will remain. Future infrastructure expansions will occur outside of designated compensation areas, wherever possible. If infrastructure (power lines, cable, water and sewer lines, drainage, etc.) cannot be located outside of the compensation area boundaries the County will initiate review with the FWS and FWC. Compensation areas will be based on actual acreage of scrub and will include the vacated roads since the roads have not been constructed.

The compensation areas will be open to the public for passive recreation (hiking, bird watching, photography etc.). Amberjack Environmental Park is a passive park. Amenities will be limited, but may include unpaved, unmulched, sand foot paths, interpretive signage and other low impact, passive uses. No additional parking areas will be provided for the proposed acquisitions in the southern part of this metapopulation since two parking lots are planned (and already permitted) on the existing park.

2.9.2 Northwestern Charlotte Metapopulation (M6W)

Conservation areas within the Northwestern Metapopulation (M6W) that are currently under public ownership and preservation include the state of Florida's Port Charlotte Management Unit of the Charlotte Harbor Buffer Preserve State Park (TS2) and Tippecanoe Scrub Environmental Park Phase I, (TS1) (Figure 11). A 23.5 hectares (58.1 acres) privately held conservation area is associated with the proposed Riverwood DRI and is located within polygon EA5 (Figure 11). A 2.8 hectares (7.0 acres) privately held conservation easement associated with the development of Bridgebrook Shores is located in TS7 (Figure 11). The Bridgebrook Shores conservation easement is currently managed by the Charlotte Harbor Environmental Center, a non-profit organization. Tippecanoe Scrub Environmental Park Phase II (TS3) and a portion of TS4 are the only proposed acquisitions within this metapopulation. Charlotte County NRD staff worked

closely with the FWS and FWC during the development of Tippecanoe Scrub Environmental Park Phase II, located within portions of TS3, to ensure that the acquisition would be able to count as mitigation during the County's HCP (Appendices V and W).

The state-owned land within the Charlotte Harbor State Buffer Preserve Park (TS2) and Tippecanoe Scrub Environmental Park Phase I, (TS1) are currently under preservation and are ineligible for compensation area credit.

The preferred compensation areas located in this metapopulation are described below (Figures18-19). No backup compensation areas are addressed here, since all but 30 of the lots and the one small strip of land north of the northernmost lots in Tippecanoe II (TS3) have been acquired and the acquisition area for the compensation area for Murdock Village (TS4) is complete, negating the need for backup compensation areas.

Table 8. Preferred Compensation and Backup Areas for M6W

Preferred Compensation Areas

Polygon label	Hectares (acres)	Figure	Notes
TS3	60.7 (150)	18	Portion of polygon, acquisition underway
TS4	10.1 (25)	19	Portion of polygon, acquisition underway

Proposed compensation areas

Scrub polygon TS3 (Tippecanoe Scrub Environmental Park Phase II) is a 77.7 hectares (192.1 acres) portion of moderately overgrown scrubby flatwoods with moderate to high habitat potential, located east of Tippecanoe Scrub Environmental Park Phase I and the Charlotte Harbor Buffer Preserve State Park (TS2) (Figure 18). The 60.8 hectare (150 acre) proposed compensation area is occupied by portions of six family groups of Florida Scrub-Jays. The mitigation for Edgewater Drive will be located in TS3. No backup compensation area is proposed since the acquisition of this area is more than 95% complete. Gopher tortoise and Florida Scrub-Jays were observed during the CAC survey (Miller and Stith 2001).

The portion of scrub polygon TS4 considered for acquisition under the preferred plan, is located immediately north of Tippecanoe Scrub Environmental Park Phase II. This polygon is identified as the preferred compensation area for Scrub-Jay impacts in Murdock Village. The polygon consists of oak scrub and oak hammock and was identified as having moderate to high restoration potential (Miller and Stith 2001). This parcel is targeted as a compensation area in order to reduce edge effect of separate compensation areas, to provide preserve land that can be used during territorial budding, to physically link proposed and existing preserve land, and so that management of all the compensation areas can be in one location. The parcel will link Tippecanoe Scrub Environmental Park Phase II to Tippecanoe Scrub Environmental Park Phase I and the Charlotte Harbor Buffer Preserve State Park. The Charlotte County NRD staff will maintain communication with the DEP staff as well as Charlotte County Parks, Recreation, and Cultural Resources staff regarding land management and Florida Scrub-jay populations. This portion of TS4 (School Board Property) has been acquired by the county for this HCP, so backup

compensation areas are no longer being considered. The entire school board site encompasses 28.63 acres. Approximately three of these acres will be impacted by the widening of Edgewater Road. The remaining 25.8 acres will be restored and managed for scrub jays. A limited parking area will be constructed in the northern portion of the site; native scrub plants will be utilized as landscape, to ensure the area is compatible with scrub jay habitat requirements. Scrub-jay crossing signs will be posted along the Flamingo/Edgewater road, in order to caution people that Scrub-jays are in the area.

Acquisition of portions of TS3 and TS4 add additional Florida Scrub-Jay habitat to protected habitat within this metapopulation. Stith (1999) called this area (Char9) the most important protected population within the metapopulation. At least two family groups of Florida Scrub-Jays currently, occur on TS1 and TS2 (county and state-owned land respectively), and further recolonization is likely, as they are both being managed according to optimal Florida Scrub-Jay habitat conditions. One family group has dispersed to Tippecanoe Scrub Environmental Park Phase I since the CAC survey, and at least one group is also occupying the Charlotte Harbor Buffer Preserve.

TS3, one of the preferred compensation areas, consists of 60.8 hectare (150 acre) of platted 0.1 hectare (0.25) acre lots, a small strip of land between the northernmost platted lots and the school board parcel, and existing asphalt roads. The majority of the asphalt roads within this compensation area will be vacated and removed in accordance with Florida Community Trust grant requirements (Figure 18). The former roadbeds will then be restored with a combination of planting native species characteristic of scrub and natural regeneration. Some of the roadbeds will be left in sand as fire breaks and as open areas for Florida Scrub-Jay acorn caching. Road removal and the associated restoration or regeneration will allow ecosystem processes and functions to occur and will remove impervious surface within the compensation area. Drainage easements will also be abandoned. Several power lines currently occur within the property, which will remain in order to serve the existing houses and those that are proposed on the parcels along the canal. Planned park amenities include , a wildlife observation platform, unpaved sand hiking trails, and interpretative signage. The parking area planned for Tippecanoe II will be located on the northern portion of the School Board Property. All utility and drainage easements will be vacated on this property. A small foot bridge may be planned on TS4 to link county-owned property for low impact public use.

Currently, public utility and drainage easements occur through the center of each block and road easements occur along each road in Port Charlotte Subdivision Section 31. A 3 meter (10 foot) wide utility and surface drainage easement occurs along the rear of each lot and a 6 foot wide side easement occurs on each lot in Port Charlotte Subdivision Section 46. A 7.6 meter (25 foot) wide canal maintenance easement occurs on the lots abutting the canals in Port Charlotte Subdivision Section 46. This easement cannot be vacated since the county needs safe access to the canal for maintenance. Road right-of-way easements will be removed when the streets are vacated. Utility and drainage easements will be vacated throughout the compensation area except where serving outparcels or adjacent properties. If future infrastructure (power lines, cable, water and sewer lines, drainage, etc.) cannot be located outside of the compensation area boundaries the county will initiate review with the FWS and FWC.

Under the preferred plan, the acquisition of 70.8 hectares (175 acres) of scrub (TS3 and TS4) adjacent to existing preserves (TS1 and TS2), will provide additional suitable habitat for the six family groups in the southern part of this metapopulation (Tippecanoe South populations). Currently, none of the six family groups occur on state or county preservation land; however, all six family groups have portions of their territories on proposed compensation land under this HCP. The preferred plan, adding 70.8 hectares (175 acres) of scrub in the southern part of this metapopulation, would bring a total of 257.5 hectares (636.4 acres) under public ownership. These public lands could support 25 family groups, based on an average territory size of 25 acres, if they are managed according to optimal Florida Scrub-Jay habitat requirements.

Parcel 00703780000016, located between Tippecanoe II and Tippecanoe I and the state lands, is owned by the Flamingo Waterway Foundation. The parcel is in a Scrub-jay zone and was occupied by Florida Scrub-Jays as recently as the winter of 2005. As such, development of the private parcel will need to be coordinated and approved by the United States Fish and Wildlife Service and the Florida Fish and Wildlife Conservation Commission. As always, the County will include the comments of the jurisdictional agencies within our permitting process.

2.9.3 Northwestern Charlotte Metapopulation (M6E)

No state or federal preservation areas occur within this metapopulation, but several existing or planned conservation areas occur within the metapopulation. On site mitigation areas totaling 8.0 hectares (19.7 acres) occur within DC1 as part of the 1998 Herons Cove HCP/ITP (Figure 13). A 2.8 hectares (6.8 acres) conservation easement is planned in DC4 as part of Charlotte Crossing Apartments (Figure 13, Appendix R) and a 0.09 hectares (0.23 acres) conservation easement is planned in DC5 for Pine View Villas. (Figure 13, Appendix Q). A Florida Scrub-Jay reserve is planned in DC13 as part of the proposed Harborview DRI (Figure 13, Appendix S). Development rights have been removed from a total of 462 lots (22.9 hectares (56.6 acres)) within DC7, DC8, DC9, DC10, DC11, and surrounding areas not designated as scrub (Figure 13). Only 205 of the lots (12.5 hectares (25.8 acres)) are eligible for mitigation use by Charlotte County. The remainder of the easements have been retained by the owners for their own mitigation use. Additional lots are likely to have the development rights removed as part of the County's Transfer of Development Rights (Units) Ordinance.

The preferred and backup compensation areas are described below (Figures 20 and 21).

Table 9. Preferred Compensation and Backup Areas for M6E

Preferred Compensation Areas

Polygon label	Hectares (acres)	Figure	Notes
DC8	10.1 (25)	20	Portion of polygon

Backup Compensation Areas

Polygon label	Hectares (acres)	Figure	Notes
DC7	10.1 (25)	21	Portion of polygon

Proposed compensation areas

Scrub polygon DC8 is a 31.3 hectares (77.3 acres) portion of overgrown scrub with high habitat potential. Although not occupied during the CAC survey, Charlotte County NRPS staff observed Florida Scrub-Jays in 2002. The polygon is now occupied by Florida Scrub-Jays (Karl Miller, Florida Fish and Wildlife Conservation Commission, Personal Communication). CAC identified polygons DC7 and DC8 as essential for the long-term survival of Florida Scrub-Jays within this metapopulation. The proposed compensation area will build upon the mitigation required as part of the Harbour Heights fire vehicle maintenance facility (separate HCP). Gopher tortoises were observed during the CAC survey and NRD staff site visits. NRD staff will continue to investigate grant funding and other options to try and acquire additional areas in DC7 and DC8.

The 10.1 hectares (25 acres) compensation area proposed in DC8 will work in conjunction with the 4.5 hectares (11.2 acres) of scrub proposed as compensation for the Harbour Heights fire and vehicle maintenance facility (separate HCP/ITP). The 10.1 hectares (25 acres) compensation area for Solomon Drive will consist of the acquisition of lots that were not previously acquired in DC8 and will provide 14.6 hectares (36.2 acres) of contiguous scrub within this metapopulation. Roads will be vacated in the compensation area upon the full acquisition of lots of both sides of the roads. Roads will be partially vacated in those cases where some lots are not part of the compensation area. Roads to be fully vacated are: Palsgrave Dr. and Tahoe Terrace. Roads to be partially vacated (up to where the privately owned lots are) are: Hillary Terrace, Marical Terrace, Blanot Drive, Waltz Terrace, Beerbohm Terrace, Scamp Terrace and Amsterdam Drive. No cross traffic will be allowed to impact the conservation area.

Portions of the compensation area in DC8 will consist of a conservation easement that was accepted by Charlotte County during a Transfer of Development Rights application. Development rights for 120 parcels were removed and transferred to another parcel. The conservation easement was accepted by Charlotte County, which will now utilize portions of the easement that contain suitable Florida Scrub-Jay habitat as part of the compensation requirements in this Habitat Conservation Plan.

The backup compensation area consists of acreage within DC7. Polygon DC7 is a 38.1 hectares (94.2 acres) disturbed scrub and scrubby flatwoods with high habitat potential.

The proposed compensation areas in DC7 and DC8 are platted 0.05 hectare (0.125 acre) lots with paper roads (platted but not constructed) and a few dirt roads. Utility and drainage easements and platted unbuilt roads will be vacated once acquired. Future infrastructure expansions will occur outside of designated compensation areas wherever possible. Compensation acreage will be based on actual acreage of scrub and will include the vacated dirt or unbuilt platted roads. Existing power lines will remain in place. Additional utilities will be placed outside the Florida Scrub-Jay compensation areas wherever possible. If infrastructure (power lines, cable, water and

sewer lines, drainage, etc.) cannot be located outside of the compensation area boundaries, the County will initiate review with the FWS and FWC.

2.10 Description of the Proposed Action

The proposed action is the clearing of all potential and identified Florida Scrub-Jay habitat in preparation for the construction of infrastructure or buildings for the four county-initiated projects (Winchester Boulevard South, Edgewater Drive, Murdock Village, and Solomon Drive). Clearing will take place outside of nesting season so as not to destroy Florida Scrub-Jay nests within the impact areas.

2.11 Description of the Species Considered under the Charlotte County Capital Improvements HCP

The principle federally listed species covered under this Charlotte County Capital Improvements HCP is the Florida Scrub-Jay. Proposed management for scrub that is optimal for Florida Scrub-Jays and characteristic of conditions along the Gulf Coast in Charlotte County are also consistent with the habitat requirements of many other species that utilize these vegetation communities (Fitzpatrick et al. 1991, FWS 1999b). Secondary species covered under this HCP and associated ITP include bald eagles and Eastern indigo snake.

No other state or federally listed species are included under this HCP since county-wide survey data do not exist for other listed species.

2.12 Other State and Federally Protected Species within the HCP Boundaries

State and Federally listed species other than the Florida Scrub-Jay may occur within the HCP Plan area. Listed species include those that are listed as endangered, threatened, or species of special concern by the FWS in 50 CFR 17.11 and 17.12, by the FWC in Rules 30-27.003 and 004, and 39-27.05, FAC, and the Department of Agriculture and Consumer Services (FDACS) in Section 581.185-187, F.S. A compilation of state listed species can be found in Official Lists of Endangered and Potentially Endangered Flora and Fauna in Florida (FWC 2004).

A total of eighteen listed species may occur within the HCP Plan Area (108). These species either are known to occur (recent observations of species or sign), have occurred in the past (historical data), or may occur based on habitat requirements of the species. No known federally listed plants have been documented within the HCP Plan Area. Recently documented (NRD and CAC data) state or federally listed species within the HCP Plan Area include the Florida Scrub-Jay, bald eagle, gopher tortoise, and coontie. Species that have historically utilized or may utilize the HCP Plan Area include the Florida mouse, Eastern indigo snake, Florida pine snake, gopher frog, Florida black bear, and Sherman's Fox squirrel. The wood stork, little blue heron, snowy egret, white ibis, roseate spoonbill, and American alligator have been observed in wetlands within or adjacent to the HCP Plan Area and the Florida sandhill crane, and tricolored heron, may also utilize these areas.

Table 10. Listed Species within HCP Plan Area

Scientific Name	Occurrence	Common Name	FWS Status[1]	FWC Status[2]	FDACS status
Aphelocoma coerulescens	O	Florida Scrub-Jay	T	T	
Haliaeetus leucocephalus	O	Bald Eagle	T	T	
Mycteria americana	O	Wood Stork	E	E	
Ajaia ajaja	O	Roseate Spoonbill		SSC	
Egretta caerulea	O	Little Blue Heron		SSC	
Egretta thula	O	Snowy Egret		SSC	
Egretta tricolor	O	Tricolored Heron		SSC	
Eudocimus albus	O	White Ibis		SSC	
Grus canadensis pratensi	P	Florida Sandhill Crane		SSC	
Alligator mississippiensis	O	American Alligator	T (S/A)	SSC	
Gopherus polyphemus	O	Gopher Tortoise		SSC	
Drymarchon corais couperi	O	Eastern Indigo Snake	T	T	
Pituophis melanoleucus mugitus	P	Florida Pine Snake		SSC	
Rana capito	P	Gopher Frog		SSC	
Ursus americanus floridanus	P	Florida Black Bear		T	
Podomys floridanus	O	Florida Mouse		SSC	
Sciurus niger shermani	P	Sherman's Fox Squirrel		SSC	
Zamia pumila	O	Florida Coontie			C

[1]FWS (1999e), [2]Logan (1997)

O: recent observation, P: possible occurrence

C: Commercially Exploited, SSC: Species of Special Concern, T: Threatened, E: Endangered, S/A Similarity of Appearance

3.0 Compensation Areas

3.1 Acquisition of Compensation Areas

Acquisition of compensation areas is underway. Charlotte County has acquired Amberjack Scrub Environmental Park (CH2, CH7, and CH11), the majority of Tippecanoe Scrub Environmental Park Phase II, the School Board Property and conservation easements in DC8. Fee simple and conservation easement acquisitions will continue for the remainder of the scrub required under this HCP and associated ITP. Compensation areas for each of the four projects will be fully acquired prior to the onset of each individual project. If surveys are conducted for linear projects and fewer impacts occur than are covered under this HCP and ITP the acreage will be available for future mitigation requirements.

Compensation for each of the four projects is summarized below.

Table 11. Compensation Area Summary

Project (Metapopulation)	No. of Family Groups	Hectares (acres)
Winchester Boulevard (M5)	3	30.3 (75)
Edgewater Drive (M6W)	6	60.7 (150)
Murdock Village (M6W)	1	10.1 (25)
Solomon Drive (M6E)	1	10.1 (25)

The CAC Florida Scrub-Jay survey and supplemental data occur for three of the four covered projects. Due to the linear nature of Winchester Boulevard South and the lack of territory data for the Scrub-Jays in the project's vicinity, additional Florida Scrub-Jay surveys were conducted for Winchester Boulevard South to accurately determine how many family groups will be impacted by the construction of the road. According to Florida Scrub-Jay surveys conducted by EarthBalance (2005), portions of the territories for three family groups occur within the road alignment. Additional Scrub-Jay surveys for the remaining four projects will not be conducted since territory data exist for the remaining linear projects (Edgewater Drive and Solomon Drive) and impacts in the large scale project (Murdock Village) is known, based on the CAC survey.

Charlotte County reserves the right to transfer the housing density from the compensation areas through the County's Transfer of Development Rights (Units) Code. Within one year of the start of each of the covered projects, Charlotte County will place the associated compensation areas under conservation easement and change the Future Land Use Map to Resource Conservation or Preservation and change the Zoning to Environmentally Sensitive. Charlotte County will provide the FWS and FWC with the final compensation areas and detailed management plans prior to the onset of each project.

3.2 Activities Covered

Covered activities include the clearing of all potential and identified Florida Scrub-Jay habitat in preparation for the construction of infrastructure or buildings for the four county-initiated

projects (Winchester Boulevard South, Edgewater Drive, Murdock Village, and Solomon Drive). These activities are proposed within occupied Florida Scrub-Jay habitat and necessitate an Incidental Take Permit from the FWS and concurrence from the FWC. Clearing will only be conducted outside the nesting season in the months of September through January.

The bald eagle is proposed for delisting as such the County will follow the guidance in place at the time of project initiation. In general conservation measures would include avoid taking of nest trees and limit disturbance during nesting season while fledgling are present (Appendix Y).

In all areas where native vegetation will be altered construction crews will be advised of the potential presence of the Eastern indigo snake and instructed that if encountered to halt activities that might injury the snake until it leaves the construction area (Appendix Z).

3.3 Management Timing

Compensation areas will be put under management as soon as possible after they are acquired, and no later than the onset of impacts associated with each project. Reporting will begin as projects are developed in accordance with the schedule set forth in section 5.4.

4.0 Impact Assessment

Florida Scrub-Jay impacts and the amount of compensation are based on the agreement between United States Fish and Wildlife Service, Florida Fish and Wildlife Conservation Commission and Charlotte County NRD staff to use the countywide survey data as the basis of review (Miller and Stith 2002). According to this agreement, twenty-five acres of compensation will be provided for each family group affected by the four county-initiated projects. Winchester Boulevard South is anticipated to take between three and five family groups and 6.3 hectares (15.5 acres) of designated scrub. Edgewater Drive is anticipated to take six family groups and 27 hectares (66.7 acres) acres of scrub. Murdock Village is anticipated to take one family group of Florida Scrub-Jays, 10.1 hectares (25 acres) of occupied scrub (based on an average territory size of 25 acres) and 178.2 hectares (440.3 acres) of unoccupied scrub. Solomon Drive is anticipated to impact at least one family group of Florida Scrub-Jays on the currently unpaved portion of the road.

4.1 Estimated Amount of Take

Based on existing data collected during the 2001-2002 CAC Survey, issuance of the Charlotte County Capital Improvements HCP ITP is anticipated to result in the taking of eleven Florida Scrub-Jay family groups and 34.1 hectares (84.2 acres) of occupied habitat under the preferred compensation plan. An total of 502.8 hectares (1241.4 acres) of Type I, II and III scrub habitat will be impacted Charlotte County Capital Improvements HCP ITP.

The scrub (Types I, II, II) impact areas by metapopulation are as follows:

Table 12. Scrub (Types I, II, III) and Florida Scrub-Jay Impact Summary

Metapopulation	**Project**	**Family Groups**	**Hectares (acres)**
Sarasota-Western (M5)	Winchester Boulevard South	3	15.3 (37.9)
Northwestern Charlotte (M6W)	Edgewater Drive and Murdock Village	7	479.6 (1185.2)
Deep Creek/Harbour Heights (M6E)	Solomon Drive	1	7.4 (18.3)

Proposed minimization measures should result in no take of the bald eagle and Eastern indigo snake. Compensation lands for the Florida scrub-jay are also suitable for the Eastern indigo snake and their protection will help offset any habitat loss from the proposed projects.

4.2 Analysis of Take

The impacts associated with each of the covered projects are adequately addressed within the compensation areas for this HCP. A total of twenty-five acres of scrub will be provided for each Florida Scrub-Jay family group that is affected by the five County-initiated projects. A discussion of projects by metapopulation follows.

4.2.1 Sarasota-Western Charlotte Metapopulation (M5)

The construction of Winchester Boulevard South is likely to impact three family groups within EE4, a highly fragmented, urbanized scrub polygon. The polygon is platted into 0.1 hectare (0.25 acre) lots and approximately 48% of the area has been developed. During the CAC survey, none of the three family groups had helpers or fledglings, indicating a potentially declining population. More recent data (NRD and Christopher Valligny (Archbold Biological Station,Personal Communication) suggest that some of the groups have expanded from pairs and may have had fledglings during the 2004 breeding season.

Compensation areas are proposed in one general area. The area is located within the southern part of the metapopulation. Proposed compensation areas expand upon existing state and county-owned preservation areas, allowing additional dispersal opportunities.

4.2.2 Northwestern Charlotte Metapopulation (M6W)

The construction of Edgewater Drive and Murdock Village are likely to impact seven Florida Scrub-Jay family groups in five scrub polygons (TS3, TS4, TS5, TS6 and TN1). The four Tippecanoe South polygons consist of scrub ranging from recently burned scrubby flatwoods and scrub to scrub approaching xeric hammock. Data from 2001-2004 show most of the Florida Scrub-Jay family groups have helpers and are successfully producing fledglings. The one family group found in TN1 during the CAC survey was a family group of four which was found in a burned patch of scrub. The remainder of the polygon is a mixture of hammock and scrub interspersed with mesic vegetation. Current development within these five polygons is low.

Compensation areas for the two projects adequately address the impacts. Tippecanoe Scrub Environmental Park Phase II (TS3) is located west of the proposed road impact and will protect many of the family groups in place. The compensation area is in close proximity to existing state and county preservation lands containing scrub. The preferred compensation area for impacts within Murdock Village (TN1) provides additional acreage onto Tippecanoe Scrub Environmental Park Phase II and provides connectivity between Tippecanoe Scrub Environmental Parks Phases I and II.

4.2.3 Deep Creek/Harbour Heights Metapopulation (M6E)

The construction of Solomon Drive is likely to impact at least one family group of Florida Scrub-Jays in an area of undesignated scrub located between DC8 and DC10. Both DC8 and DC10 contain moderate to high quality Florida Scrub-Jay habitat that is relatively undeveloped.

Compensation areas will be provided within DC8 or DC7, which are considered critical to the maintenance of Florida Scrub-Jays in this metapopulation (Miller and Stith 2002). Housing density is currently low (only three houses currently occur in DC8). The proposed compensation areas will build upon existing compensation areas as part of the Harbour Heights vehicle maintenance facility (separate HCP).

4.3 Cumulative Impacts

The proposed compensation areas adequately address the impacts for the proposed projects. Cumulative effects are likely to occur as future development occurs in the region, but are not necessarily linked to these four projects. Most of land adjacent to the proposed projects has been platted into quarter acre lots that will be developed into single family residential home sites over time, regardless of the covered projects. The individually owned single family lots currently exist and are not tied to the projects. Cumulative effects for Florida Scrub-Jays, bald eagles and Eastern indigo snakes can be addressed by the jurisdictional agencies and the land owners during the build-out of individual projects.

5.0 Charlotte County Capital Improvements HCP Operating Conservation Program

The Charlotte County Capital Improvements HCP operating conservation program contained herein provides conservation measures to be implemented by the applicants in order to minimize and mitigate potential adverse impacts of the incidental take on occupied and potential Florida Scrub-Jay habitat to the maximum extent practical. The biological goals and objectives of the Charlotte County Capital Improvements HCP operating conservation program are as follows:

5.1 Biological Goals:

The biological goals defined below represent the overall guiding principals for the Charlotte County Capital Improvements HCP operating conservation program.

1. Reduce extinction risk and increase population persistence probability of Charlotte County Florida Scrub-Jays by acquiring, restoring, and permanently managing optimal Florida Scrub-Jay habitat in 111.2 hectares (275 acres) of Florida Scrub-Jay habitat as identified within the Florida Scrub-Jay Habitat Compensation Areas.

2. Enhance recovery potential of the Sarasota-Western Charlotte Metapopulation (M5), the Northwestern Charlotte Metapopulation (M6W), and the Deep Creek and Harbour Heights Metapopulation (M6E) by acquiring, restoring and maintaining the scrub and scrubby flatwoods as optimal Florida Scrub-Jay habitat.

3. Protect the biological integrity and species diversity that is characteristic of the scrub systems in Charlotte County by returning the Charlotte County Capital Improvements HCP conservation and compensation areas to conditions representative of the historical landscape, which was maintained by fire.

5.1.1 Biological Objectives:

The biological objectives presented below represent specific measurable actions that must be implemented to achieve the above stated biological goals.

1. Acquire the scrub tracts identified in section 2.8 of this document.

2. Implement mechanical and restoration strategies as set forth in Section 5.1.3, upon acquistion, to initiate recovery of optimal Florida Scrub-Jay habitat quality features within the habitat compensation areas.

   Apply mechanical treatments to reduce the tree canopy to less than 20% and to eliminate nonindigenous invasive tree species (Brazilian pepper, melaleuca, downy rose myrtle, cogon grass etc.). Logging operations shall be used as the primary mechanical technique to thin pine trees and to remove tree sized (> 3.0 inch diameter at breast height (dbh)) scrub oaks and cabbage palms. Nonindigenous invasive species will be removed with a combination of cut-stump herbicidal control, bulldozing, mowing, or bullhogging. Areas with cogon grass will be treated with herbicide. Bulldozing will only be used if solid

nonindigenous species stands occur. Pines will be thinned to 20%-30% of the canopy, but will not be removed in their entirety.

Initiate an aggressive restoration burning program (in areas that are remote enough) after completion of mechanical treatments. Fire shall be used in order to reduce the shrub height, initiate open areas of sand and to consume vegetative debris left after mechanical treatment. Burns will be conducted during the summer fire season, post nesting (July) wherever conditions within the burn prescription allow. Where fire is not practical, vegetative debris will be removed from site, shrub height will be reduced mechanically and open areas will be created mechanically.

3. Implement a habitat management program that uses prescribed fire as the primary management tool, on parcels that are far enough away from development. Mechanical treatments will be used on parcels that are too close to development to allow controlled burns. Both methods will attempt to mimic the role of natural fires in shaping the landscape. Both treatments will be geared toward managing the scrub in the early successional stage required by Florida Scrub-Jays.

   The presence of optimal Florida Scrub-Jay habitat requirements found in Fitzpatrick et al. 1991 and described in section 5.4 will be used by the applicants to measure achievement of these biological objective at the landscape scale on each of the Florida Scrub-jay habitat conservation and compensation areas.

4. Establish a comprehensive monitoring program that annually, for the term of the ITP, monitors the success of the applied mechanical and fire management treatments in achieving the biological objectives. The monitoring results shall be used to refine and improve future management actions.

5. Explore the potential of establishing interagency partnerships with FWS, FWC, DEP, SWFWMD, and DOF and/or obtaining additional funding through grants for management and education.

5.1.2 Scrub Management Considerations

The Charlotte County Natural Resources Division will provide detailed management plans for each of the compensation areas to the United States Fish and Wildlife Service and the Florida Fish and Wildlife Conservation Commission once the compensation areas are agreed upon are purchased. The Florida Scrub-Jay is a well studied species and management protocols that work are available. General language has been included in the HCP which will allow changes in best management practices to occur rather than adhering to strict permit conditions. More specific management details tailored to the individual compensation areas will be addressed more thoroughly within the management plans for each particular compensation area.

The scrub and scrubby flatwoods will be managed with a combination of fire and mechanical means. The scrub and scrubby flatwoods will be managed for Florida Scrub-Jays according to methods in Ecology and Development-related Habitat Requirements of the Florida Scrub Jay

(Fitzpatrick et al. 1991) or as amended by the United States Fish and Wildlife Service or the Florida Fish and Wildlife Conservation Commission. Scrub will be maintained so as not to exceed 3 meters (9.8 feet) in height. Fire and mechanical management will decrease the height of the scrub oaks, as well as decrease the density of saw palmetto and other woody vegetation. This decrease in the mid and overstory will allow the native understory vegetation to thrive. Dense areas of saw palmetto and other mid story vegetation will be thinned in order to increase the number of sandy openings utilized by listed species.

Fire is the preferred method for restoration and long-term maintenance of Florida Scrub-Jay habitat (Fitzpatrick et al. 1986, FWS 1999a, Breininger 1999, Breininger et al. 1999). Fire keeps the scrub in the early successional state required by Florida Scrub-Jays. In general, fire has few negative effects on scrub species since the community and the species within it have evolved with fire. In order to mimic natural fire, burn units will incorporate existing ecotones, but control lines will not be placed within them. Prescription burns will be conducted outside of the nesting season during the summer fire season. Management of scrub for the habitat requirements of Florida Scrub-Jays complements most other native scrub species. No protected species are known to require unburned scrub.

Fire frequency will be determined based on habitat parameters from monitoring events at individual sites, rather than set time intervals. This flexibility in scheduling will allow the manager to react to conditions of the particular site and manage for habitat heterogeneity and Florida Scrub-Jay requirements, rather than strict permit conditions. Compensation areas will be managed in mosaic landscape so that the compensation areas maintain microhabitats and variability.

Charlotte County staff will work with the Division of Forestry, the Florida Fish and Wildlife Conservation Commission, and the United States Fish and Wildlife Service to develop burn plans and neighborhood outreach programs (fire education) for each of the compensation areas.

The compensation areas will be monitored for invasive nonindigenous vegetation and treated, as necessary, with a combination of mechanical removal (cutting, pulling, etc.) and chemical treatment. Periodic inspections and treatments will occur on a regular basis to prevent reinfestation by nonindigenous, invasive vegetation. Documented nonindigenous plant species within the compensation areas include Brazilian pepper (*Schinus terebinthifolius*), melaleuca (*Melaleuca quinquenervia*), downy rose myrtle (*Rhodomyrtus tomentosa*), wild balsam apple (*Momordica charantia*), and cogon grass (*Imperata cylindrica*).

The only documented state or federally listed vertebrate species within the Charlotte County Capital Improvements Habitat Conservation or Compensation areas are the state and federally listed Florida Scrub-Jay, bald eagle, and the state-listed gopher tortoise. Other listed species, including Eastern indigo snake, Florida pine snake, Florida mouse, and gopher frog may occur but have not been documented. Most of the listed scrub plants are endemic to the Lake Wales Ridge (FWS 1999b) and are not known to occur in Charlotte County. No federally listed plants are known to occur within the Charlotte County Capital Improvements Habitat Conservation Plan or Compensation areas.

Charlotte County has had recent success with scrub-jay recolonization of restored scrub at Tippecanoe Scrub Environmental Park Phase I. Parks, Recreation and Cultural Resources Department staff first observed one family group in the fall of 2004 after a twenty-seven acre prescribed burn. Additional mechanical thinning and roller chopping were conducted in 2004 with another 44 acre prescribed burn in December 2004. A scrub jay survey was conducted in the spring of 2006 (Appendix A-1) The environmental park, managed by Charlotte County Parks Recreation and Cultural Resources, is not a compensation area within this HCP.

One family group of Florida Scrub-Jays (five individuals) is currently utilizing Amberjack Environmental Park. A prescribed burn was conducted by Parks, Recreation and Cultural Resources Department staff in January 2003. Mechanical thinning of 39 acres was conducted in December 2004 and an additional 8 acre prescribed burn was conducted in January 2004. The family group has remained at Amberjack Environmental Park as of January 2006.

5.1.3 Adaptive Management

This HCP incorporated the results from computer modeling by Dr. Brad Stith (1999) when identifying compensation areas. Please see text discussions for each of the metapopulations in 2.4.. Individual compensation areas were also designed based on published recommendations specific to Florida Scrub–Jays (i.e. occupied territories with experienced breeding pairs, scrub adjacent to existing preserves etc.).

Each of the preferred compensation areas proposed within this HCP was carefully chosen based on the biological requirements of the Florida Scrub-Jay, proximity to other existing conservation lands and published population viability analysis models. Additionally, all of the preferred compensation models are currently occupied by Florida Scrub-Jays. NRD staff will immediately begin a restoration and management program on all compensation areas. In addition, we will develop partnerships with other managing entities, to restore and manage scrub on other preservation lands within the county. We hope this will allow for the recolonization of Scrub-jays on other scrub lands in the county.

NRD staff is currently determining restoration efforts that will be needed prior to final acquisition of the mitigation properties. Management of the acquired lots will begin immediately, in order to keep and attract Scrub-jays to the area. Within one year from acquisition, exotic flora and fauna will be removed, and the tree canopy and subcanopy will be reduced. The use of prescribed fire will be utilized for each appropriate compensation site, where smoke management issues do not prohibit fire, as outlined in Florida Statute 590. The Natural Resources staff has successfully conducted prescribed burns on other county owned lands. Conducting proactive restoration will provide the most optimal habitat in the shortest time frame, to ensure compensation area success. Compensation areas will be continually monitored (as outlined in 5.4) to gauge the effects of management treatments. Monitoring of the compensation areas and the Scrub-jays within them will allow the land manager to react to changes in the habitat and adjust techniques accordingly.

We also propose to work with other land management agencies within the county to implement a comprehensive scrub habitat management program. Existing scrub communities will be evaluated in terms of scrub jay habitat conditions. Management plans will focus on improving scrub habitat conditions throughout the county, in order to increase scrub jay numbers. A formal monitoring program will be implemented, to track changes in the number of scrub jay families on public lands. Any additional scrub jay groups colonizing these areas will be reported to FWS. We hope that additional groups colonizing existing county lands will offset any lack of birds in our proposed compensation areas, in the event that these areas do not support scrub jay groups in the future (all compensation sites are currently occupied by Florida Scrub jays). The Natural Resources Division is in the beginning stages of designing such a program.

In addition, there is a funding mechanism currently in place that would allow Charlotte County to purchase additional lands, if the current compensation areas are determined to be unsuccessful by the county and FWS. Charlotte County has a .05 millage assessment to purchase environmentally significant lands that could be used as a match for state and federal grants. The millage rate currently generates $600,000-$800,000 per year, and is estimated to increase as real estate values rise. This funding mechanism could be used to acquire additional scrub for the HCP in the event our current compensation areas do not support scrub jays in the future, and if additional family groups do not recolonize existing county preservation areas. NRD staff will work with the FWS to determine appropriate time frames for measuring the success of our compensation areas, and our management of other county scrub lands.

5.2 Restoration and Management Treatments on Other Listed Species

The eighteen state or federally listed species that may occur within compensation areas (see 2.11) are likely to benefit from the restoration and management treatments on the compensation areas. Once the compensation areas are restored and managed according to historical community processes, the scrub dependant species will benefit as the mid and understory are opened up. Reductions in canopy height and understory vegetation will provide open habitat for fossorial and terrestrial animals such as the gopher tortoise, Eastern indigo snake, Florida pine snake, Florida mouse, gopher frog and coontie.

The patchy management patterns that are the goal for the compensation areas within this HCP will allow microhabitats for each of these listed species. Removal of nonindigenous invasive vegetation will remove competition for native scrub species. Fire (or mechanical regimes) will allow community function to occur based on evolutionary processes.

Additional land in preservation that is connected to existing state or county preservation land will provide dispersal opportunities for both large and small ranging species. Compensation areas will provide additional buffers to isolated wetlands or slough systems that are utilized by many of the listed wading birds.

5.3 Measures to Minimize Impacts

Minimization measures will be used in order to reduce the impacts on Scrub-Jays and their habitat within the compensation areas. These measures include the following:

1. Restoration and management of the compensation areas will occur outside of the Florida Scrub-Jay nesting season, to avoid nest disturbance. Large-scale management events will occur during July- mid February.

2. Fire breaks will be placed along existing jeep trails, plow lines, or disturbed areas whenever possible.

3. Fire management units will be burned in rotating years in order to provide patchy, optimal Florida Scrub-Jay habitat.

4. A patchy fire regime will be utilized during the growing season. Head fires will be used whenever possible in order to open up bare sandy patches.

5. If canopy trees are removed from compensation existing roads, jeep trails or fire breaks will be used whenever possible to avoid soil compaction.

6. Feral cats will be trapped and removed from the compensation areas and cat colonies will be prohibited within the compensation areas or at adjacent public facilities.

7. All motorized vehicles (All terrain vehicles, motorcycles etc.) will be prohibited from the compensation areas with the exception of vehicles used as part of management or monitoring protocols.

8. Fencing will be prioritized and budgeted accordingly. Site security will be an important element in each of the management plans associated with compensation sites. Natural Resources staff will determine and prioritize the most illegally accessed sites. Tippecanoe Scrub Environmental Park Phase II will be fenced immediately upon acquisition. Sites that can not be fenced immediately will be posted with a County sign that will be enforced by established County Ordinance 81-31, which provides enforcement authority to the Charlotte County Sheriffs Department. This specific ordinance prohibits unlawful operation of motor vehicles upon public land except within designated roadways within the boundaries of such land. The sign will also allow enforcement of County Ordinance 71-9, which prohibits dumping and deposits of litter on public lands. Currently, the Charlotte County Sheriffs Office has a full time deputy to enforce these ordinances and has proven to be effective in enforcing the above County ordinances. To compliment those enforcement efforts, Charlotte County also will provide enforcement support through the Code Enforcement Department. Their officers will also monitor each compensation site on a routine basis, and this person has authority to enforce all County ordinances

5.4 Monitoring and Reports

Charlotte County will prepare and provide an annual HCP Report to the FWS and FWC for the duration of the twenty year ITP permit. Once the permit has expired, reports will be provided every other year. The report will be supplied annually by May 15. The May report will allow the land manager to make any needed habitat corrections during the natural summer fire season. The report will address both biological and compliance monitoring. Details within the report will include:

Habitat monitoring:

Habitat assessments shall be performed annually during the spring (February-March). Details will include representative 10 meter^2 plots for assessments of pine canopy coverage, canopy height, percent oak coverage, percent bare sand, scrub oak height, species composition and coverage of nonindigenous species. Quantitative height measurements will be measured with a clinometer, the canopy coverage and amount of bare sand will be measured with a measuring tape or cover board, and species composition will be recorded. Records on mechanical or fire (both prescribed and wild) will be recorded.

Representative photo points, at least one per 25 acres, will be randomly installed in several locations within each of the compensation areas for long term vegetation monitoring. Qualitative and quantitative sampling will be conducted. Qualitative descriptions will be prepared for the site as a whole and quantitative sampling for canopy height, scrub oak height, percent bare sand, shrub height etc. will be conducted at the photo points. Quantitative height measurements will be measured with a clinometer and the amount of bare sand will be measured with a measuring tape.

Florida Scrub-Jay monitoring:

Florida Scrub-Jay surveys will be conducted at least twice annually; pre-nesting (February) and post-fledging (July). The spring survey will provide population estimates in the beginning of the breeding season and July surveys will provide an estimate of annual recruitment. Surveys will be conducted according to standard Florida Scrub-Jay protocols (Fitzpatrick et al. 1991). Florida Scrub-Jay prerecorded calls will not be used except if needed to initially locate the family group. Rough territory boundaries will be mapped based on the behavior and movements of the family groups.

The data collected from the habitat and Scrub-Jay monitoring will allow Charlotte County NRD staff to adjust treatments as conditions change. Overgrown areas will be targeted first so as to restore as much scrub as possible; both mechanical treatments and prescribed fire will be utilized. All treatments will be documented (i.e. type of treatment, hectares treated, date, length of treatment, stochastic events etc.) and reported in the annual report. Further details will be provided in each of the management plans. The management plans for the Edgewater and Murdock Village compensation areas (Tippecanoe Scrub Environmental Park Phase II and

School Board Property, respectively) will be included under the same plan, but separated by management unit.

5.5 Land Use Restrictions for Compensation Areas

The compensation areas will be used as listed species habitat. Improvements will be limited to unimproved sand trails, informational kiosks, small parking areas for use by passive use recreationalists, fencing and uses consistent with Florida Scrub-Jay habitat. Compensation areas will not be used for public or private infrastructure which could negatively affect Florida Scrub-Jays and their habitat.

6.0 Funding

The Charlotte County Board of County Commissioners will fund all elements of this HCP. Money for land acquisition has been proposed for inclusion in the next Capital Improvements Plan (the County's funding budget). The County will make efforts to try to obtain land acquisition grants to try to offset the expense of land acquisition. Money for management will be placed within the Capital Improvements Plan as projects are funded. Although grants will be utilized when available, Charlotte County accepts the responsibility to provide adequate funding for the land acquisition, management, monitoring and reporting within the covered area.

7.0 Alternatives Considered

Three alternatives were considered to address the needs of the proposed action. Each alternative is based upon the biological requirements of the Florida Scrub-Jay, a scrub indicator species, the legal mandates of the FWS, and the Applicant's desire to resolve Florida Scrub-Jay permitting for county initiated projects within Charlotte County.

7.1 Alternative 1: No Action Alternative

Under Alternative 1, the FWS would not issue the ITP to the Applicant and the Applicant would not implement the proposed land acquisitions and management resulting in status quo, where the FWS must review each and every development proposal.

Alternative 1 is not a feasible alternative. The four County-initiated projects are projects that are either important to the health and well-being of Charlotte County citizens (hurricane evacuation routes) or important to the future growth or economic development of the County. Winchester South is a hurricane evacuation route. Edgewater Drive is an important road which will ease the congestion from US 41 (Tamiami Trail). Solomon Drive will provide access to lots which currently do not have a paved road. Murdock Village is an important County initiative which will diversify the tax base. Most of these projects are ready for permitting and construction will ensue as soon as the ITP is issued.

7.2 Alternative 2:

Alternative 2 is to prepare separate HCPs for each project at the time of initiation. This alternative would result in duplicative paperwork and redundant reviews, and not encourage long-term planning and land acquisition. This alternative would have uncertainties that the County is trying to eliminate by planning ahead in the preferred alternative.

7.3 Alternative 3: Preferred Alternative

Alternative 3 (Preferred Alternative), is the issuance of a Section 10 (a) (1) (B) ITP by the FWS to allow the incidental take of the Florida Scrub-Jay for a 20 year period. The authorized take would be incidental to the otherwise lawful development activity for the four county-initiated projects (Winchester Boulevard South, Edgewater Drive, Solomon Drive, and Murdock Village) within Charlotte County. Authorization of the ITP is predicated in the full implementation of the applicant's HCP and compliance with all other requirements for permit issuance.

Issuance of an ITP for the proposed action would authorize the take of Florida Scrub-Jays and potential Florida Scrub-Jay habitat located within the project areas for the four county-initiated projects. Based on the data within the Center for Avian Conservation Inc. report (Miller and Stith 2002) calculations by FWS, supplemental information when available, the issuance of the Charlotte County ITP is anticipated to result in the taking of a total of 6.3 hectares (15.5 acres) of identified scrub in M5, and 215.3 hectares (532 acres) of identified scrub in M6W. Three Scrub-Jay family groups will likely be affected in M5, seven Scrub-Jay family groups will likely be affected in M6W, and one Scrub-Jay family group will likely be affected in M6E.

7.4 Alternative 4:

Alternative 4 would increase the compensation lands provided in anticipation of additions impacts to Florida scrub-jays that may occur if additional family group move into the project areas in the interim time period. Due to the poor quality of the habitat in private urban areas the County does not anticipate an increase in Florida scrub-jay impacts in the project areas over the time frame of the permit. Early initiation of restoration on compensation lands acquired is expected to increase Florida scrub-jay populations offsetting any potential increases in impacts. In addition the acquisition of additional compensation lands would be cost prohibitive
.

8.0 Plan Implementation, and Unforeseen Circumstances

8.1 Acquisition of Compensation Areas

Implementation of this HCP is already underway. United States Fish and Wildlife Service, Florida Fish and Wildlife Conservation Commission and Charlotte County staff have worked closely since 2001 to ensure that proposed compensation areas meet the requirements of the jurisdictional agencies. Based on these working relationships, Charlotte County has begun the acquisition of some of the compensation areas with FWS and FWC guidance. Charlotte County cannot wait to acquire the compensation areas since several of the proposed compensation areas require the assembly of platted 0.05-0.1 hectare (0.125 – 0.25 acre) lots.

8.2 Management of Compensation Areas

Management on compensation areas will be initiated when the parcels are acquired and will begin no later than when impacts to the covered projects begin. Charlotte County will provide more detailed management plans to the FWS and FWC after the compensation areas are acquired and management plans can be written. Compensation areas will be managed according to best management practices for Florida Scrub-Jays as agreed upon by the FWS, FWC and Charlotte County.

8.3 Changed Circumstances

Reasonably foreseeable circumstances which may occur in the project area and the covered species include hurricanes, fire, sea level rise, flooding, or sudden population declines due to disease or habitat degradation.

A steep population change of Florida Scrub-Jays due to disease or habitat degradation could cause the FWS to review any changes in species viability. Adaptive management provisions implemented by Charlotte County in a response to such an event will require consultation with the FWS to determine if additional measures are required.

8.4 Unforeseen Circumstances

"Unforeseen circumstances" or "extraordinary circumstances," are defined within the Endangered Species Habitat Conservation Planning Handbook (FWS and NMFS 1996) and are described as "changes in circumstances surrounding an HCP that were not or could not be anticipated by HCP participants and the Service, that result in a substantial and adverse change in the status of a covered species". The applicant and the FWS acknowledge that even with the detailed provisions provided within this HCP, unforeseen circumstances may arise during the term of the HCP.

The applicants are committed to work with the FWS to address future unforeseen changes to the maximum extent reasonably practicable. In accordance with the Department of the Interior's and the Department of Commerce's "No surprises" policy, the applicants acknowledge that the FWS shall not require the applicants to commit additional land, additional funds, or additional

land restrictions beyond those which are identified within the Charlotte County Capital Improvements HCP, as long as the applicants are adequately implementing the conservation actions of this HCP. The FWS and the applicants agree that additional mitigation measures to address unforeseen changes must be close to the terms of this HCP and shall be limited to modifications in scrub management treatments or schedules within the Scrub-Jay compensation areas.

Catastrophic or other unforeseen events could cause the FWS and FWC to review any changes in the viability of the covered species. The FWS and FWC will reinitiate consultation and changes will be agreed upon by all parties (FWS, FWC and Charlotte County).

The monitoring program contained herein will provide the information to determine if unforeseen changes have occurred within the covered Florida Scrub jay impact and compensation areas and if changes to the scrub management need to be addressed.

8.5 No Surprises

The "No Surprises" policy establishes a clear commitment from the FWS to honor the agreements under an approved HCP for which the permitee is implementing the terms and conditions in good faith (FWS 1996). The HCP Handbook (FWS and NMFS 1996) states that the FWS will not require the commitment of additional land or financial compensation beyond the level of mitigation provided within the HCP.

9.0 **Literature Cited**

Bowman, R. 2001. Demography of Florida scrub-jays in a suburban matrix: Implications for reserve design and spatially explicit modeling. Paper presented at the United States Fish and Wildlife Service sponsored 2001 Florida Scrub Symposium. Orlando Florida.

Breininger, D. 2001. Biological Criteria for the Recovery of Florida Scrub-Jay Populations on Public Lands in Brevard County and Indian River County. Annual Progress Report to Endangered Species Office, US Fish and Wildlife Service, Vero Beach, Florida.

Breininger, D.R. 1999. Florida scrub-jay demography and dispersal in a fragmented landscape. The Auk 116:520-527.

Breininger, D.R., M.A. Burgman, and B.M. Stith. 1999. Influence of habitat quality, catastrophes, and population size on the Florida scrub-jay. Wildlife Society Bulletin 27:810-822.

Breininger, D.R., V.L. Larson, B.W. Duncan, R.B. Smith, D.M. Oddy and M. F. Goodchild. 1995. Landscape patterns of Florida scrub jay habitat use and demographic success. Conservation Biology 9:1442-1453.

Breininger, D.R., V.L. Larson, D.M. Oddy, R.B. Smith, and M.J. Barkaszi. 1996. Florida scrub-jay demography in different landscapes. The Auk: 113:617-625.

Breininger, D.R., M.J. Provancha, and R.B. Smith. 1991. Mapping Florida scrub jay habitat for purposes of land management. Photogrammetric Engineering & Remote Sensing 57: 1467-1474.

Breininger, D.R. and P.A. Schmalzer. 1990. Effects of fire on plants and birds in a Florida oak/palmetto scrub community. American Midland Naturalist 123:64-74.

Charlotte County. 1997. Chapter 3, Natural Resources and Coastal Planning Element. Pages 3.1-3.262 in Charlotte County Comprehensive Plan 1997-2010.

Christman, S.P. 2000. Florida scrub-jay distribution and habitat analysis, Sarasota County. Unpublished report prepared for Sarasota County Natural Resources.

Cox, J.A. 1987. Status and distribution of the Florida scrub jay. Florida Ornithological Society, Special Publication No. 110 pp.

Curnutt, J.L. 1996. Southern Bald Eagle. Pages 179-187 in J.A Rodgers, H.W. Kale and H.T. Smith (eds). Rare and Endangered Biota of Florida Volume V. Birds. University Press of Florida, Gainesville.

DeGange, A.R., J.W. Fitzpatrick, J.N. Layne, and G.E. Woolfenden. 1989. Acorn harvesting by Florida scrub jays. Ecology 70:348-356.

Dreschel, T.W., R.B. Smith, and D. R. Breininger. 1990. Florida scrub jay mortality on roadsides. Florida Field Naturalist 18:82-83.

Duncan, B.W., S. Boyle, D.R. Breininger, and P.A. Schmalzer. 1999. Coupling past management practice and historic landscape change on John F. Kennedy Space Center, Florida. Landscape Ecology 14:291-309.

Duncan, B.W., D.R. Breininger, P.A. Schmalzer, and V.L. Larson. 1995. Validating a Florida scrub jay habitat suitability model, using demography data on Kennedy Space Center. Photogrammetric Engineering and Remote Sensing 61:1361-1370.

EarthBalance. 2005. Winchester Boulevard Phase 3 Improvements. 2004/2005 Scrub jay Survey Report. Report to Charlotte County, U.S. Fish and Wildlife Service, and Florida Fish and Wildlife Conservation Commission.

Fitzpatrick, J.W., B. Pranty, and B. Stith. 1994. Florida scrub jay statewide Map 1992-1993. Archbold Biological Station, Lake Placid, Florida.

Fitzpatrick, J.W., G.E. Woolfenden and M.T. Kopeny. 1991. Ecology and development-related habitat requirements of the Florida scrub jay (*Aphelocoma coerulescens coerulescens*). Florida Game and Fresh Water Fish Commission, Nongame Wildlife Technical Report Number 8. Tallahassee, Florida.

Henderson, W.G. 1984. Soil survey of Charlotte County, Florida. Soil Conservation Service, U.S. Department of Agriculture.

Koenig, W.D., F.A. Pitelka, W.J. Carmen, R.L. Mumme, M.T. Stanback. 1992. The evolution of delayed dispersal in cooperative breeders. The Quarterly Review of Biology. 57:111-150.

Lack, D. 1968. Ecological Adaptations for Breeding in Birds. Methuen Press, London.

Lippincott, C.L. 1997. Ecological Consequences of *Imperata cylindrica* (Cogon grass) invasion in Florida sandhill. PhD. Dissertation. University of Florida.

Logan, T.H.. 1997. Florida's Endangered Species, Threatened Species and Species of Special Concern Official Lists. Florida Game and Fresh Water Fish Commission.

McGowan, K.J. and G.E. Woolfenden. 1989. A sentinel system in the Florida scrub jay. Animal Behavior. 37:1000-1006.

McGowan, K.J. and G.E. Woolfenden. 1990. Contributions to fledgling feeding in the Florida scrub jay. Journal of Animal Ecology 59:691-707.

Meyers, R.L. 1990. Scrub and High Pine. Pages 150-193 in R.L. Meyers and J.J. Ewel (eds) Ecosystems of Florida. University of Central Florida Press, Orlando.

Miller K.E. and B.M. Stith. 2002. Florida Scrub-Jay Distribution and Habitat in Charlotte County. Final Report to Charlotte County, Florida.

Moler, P.E. 1992. Eastern indigo snake. Pages 181-186 in P.E. Moler (ed). Rare and endangered biota of Florida, volume III, Amphibians and Reptiles. University Press of Florida; Gainesville, Florida.

Mumme, R.L. 1992. Do helpers increase reproductive success? Behavioral Ecology and Sociobiology 31:319-328.

Mumme, R.L., S.J. Schoech, G.E. Woolfenden, and J.W. Fitzpatrick. 2000. Life and death in the fast lane: Demographic consequences of road mortality in the Florida Scrub-Jay. Conservation Biology14:501-512.

Pranty, B., J.W. Fitzpatrick, and B.M. Stith. 1997. Unpublished manuscript. Distribution of the Florida scrub-jay, 1992-1996.

Root, K.V. 1998. Evaluating the effects of habitat quality, connectivity, and catastrophes on a threatened species. Ecological Applications 8:854-865.

Schaub R., R.L. Mumme, and G.E. Woolfenden. 1992. Predation on the eggs and nestlings of Florida scrub jays. Auk 109:585-593.

Stith, B.M. 1999. Metapopulation Analysis of the Florida scrub-jay (*Aphelocoma coerulescens*): a statewide assessment. Final Report to the Endangered Species Office, U.S. Fish and Wildlife Service, Jacksonville, Florida.

Stith, B.M., J.W. Fitzpatrick, G.E. Woolfenden, and B. Pranty. 1996. Classification and conservation of metapopulations: A case study of the Florida scrub jay. Pages 187-215 in D. R. McCullough (ed) Metatpopulations and Wildlife Conservation. Island Press, Washington D.C.

Thaxton J.E. and T.M. Hingtgen. 1996. Effects of suburbanization and habitat fragmentation on Florida scrub-jay dispersal. Florida Field Naturalist 24:25-37.

Toland, B. 1999. Current Status and Conservation recommendations for the Florida scrub-jay in Brevard County. Unpublished report to the Brevard County Board of County Commissioners.

United States Fish and Wildlife Service (FWS) 1999a. Florida Scrub-jay. Pages 4-261 – 4-289 in South Florida Multi-species Recovery Plan. Atlanta, Georgia

United States Fish and Wildlife Service (FWS) 1999b. Florida Scrub. Pages 3-31 – 3-68 in South Florida Multi-species Recovery Plan. Atlanta, Georgia

U.S. Fish and Wildlife Service (FWS). 1999c. Bald Eagle. 4-237 – 4-260 in South Florida Multi- Species Recovery Plan. Atlanta, Georgia

U.S. Fish and Wildlife Service (FWS). 1999d. Eastern Indigo Snake. 4-567 – 4-584 in South Florida Multi-Species Recovery Plan. Atlanta, Georgia

U.S. Fish and Wildlife Service (FWS). 1999e. South Florida Multi-Species Recovery Plan. Atlanta, Georgia

U.S. Fish and Wildlife Service (FWS). 2006. Draft national bald eagle management guidelines. http://www.fws.gov/migratorybirds/baldeagle.htm

United States Fish and Wildlife Service and National Marine Fisheries Service. 1996. Endangered Species Habitat Conservation Planning Handbook.

Woolfenden, G.E. 1996. Florida Scrub-Jay. Pages 267-280 in J.A Rodgers, H.W. Kale and H.T. Smith (eds). Rare and Endangered Biota of Florida Volume V. Birds. University Press of Florida, Gainesville.

Woolfenden, G.E. and J.W. Fitzpatrick. 1984. The Florida Scrub Jay: Demography of a Cooperative Breeding Bird. Princeton University Press, Princeton, New Jersey.

Woolfenden, G.E. and J.W. Fitzpatrick. 1990. Florida scrub jays: a synopsis after 18 years of study. Pages 239-266 in P.B. Stacey and W.D. Koenig (eds.). Cooperative breeding in birds: long-term studies of ecology and behavior. Cambridge University Press, Cambridge, England.

Woolfenden, G.E. and J.W. Fitzpatrick. 1991. Florida scrub jay ecology and conservation. Pages 542-565 in C.M. Perrins, J.D. Lebetoa, and G.J.M. Hirons (eds). Bird Population Studies: Relevance to Conservation and Mangement. Oxford University Press, Oxford, England.

Woolfenden, G.E. and J.W. Fitzpatrick. 1996. Florida Scrub-Jay (*Aphelocoma coerulescens*). Pages 1-28 in A. Poole and F. Gill (eds.). The birds of North America, Number 228. The Academy of Natural Sciences, Philadelphia and The American Ornithologists' Union, Washington D.C.

10.0 List of Preparers

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Peace River Preserve

Draft Management Plan

February 2011

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ABBREVATIONS AND ACRONYMS

ATV	All-terrain vehicle
CHEC	Charlotte Harbor Environmental Center
DEP	Florida Department of Environmental Protection
DNR	Florida Department of Natural Resources
DOF	Florida Department of Agriculture & Consumer Services Division of Forestry
FEMA	Federal Emergency Management Agency
Fire/EMS	Charlotte County Fire and Emergency Medical Services Department
FNAI	Florida Natural Areas Inventory
FWC	Florida Fish and Wildlife Conservation Commission
HCP	Habitat Conservation Plan
MP	Management Plan
Natural Resources	Parks and Natural Resources Division
NWI	National Wetlands Inventory
Serene Estates	Serene Estates Conservation Easement
SHCA	Strategic Habitat Conservation Area
Sheriff	Charlotte County Sheriff's Office
SWFWMD	Southwest Florida Water Management District
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service

1.0 INTRODUCTION

Peace River Preserve is a 410-acre tract of environmentally sensitive land located in north-central Charlotte County, at the end of Sandhill Drive. (Figures 1 and 2). The Peace River forms the eastern boundary of the property. Residential communities border the property to the north, west and southwest. To the east and south is the Peace River. The property is accessible via a power line easement. The Preserve is located in Township 40 South, Range 23 East, Sections, 10, 11 and 15. The Preserve is within the United States Geological Survey (USGS) Quadrangles Cleveland and Bermont. The Preserve is within one mile of other government and non-profit organization preserve land (Figure 3).

This property was acquired to maintain and manage environmentally sensitive land for the Conservation Charlotte Program, including scrub, scrubby flatwoods, and bottomland hardwoods as well as the protection of water quality of Peace River. Listed species such as the Florida scrub jay (*Aphelocoma coerulescens coerulescens*), the gopher tortoise (*Gopherus polyphemus*), the gopher frog (*Rana capito*), eastern indigo snake (*Drymarchon corais*), Florida mouse (*Podomys floridanus*), Florida pine snake (*Pituophis melanoleucus mugitus*), American alligator (*Alligator mississippiensis*), and sandhill crane (*Grus canadensis*), have the potential to be present (Section 3.2).

This Management Plan (MP) outlines the monitoring and management activities for the Preserve. Key management strategies include exotic/invasive species removal (Section 3.4) and prescribed burns (Section 3.5). Activities such as garbage removal and site security will assist in restoring the Preserve to its native state (Section 4.0). The Preserve has good manageability potential. This property was purchased by Charlotte County in 2008 (Appendix A).

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2.0 PURPOSE

The primary purpose in purchasing the Preserve is to assure that the property will be retained forever in its existing natural condition and to prevent any use of the property that will impair or interfere with the environmental value of the property. An important benefit to retaining the Preserve in its natural condition is the additional protection of water resources. The Peace River and Shell Creek provide most of the potable water supply for the city of Punta Gorda. Retention of the natural wetlands of the preserve will filter and protect the water resources for Punta Gorda

The secondary purpose for purchasing this Preserve is public recreation and education. This preserve provides opportunity for public passive recreation and enrichment through educational opportunity concerning Florida's natural communities and ecosystems. The future goal is to provide the public recreational opportunities that are compatible with the conservation of Charlotte County's natural lands.

The purpose of this MP is to outline the natural resources of this area, monitoring and management objectives, and to provide a framework and schedule for management activities. This MP will be modified as necessary.

3.0 NATURAL RESOURCES

The valuable natural resources in the Preserve include imperiled ecosystems and listed species. The most important tools for the management of the natural resources within the Preserve will include prescribed fire and invasive species removal.

All plant and animal species listed are included with their scientific names, and state and federal designations in Appendix B.

3.1 Natural Communities

This preserve is made up of main habitats: Freshwater Tidal Swamp, Scrub/Scrubby Flatwoods, and Hydric Hammock. (Figure 4).

Freshwater Tidal Swamp

The Preserve is made up of approximately 201.2 acres of Freshwater Tidal Swamp. Freshwater Tidal Swamps occur on floodplains near the mouths of rivers just inland from mangroves or saltmarshes. They are swamp forests with well developed trees inland and increasingly dwarfed trees towards the coast, often with an extensive mat of convoluted surface roots. The dominant trees are usually cabbage palm (*Sabal palmetto*), black gum(*Nyssa sylvatica*), bald cypress(*Taxodim distichum*), southern magnolia(*Magnolia grandiflora*), and red cedar(*Toona ciliate*). Other typical plants include water tupelo(*Nyssa aquatica*), pumpkin ash(*Fraxiaus profunda*), swamp bay(*Persea palustris*), white cedar(*Thuja plicata*), titi(*Cyrilla racemiflora*), wax myrtle(*Myrica cerifera*), cocoplum(*Chrysobalanus icaco*), dahoon holly(*Ilex cassine*), myrtle-leaved holly(*Ilex myrtifolia Walter*), saltbush(*Baccharis halinifolia*) and leather fern(*Acrostichum danacifolium*). Typical animals include those with marine affinities such as olive nerites(*Neritina reclivata*) and fiddler crabs(*Uca*)genus. Because they are found only near river mouths, their distribution is inherently limited in Florida.

Scrub/Scrubby Flatwoods

The Preserve is made up of approximately 102.65 acres of Scrub/Scrubby Flatwoods. The vegetation is a combination of Scrub and Mesic Flatwoods species: Scrubby Flatwoods often occupy a broad transitions or ecotones between these communities. This community is essentially a Mesic Flatwoods with a Scrub understory. The Florida Natural Areas Inventory, (FNAI) estimates Mesic Flatwoods account for 30-50% of the state's uplands. However, very few undisturbed areas of Mesic Flatwoods exist because of habitat mismanagement and silvicultural, agricultural, or residential development.

Typical plants include longleaf pine(*Pinus palustris*), slash pine(*Pinus elliottii*), sand live oak(*Quercus geminata*), Chapman's oak(*Quercus chapmanii*), myrtle oak(*Quercus myrtifolia*), scrub oak(*Quercus inopina*), saw palmetto(*Serenoa repens*), staggerbush(*Lyonia* spp.), wiregrass(*Aristida* spp.), dwarf blueberry(*Vaccinium corymbosum*), gopher apple(*Licania michauxii*), rusty lyonia(*Lyonia ferruginea*), tarflower(*Bejaria racemosa*), golden-aster(*Chrysopsis floridana*), silkbay(*Persea humilis*), garberia(*Carberia heterophylla*), huckleberry(*Gaylusscia dumosa*), runner

oak(*Quercus Margarettiae*), and frostweed. Several variations of Mesic Flatwoods are recognized, the most common association being longleaf pine-wiregrass-runner oak and slash pine-gallberry-saw palmetto. Other typical plants include: St. Johns-wort (*Hypericum perforatum*), dwarf huckleberry (*Gaylussacia dumosa*), fetterbush(*Lyonia lucida*), dwarf wax myrtle(*Myrica pusilla*), stagger bush (*Lyonia mariana*), blueberry (*Vaccinium darrowi*), gopher apple (*Licania michauxii*), tar flower (*Barjeria racemosa*), bog buttons (*Lachnocaulon* spp.), blackroot (*Leptandra virginica*), false foxglove (*Agalinis tenuifolia*), white-topped aster (*Sericocarpus linifolius*), yellow-eyed grass (*Xyris difformis var. floridana*) and cutthroat grass (*Panicum abscissum*)(FNAI and DNR, 1990.)

Hydric Hammock

The Preserve is made up of approxiamately 48.48 acres of Hydric Hammock. Hydric Hammock is characterized as a well developed hardwood and cabbage palm forest with a variable understory ofted dominated by palms and ferns. Typical plants include cabbage palm(*Sabal palmetto*), red cedar(*Toona ciliate*), red maple(*Acer rubrum*), swamp bay(*Persea palustris*), sweetbay(*Magnolia Virginia*), water oak(*Quercus nigra*), southern magnolia(*Magnolia grandiflora*), wax myrtle(*Myrica cerifera*), saw palmetto(*Serenoa ripens*), bluestem palmetto(*Sabal minor*), needle palm(*Rhapidophyllum hystix*), poison ivy(*Toxicodendron radicans*), dahoon holly(*Ilex cassine*), myrsine(*Rapanea pumctata*), hackberry(*Celtis occidentalis*), sweetgum(*Liquidambar styraciflua*), loblolly pine(*Pinus taeda*), Florida elm(*Ulmus americana var. floridana*), swamp chestnut oak(*Quercus michauxii*), American hornbeam(*Carpinus caroliniana*), Walter viburnum(*Viburnum obovatum*), royal fern(*Osmunda regalis*), peppervine(*Ampelopsis arborea*), rattanvine(*Berchemia scandens*), yellow jassamine(*Gelsemium sempervirens*), and Virginia creeper(*Parthenocissus quinquefolia*). Typical animals include green anole(*Anolis carolinensis*), gray squirrel(*Sciurus griseus*) various flycatchers, and warblers.

Hydric Hammock occurs on low, flat, wet sites where limestone may be near the surface and frequently outcrops. Soils are sands with considerable organic material that although generally saturated, are inundated only for short periods following heavy rains. Ther normal hydroperiod is seldom over 60 days per year. Because of their generally saturated soils and the sparsity of herbaceous ground cover, hydric Hammocks rarely burn.

Hydric Hammock generally grades into Floodplain Swamp, Strand Swamp, Basin Swamp, Baygall, Wet Flatwoods, Coastal Berm, Maritime Hammock, Slope Forest, Upland Mixed Forest, or Upland Hardwood Forest.

3.2 *Wildlife*

Typical animal species that inhabit scrub and scrubby flatwoods communities include the red-widow spider (*Latrodectus bishopi*), scrub wolf spider (Family Lycosidae), oak toad (*Bufo guercicus*), blue-tailed mole skink (*Eumeces eqregius lividus*), six-lined racerunner (*Cnemidophorus sexlineatus)*, coachwhip (*Masticophis flagellum*), common ground dove

(*Columbina passerina)*, Florida scrub jay, loggerhead shrike (*Lanius ludovicinianus*), rufous-sided towhee (*Pipilo erythrophthalmus)*, and eastern spotted skunk (*Spilogale putorius*) (FNAI and DNR, 1990). Several species that utilize these habitats are endemic to the state of Florida, including the Florida scrub jay, the Florida mouse, the Florida scrub lizard (*Sceloporus woodi*), and sand skink (*Neoseps reynoldsi*) (Hipes et al., 2001). However, the Florida scrub lizard and the sand skink are not known to occur in this part of the state.

Typical animal species that inhabit tidal freshwater marsh communities include; osprey(*Pandion haliaetus*), mullet(*Mugilidae* fam.), Florida green water snake(*Nerodia floridana*), Florida water snake(*Neroda fasciata pictiventris*), brown water snake(*Nerodia taxispilota*), snowy egret(*Egretta thula*), little blue egret(*Egretta caerulea*), reddish egret(*Egretta rufencens*), tricolor egret(*Egretta tricolor*), wood stork(*Mycteria Americana*) as well as various shrimp, crabs and fish and fish larvae. It has been well documented that numerous aquatic and marine species utilize this habitat as a nursery and safe haven for developing young.

Typical animal species that inhabit hydric hammock communities include; eastern Indigo snake(*Drymarchon corais couperi*), short tailed hawk(*Buteo brachyurus*), swallow tailed kite(*Elanoides forficatus*), black crowned night heron(*Nycticorax nycticorax*), yellow crowned night heron(*Nycticorax violacea*), limpkin(*Aramus guarauna*), Florida long tailed weasel(*Mustela frenata peninsulae*).

A master list of all wildlife observed within the Preserve is included in Appendix C and will be updated as necessary. All federally and state listed species that have been observed are included in Figure 7.

Gopher Tortoises

A baseline survey for gopher tortoises has not been conducted for the Preserve at this time. Several gopher tortoise burrows have been observed throughout the Preserve.

Scrub Jays

A baseline survey for scrub jays, a FWC and USFWS Threatened species, was conducted by the Center for Avian Conservation, Inc. September 2001-February 2002 (Miller and Stith, 2002). The survey documented 54 scrub jay groups with 165 individuals. The Preserve is located within this population's range. There was more than a twofold population change from the jays documented for the same study area in 1992 as part of a Statewide Mapping Project. This apparent increase may be due largely to an increased survey effort in this area. The long term viability of this metapopulation may be limited due to increased suburbanization in the area. Further land acquisition in the area will provide increased habitat preservation in the area.

The USFWS identifies the Preserve as being in a scrub jay review area (USFWS, 200b). This area is defined by a 850-foot buffer around the sighting a jay, which provides a reasonable estimate of the area in which their territory is likely to be found (Souza,

2007). USFWS has recorded four scrub jay sightings within 850 feet on the Preserve boundary, although none of these sightings are within the boundaries. County staff has documented sightings within the Preserve boundary.

The FWC identified the majority of the Preserve as a Strategic Habitat Conservation Area (SHCA) for scrub jays (Appendix E). SHCA lands are essential to providing some of the state's rarest animals, plants, and natural communities with the land base necessary to sustain populations into the future (Cox et al., 1994).

Management and monitoring (Section 3.5) of the Preserve will assess the value of the habitat for scrub jays. Currently, staff surveys have determined that overall, the habitat meets some scrub jay requirements, but falls short of others due to fire suppression (Section 3.5).

Other Listed Species

Other listed species that may occur throughout the Preserve (based on their geographical ranges) include the American alligator, Florida mouse, sandhill crane, gopher frog, eastern indigo snake, and Florida pine snake. Their state and federal rankings are included in Appendix B. Species that have the potential to associate with gopher tortoise burrows within Charlotte County, such as the Florida mouse, gopher frog, eastern indigo snake, and pine snake (Hipes et al., 2001), and will be surveyed for with a burrow scope.

Information on listed or rare species that have been previously unrecorded in Charlotte County will be submitted to FNAI (Appendix F).

3.3 Soils

The scrub/scrubby flatwoods (Figure 4) is dominated by Oldsmar sand, with small pockets of EauGallie sand and Pineda fine sand (Appendix G). These soils are typically associated with south Florida flatwoods and sand pine scrub (Soil Survey Staff, 2007), which is consistent with the field verification.

The freshwater tidal marsh is dominated by Wulfert muck (Appendix G). This is a nearly level, very poorly drained soil on broad tidal swamps. Natural vegetation consists of American mangrove, black mangrove, and needlegrass. This Wulfert soil is in the Salt Water Marsh range site.

3.4 Invasive/Exotic Species

Exotic, or nonnative, plants reduce the quantity and quality of habitat available for native flora and fauna, especially when those exotic species become invasive and outcompete the native habitats. Exotic species should be removed to benefit the listed species observed and the listed species that have the potential to be present. To date the exotics occurring on the property are cogon grass and Brazilian pepper and melaeuca. The county will continue to monitor for the presence of invasive species on the property. As new exotic/invasive species are found to be present appropriate treatment strategies will be implemented.

3.5 Preserve Management

Fire will be one of the key management strategies within the Preserve. A prescribed fire was conducted on the Preserve in 2008. Additional prescribed burns will be set for the remaining burn tracts annually over the next four years (Figure 8). The perimeters of the proposed burn tracts will utilize existing roads and all-terrain vehicle (ATV) trails as fire breaks.

In the instances where the Preserve borders a residence, mechanical thinning will be conducted within a reasonable buffer of the residence. This buffer will be based on the locations of fire breaks and will be field-determined prior to that year's prescribed fire. A mechanical reduction was conducted in December of 2009. The purpose of the reduction was restoration of scrub community with significant reduction in the overstory.

Prescribed fires will follow those guidelines and meet those requirements set forth by the Florida Department of Agriculture & Consumer Services Division of Forestry (DOF), Florida Statute Chapter 590, and Florida Administrative Code 51-2. These requirements include drafting a burn plan with the DOF, and using existing fire breaks (such as roads or trails) along the perimeters of the burn. If fire breaks are not present, they shall be constructed. As part of an outreach program, all residents within at least a half-mile buffer will be notified of the fire and given the opportunity to meet with Natural Resources staff at a public meeting to discuss why prescribed burns are conducted and to ask questions.

In addition to prescribed fire other management activities will be utilized when appropriate for the management of the Preserve. Some of those activities include but are not limited to mechanical reduction of vegetation and overstory trees. Where and when necessary bushhogging, timber thinning, rollerchopping as well as chemical treatment will be utilized to effectively manage the property.

Scrub and Scrubby Flatwoods

Both scrub and scrubby flatwoods are fire-maintained communities. In the absence of fire, these communities may succeed into a xeric or mesic hardwood hammock (Myers and Ewel, 1992). Because scrub habitat is ranked as imperiled (FNAI and DNR, 1990) and scrubby flatwoods is ranked as rare (FNAI and DNR, 1990), it is imperative that these habitats receive the proper burn regime for conservation and the benefit of the wildlife that live in these ecosystems.

Fitzpatrick et al. (1991) recommends burning oak scrub every five to 20 years in order to allow the scrub oaks to produce a mast acorn crop that is sufficient to support jays. Scrubby flatwoods commonly burn between every one to eight years (Behm and Duryea, 2003). Post- management surveys will help determine the timing of the next burn or mechanical thinning regime.

Surveys will be taken pre-management and post-management to assess the value of the habitat for scrub jays. These surveys will measure the following categories at each transect: height of the shrub layer, the areal coverage of shrub layer, the percentage of scrub oaks in the shrub layer, the maturity of the oaks (production of a mast crop, which will not occur until at least three years after a burn or mechanical thinning), the areal coverage of bare substrate, the canopy cover, and the canopy species. Photopoints will be established at each of these transects with rebar. Photographs will be taken at the same height, in each of the four cardinal directions. This data will be compared to an ideal scrub jay habitat data set (Appendix H), as defined by Fitzpatrick et al. (1991). Each category will receive a rating of red, yellow, or green. A red category does not meet scrub jay habitat requirements. A yellow category meets some scrub jay habitat requirements. A green category meets or exceeds scrub jay requirements. Pre-management surveys will occur once at each management tract prior to the first prescribed burn or mechanical thinning. The first post-management surveys will occur within three months after the initial management to check on conditions and scrub jay utilization. Thaxton and Hingtgen report immediate foraging use by scrub jays of newly burned sites (1994). These post-management surveys should be conducted annually in October. At this time, not only are acorns appearing and maturing (Arny, 2006), but scrub jays are also conducting frequent and vigorous territorial displays (Fitzpatrick et al., 1991).

Hydric Hammock

Hydric Hammocks rarely burn due to saturated soils and the sparsity of herbaceous groud cover.

Freshwater Tidal Marsh

United States Department of Agriculture recommends burning and grazing as effective management activities to maintain this habitat in its natural state. Grazing is not an option and since this habitat is often too wet to support a fire other practices will have to be applied to maintain this habitat.

3.6 Water Quality Protection

Maintaining the natural condition of the Preserve ensures continued protection for the potable water supply for the citizens of Punta Gorda.

The Federal Emergency Management Agency (FEMA) has categorized the wetland portion of the Preserve, as “A Zone” and the upland portion of the Preserve as a “X Zone” (Figure 9). “A Zones” are in high risk of flooding. These areas have a 1% annual chance of flooding and a 26% chance of flooding over 30 years. “X Zones” have a low to moderate chance of flooding and fall outside of this 1% annual flood probability. The Preserve is within a Category 2 and 3 Storm Surge (Figure 10).

3.7 Connectivity to other Conservation Lands

Several other public lands lie within several miles of the Preserve including Prairie/Shell Creek across the Peace River to the east of the preserve.

This area's future land use is residential, except that the preserve has been changed to Preservation and some of the residential areas may become denser (Figure 13). There are no plans to change the existing zoning designation or the future land use of surrounding lands at this time (Williams, 2007).

3.8 Archeological, Cultural, and Historical Resources

No archeological survey has been conducted at this time.

4.0 RESOURCE ENHANCEMENT

Due to the present quality of the Preserve, there is not much restoration needed.

Existing physical structures include:

- Several dirt roads – may fragment habitat and expose small animals to collisions with vehicular traffic. The dirt roads will likely remain in place to serve as firebreaks during prescribed burns.
- Illegally dumped debris - Debris may provide a hazard to wildlife and pedestrians by way of sharp edges, presenting a tripping hazard, a trapping hazard (reptiles, amphibians, or small rodents falling in a water-filled tub and drowning, e.g.), accidental ingestion (Especially of small glass or metal pieces while grazing), and releasing hazardous materials into a sensitive environment. Currently, the amount of illegally dumped debris is minimal. Garbage may be removed by hand.
- ATV trails - ATVs may further fragment habitat. As ruts from former ATV trails become deeper and wider, they become unsuitable for travel, at which point ATV users may create new trails. ATVs compact soil, destroy groundcover, and may collide with small wildlife such as reptiles and amphibians. ATV trails may create openings for colonization of exotic/invasive species. Natural Resources staff will be coordinating with FWC to curb ATV traffic. Perimeter fences and "No trespassing" signs may be installed.

5.0 MANAGEMENT NEEDS

5.1 Coordinated Management

Management activities will be coordinated with local and state agencies as follows

- The **USFWS** will be coordinated with to ensure federal regulations regarding wildlife are enforced within the Preserve boundaries. USFWS guidance and expertise may also be sought in habitat restoration and management of federally listed wildlife species utilizing the Preserve.
- Water agencies, such as **SWFWMD** and the **South Florida Water Management District** will be given the opportunity to review the MP.
- The **DOF** will be asked to assist in prescribed burning, as may be necessary, and for the required authorizations to conduct such burns. They will also be called upon to assist with wildland fire emergencies.
- The **FWC** will be coordinated with to ensure state regulations regarding wildlife are enforced within the park boundaries. FWC guidance and expertise may also be sought in habitat restoration and management of state listed wildlife species utilizing the Preserve. FWC will be coordinated with to curb ATV traffic within the Preserve.
- The **Charlotte County Sheriff's Office** (Sheriff) may be asked for assistance with security and vandalism concerns.
- The **Charlotte County Animal Control** may be asked for assistance with the removal of stray or feral animals.
- The **Charlotte County Fire and Emergency Medical Services Department** (Fire/EMS) will be asked for assistance in conducting prescribed burning and responding to emergencies as necessary.
- **CHEC** may be coordinated with for management activities.
- Adjacent **property owners** will be asked to report suspicious activity.

5.2 Maintenance

The maintenance objectives for the Preserve are employee health, safety, and welfare while assessing the site, maintenance of aesthetic qualities, and protection of natural resource values.

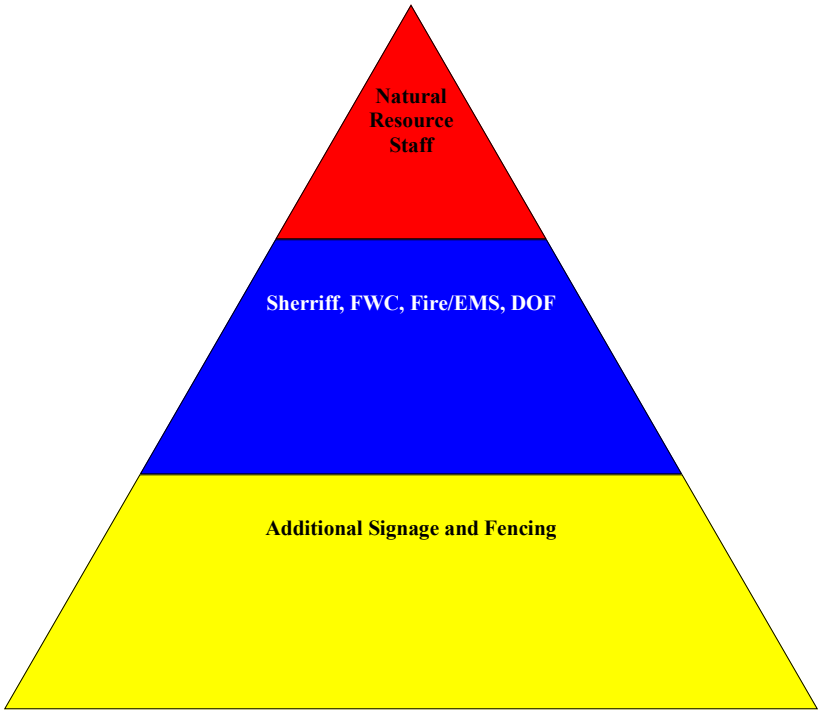
Natural Resources staff has the responsibility for managing and maintaining the Preserve. The site will have a dedicated contracted staff or volunteer/community service workers to perform routine maintenance tasks, including

- Mowing and pruning of vegetation around the fire breaks
- Upkeep and cleaning of any facilities including fencing and signage
- Garbage and debris removal
- Land Management (including removal of exotic species and controlled burns)

5.3 Security

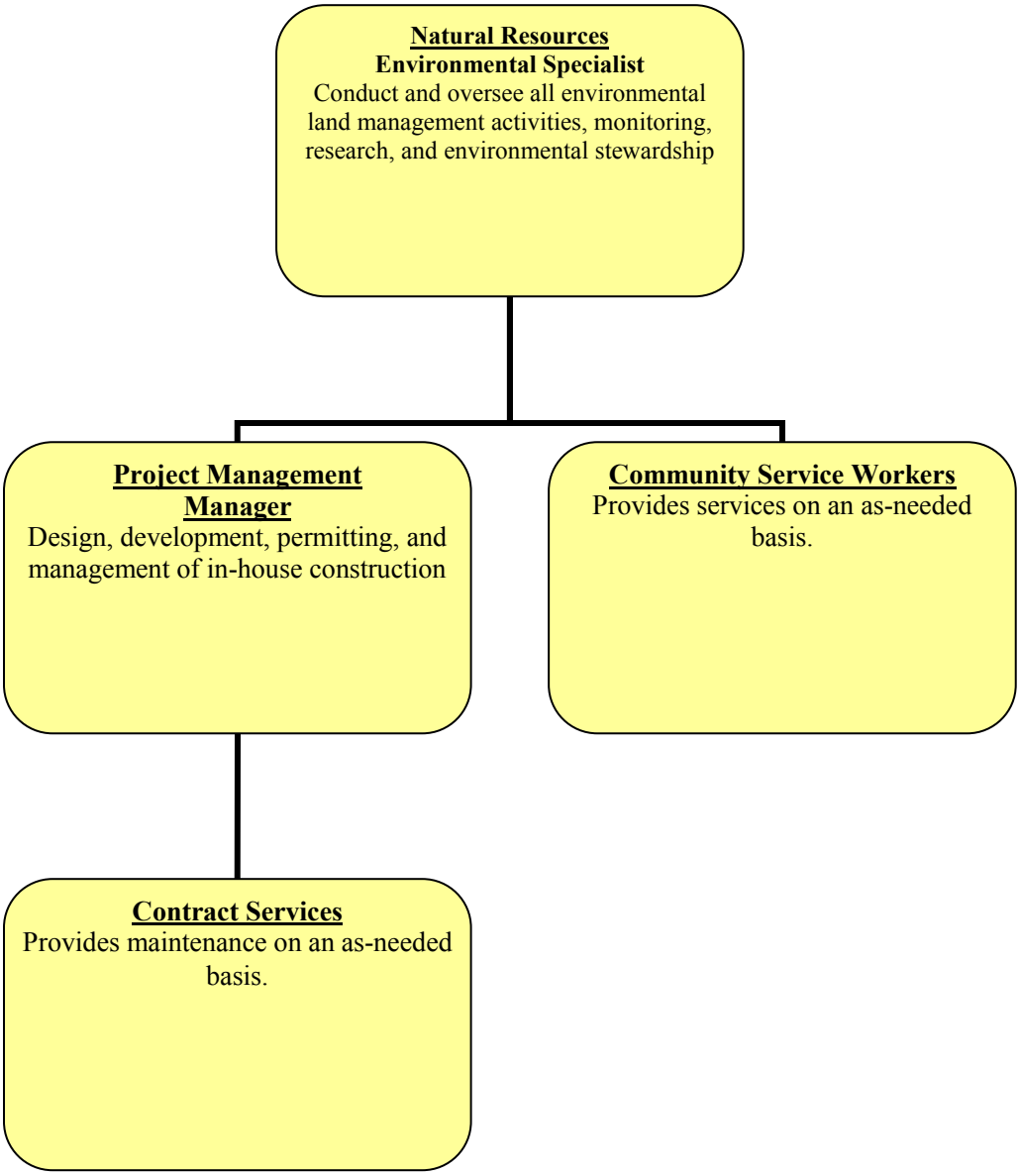
Natural Resources ultimately has the responsibility for site security, including prevention of vandalism, property damage, unauthorized vehicle access, and trespassing. A three-tiered approach to site security will be employed by Natural Resources:

- **Staff** – Natural Resources staff shall monitor the integrity of any fences, repair damage by vandalism, monitor the site for evidence of ATV use, and take measures to clarify restricted areas and activities to citizens with signage
- **Sheriff, FWC, Fire/EMS, and DOF** – Shall respond to emergency calls or ATV reports from citizens
- **Signage and Fencing** – Fencing may be installed to restrict ATV and vehicle access. Signage to clarify restricted areas, times, and activities is being considered.



5.4 Staffing

Natural Resources will provide staffing, management, and maintenance for the Preserve. The following full-time staff positions and their areas of responsibilities will be provided.



6.0 COST ESTIMATE AND FUNDING SOURCES

There are several agencies that may award grants for management activities, including USFWS, FWC, and SWFWMD.

7.0 PRIORITY SCHEDULE

A priority schedule that details a timeline for major events is included in Appendix J. This priority schedule covers 2005-2014. A new schedule will be released after 2014, or when the MP is updated.

8.0 MONITORING AND REPORTING

The goals of habitat assessment monitoring are to evaluate management efforts to ensure they are meeting ideal habitat requirements for scrub jays and other listed species. Management activities are outlined in Section 3.5. This MP will be updated as necessary.

9.0 REFERENCES

Allison, C. 2007. Florida Fish and Wildlife Conservation Commission, Southwest Region. Telephone conversation with Kim Hermann, Charlotte County Environmental & Extension Services, Natural Resources Division. October 22.

Arny, N. 2006. *Common oaks of Florida*. FOR51. University of Florida, IFAS Extension. Behm, A. and M. Duryea. 2003. *Fire in the wildland-urban interface: considering fire in Florida's ecosystems*. University of Florida Institute of Food and Agricultural Services.

Cowardin L., V. Carter, F. Golet, and E. LaRoe. 1979. *Classification of wetlands and deepwater habitats of the United States*. Performed for the U.S. Department of the Interior, Fish and Wildlife Services. FWS/OBS-79/31. December.

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

Eggers, Steve D., and Donald M. Reed. 1997. *Wetland plants and communities of Minnesota and Wisconsin*. U.S. Army Corps of Engineers, St. Paul District. Jamestown, ND: Northern Prairie Wildlife Research Center Online. http://www.npwrc.usgs.gov/resource/plants/mnplant/index.htm (Version 03SEP1998).

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

Florida Department of Environmental Protection, 2006. *Wetland delineation chapter 62-340, F.A.C.* Wetland Evaluation and Delineation Section.

FWC, 2007. The "bear" facts. Behavior. Available at http://myfwc.com

DOF. 2007. *Fires by Section/township/range*. Florida. Myakka River District. August 21. Available online at http://www.fl-dof.com/

FNAI and DNR. 1990. *Guide to the natural communities of Florida*. February.

Fuller, B. 2007. City of Punta Gorda, Utility Department. Telephone Conversation with Kim Hermann, Charlotte County Environmental & Extension Services, Natural Resources Division. October 22.

Hipes, D., D. Jackson, K. NeSmith, D. Printiss, and K. Brandt. 2001. *Field guide to the rare animals of Florida*. Florida Natural Areas Inventory.

Miller, K. and B. Stith. 2002. *Florida scrub–jay distribution and habitat in Charlotte County*. Final Report. Center for Avian Conservation, Inc. Contract # 2001000116: Scrub-Jay Survey. December.

Myers, R. and J. Ewel. 1992. *Ecosystems of Florida*. University of Central Florida Press.

National Park Service. 2007. National Register of Historic Places. National Register Information System database. November 14. Available online at http://www.nps.gov/nr/

Peace River Manasota Regional Water Supply Authority. 2007. *Shell Creek Feasibility Study*.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. *Web Soil Survey*. Available online at http://websoilsurvey.nrcs.usda.gov/ accessed 8/22/2007.

Souza, P. USFWS, South Florida Ecological Services Office. Letter to Bruce Loucks, Charlotte County. March 12.

Thaxton, J. and T Hingtgen. 1994. *Response of Florida scrub jays to management of previously abandoned habitat, OSSP -1- DO*. Florida Park Service Annual Report. District 4 Research.

USFWS. 2007a. *National wetlands inventory maps, USGS Quadrangle Cleveland*. Available online at http://www.fws.gov/nwi/

USFWS. 2007b. Scrub jay territory search. Charlotte County. Available online at http://charlottefl.com/ScrubJaySearch/

Williams, I. 2007. Charlotte County, Growth Management Department. Email to Kim Hermann, Charlotte County Natural Resources. December 28.

PRAIRIE CREEK PRESERVE
RESOURCE MANAGEMENT PLAN

Date

June 21, 2010

Prepared by:

Wildlands Conservation

Prepared for:

Charlotte County Environmental &
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Natural Resources Division
25550 Harbor View Road, Suite 2
Port Charlotte, FL 33980-2503

EXECUTIVE SUMMARY

Prairie Creek Preserve is a 1,603-acre preserve located in north central Charlotte County. It is accessible to the public off of Highway 17 (see Figure 1). The site is accessible to the public between dawn and dusk via an entrance along the east side of Highway 17 approximately 6 miles north of I-75. Its central feature is Prairie Creek, which flows in a southwesterly direction where it eventually merges with Shell Creek, and finally the Peace River. The site is predominantly comprised of a mosaic of natural vegetation beginning with the Bottomland Forest that extends along the Creek. The majority of the remainder of the site is dominated by natural upland communities: scrub, scrubby flatwoods, and pine flatwoods. There is an area of improved pasture in the southwest corner and along the eastern boundary. The site was purchased in 2008 with Conservation Charlotte funds.

In addition to the central feature Prairie Creek, the site contains many other natural resources of interest. Scrub is universally recognized as a rare habitat and several listed species are known (scrub jays, gopher tortoise) or likely (eastern indigo snake, Florida sandhill crane, southeastern American kestrel, gopher frog, listed wading birds) to occur.

The well entrenched stream that extends through high, dry land, also equates to a high probability that there are pre-settlement artifacts in and/or along the banks of the Creek.

The preserve's amenities include hiking trails, a horse trail, creek access and a parking area.

During the initial three years (2008-2011), with the option up to five years (through 2013), the majority of the preserve's active site maintenance, including access gate maintenance, road and trail maintenance, parking maintenance, prescribed burning, nuisance exotic species control, and feral hog control, are the responsibility of the Ryals Cattle and Citrus, LLC (tenant) as per the management agreement with the County. In turn, tenant is allowed to continue to graze cattle and conduct minimal agricultural practices as stipulated in the agreement. The county is responsible for oversight of management activities, ecological monitoring, and site security (Charlotte County Sheriff's office).

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ABBREVATIONS AND ACRONYMS

ATV	All-terrain vehicle
CHEC	Charlotte Harbor Environmental Center
DEP	Florida Department of Environmental Protection
DNR	Florida Department of Natural Resources
DOF	Florida Department of Agriculture & Consumer Services Division of Forestry
Easement	Biscayne Trust Conservation Easement
FEMA	Federal Emergency Management Agency
Fire/EMS	Charlotte County Fire and Emergency Medical Services Department
FNAI	Florida Natural Areas Inventory
FWC	Florida Fish and Wildlife Conservation Commission
HCP	Habitat Conservation Plan
MP	Management Plan
Natural Resources	Charlotte County Environmental & Extension Services, Natural Resources Division
NWI	National Wetlands Inventory
Reservoir	Shell Creek Reservoir
Serene Estates	Serene Estates Conservation Easement
SHCA	Strategic Habitat Conservation Area
Sheriff	Charlotte County Sheriff's Office
SWFWMD	Southwest Florida Water Management District
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service

Table 1. List of Acronyms.

1.0 INTRODUCTION

Description and Location

Prairie Creek Preserve is a 1,603-acre preserve located in north central Charlotte County. It is accessible to the public and can be accessed off of Highway 17 (see Figure 1 and Figure 2). Its central feature is Prairie Creek, which flows in a southwesterly direction where it eventually merges with Shell Creek, and finally the Peace River. The site is predominantly comprised of a mosaic of natural vegetation beginning with the Bottomland Swamp that extends along the Creek. The majority of the remainder of the site is dominated by natural upland communities: scrub, scrubby flatwoods, and pine flatwoods. There is an area of improved pasture in the southwest corner and along the eastern boundary. The site was purchased in 2008 with Conservation Charlotte funds.

Conservation Charlotte

The Conservation Charlotte program provides for the acquisition and protection of natural lands. Priority sites within Charlotte County are selected using the following environmental criteria: rarity, connectivity, ecological quality, and manageability, and contribution to protection of a water resource.

Site Significance

The site was nominated because it met the Conservation Charlotte criteria by the Environmentally Sensitive Lands Oversight Committee (ESLOC) primarily because it represented the largest, contiguous, privately owned block of natural xeric (scrub and scrubby flatwoods) habitat remaining in Charlotte County. Scrub, along with scrub endemics (plants and animals that occur in scrub), is one of the rarest habitats on earth. Land uses adjacent to the property are predominantly rural or low density residential thus enabling land managers to use the practice of prescribed fire in managing the pyrogenic (fire loving) natural plant communities. Furthermore, the site extends along Prairie Creek, a major tributary to the Peace River.

2.0 PURPOSE

The goal of purchasing and managing Prairie Creek Preserve is to preserve, restore, enhance, and maintain the site's natural plant communities to a condition suitable for maintaining viable populations of all species indigenous to the Preserve's habitats as well as to introduce consistent and compatible public education and passive resource-based recreation.

To achieve this goal, there are several management O*bjectives:*

1. Continue to re-establish normal burn regimes in all natural plant communities.

2. Continue to establish an exotic species removal plan for both plants and animals.

3. Continue to manage the scrub and scrubby flatwoods areas for Florida scrub jays, a federally listed species that has been observed on site, as prescribed in the Ecology and development-related habitat requirements of the Florida scrub jay (Fitzpatrick et al., 1991.)

4. Continue to manage for all other listed species that have been documented on site or that may potentially occur including, but not limited to the gopher frog, gopher tortoise, eastern indigo snake, Florida pine snake, Florida sandhill crane, southeastern American kestrel, wood stork, white ibis, little blue heron, tricolored heron, roseate spoonbill, and Florida mouse.

5. Continue to support passive recreational activities (e.g. hiking, horseback riding, nature appreciation) that are compatible with ecological management.

6. Continue to establish and promote educational programs, interpretive literature, and signage which explain the site's history. This is being achieved through coordination with local and state environmental organizations as well as local universities.

7. Continue to maintain the site's park-related infrastructure including: site security (fencing), appropriate access, a parking area, boundary signage, fire lanes, and a trail network.

8. Continue to conserve soil and water through control and prevention of soil erosion.

Site acquisition and ecological resource management meets several of the goals and objectives identified in the Charlotte County Comprehensive Plan. More specific objectives are listed below.

Chapter 1. Future Land Use Element

Policy 2.2.25 *(Modified by Ordinance # 2008-019, Adopted on February 19, 2008)***:** The following designations shall be used for environmentally sensitive lands:

Preservation
These areas will be maintained as public and private aquatic preserves, wilderness areas, wildlife sanctuaries, and similar uses for the protection of open spaces, natural lands, rivers and watersheds. Allowable development activities include those necessary for management of the resource and limited public access, and sparse residential use. Uses permitted in preservation areas shall be primarily of a passive nature, related to the aesthetic, educational and scientific enjoyment of the natural resources. Development identified within an approved land management plan of a public land management agency that uphold the allowable development activities listed above are considered consistent with this designation.

Chapter 3. Natural Resource and Coastal Planning Element

Objective 1.8 *(Amended on July 13, 1999, Ordinance #99-031)***:** Charlotte County shall protect existing natural reserves, preserves, and resource conservation areas, and will encourage the establishment of greenways by linking conservation and recreational lands along natural landscape features including, but not limited to, rivers, streams, shorelines, wildlife corridors, and man-made corridors such as abandoned railroad right-of-ways.

Chapter 5. Recreation and Open Space Element

Objective 1.4 (Management): Protect and maintain open space and parkland that will conserve forests, wetlands, fish, marine life, and wildlife and in order to retain their environmental, economic, aesthetic and recreational values.

Management Authority and Responsibility

Management of Prairie Creek Preserve is ultimately the responsibility of the Charlotte County Parks and Natural Resources Division of the Community Services Department. However, primary management responsibilities fall on to the Ryals Citrus and Cattle LLC, for the initial three years (2008-2011) with a mutually agreeable option to continue for two one year cycles. The details of this arrangement are spelled out in the Agreement between the County (the landlord) and the tenant (the Ryals Citrus and Cattle LLC). The Tenant is the previous land owner of the property. This agreement is summarized in **5.0 Management Needs** Section of this report.

3.0 NATURAL RESOURCES

Location and Setting

Prairie Creek Preserve is located in the rural eastern portion of the county (See Figure 1 and Figure 2). It can be accessed off of SR 17. There is also management access to the east through Prairie Creek Estates.

Climate

The climate of Charlotte County is oceanic and subtropical. The temperature is influenced by latitude, low elevation, winds that sweep across the peninsula, and proximity to the Gulf of Mexico. Consequently, the climate is characterized by high relative humidity, short mild winters, long warm summers, and rainfall that is abundant throughout the year, but is heaviest from June through September (Henderson, 1984).

Topography
(Figure 3)

The site's elevation is lowest on Prairie Creek at the southern boundary of the property (5' above sea level) and rises to a high of over 30' above sea level in the northeast (USGS Topographical data, 2010). In general, the lands along the steeply incised Creek rise steeply and then gently slope downward away from the Creek. The Creek floodplain contains many old river meander scars and oxbows.

3.1 Natural Communities

(Figure 4)
Plant communities are categorized by soil moisture regimes: xeric (sand pine scrub, scrubby flatwoods), mesic (pine flatwoods, palmetto prairie, mesic hammock), and hydric (mixed hardwood swamp, freshwater marsh).

Xeric.

(Sand Pine) Scrub. This habitat is relatively rare off the Lake Wales Ridge. When managed properly, it has an open overstory of sand pine (*Pinus clausa*), and is overwhelmingly dominated by various oaks in the shrub strata including: sand live oak, runner oak, myrtle oak, Chapman oak, and scrub oak, as well as rosemary. Scrub typically burns between every 10 and 25 years. The ground strata is sparsely vegetated and there are typically areas of open sand with sparse herbaceous vegetation. Wildlife species common to scrub include: scrub lizard, six-lined racerunner, coachwhip, eastern diamondback rattlesnake, white-eyed vireo, eastern towhee, Florida scrub jay, downy woodpecker, cotton rat, and southern flying squirrel.

Scrubby Flatwoods. Scrubby flatwoods are actually a xeric community that has characteristics of both pine flatwoods (sparse slash pine overstory, occurrence of wiregrass, dense shrub strata) and scrub (common scrub oaks and xeric soils. Species documented in these areas is slash pine (*Pinus elliottii*), with a dense shrub strata of saw palmetto, runner oak, sand live oak, myrtle oak, blueberry (*Vaccinium* sp.), and rusty lyonia. The herbaceous strata is sparse – however broom sedge, wiregrass, and paintbrush (*Carphephorus corymbosum*) are common. This habitat type burns on a 2 to 4 year burn regime (Wade, ND). Wildlife that are common in scrubby flatwoods include: oak toad, southern toad, six-lined racerunner, pygmy rattlesnake, Florida scrub jay, white-eyed vireo, ground dove, cotton rat, and Florida mouse.

Mesic.

Pine (Mesic) Flatwoods. This area is dominated by a sparse overstory of slash pine with a dominant shrub strata of palmetto and oaks, including sand live oak, St. John's wort (*Hypericum fasciculatum*) and wax myrtle (*Myrica cerifera*). Common species in the herbaceous strata are runner oak, elaphantopus, broom sedge, wiregrass, and dog fennel (*Eupatorium* spp.). This area should be burned on a one to three year burn interval. Typical wildlife that inhabit flatwoods include: squirrel treefrog, five-lined skink, green anole, eastern towhee, Bachman's sparrow, red-bellied woodpecker, cotton mouse, and cotton rat.

Palmetto Prairie. These areas are vegetatively similar in composition to pine flatwoods without the overstory of slash pine. This lack of a pine canopy is typically due to past timber practices coupled with frequent burning that prohibits pines from growing to maturity. Typical species that occur in palmetto prairies maintained with frequent fire include: squirrel treefrog, green anole, Bachman's sparrow, white-eyed vireo, common yellowthroat, eastern towhee, cotton mouse, and cotton rat.

Hydric.

Bottomland Forest. These areas on the Preserve are typically characterized as well developed hardwoods and cabbage palm (*Sabal palmetto*) forest, with a variable understory of palms and ferns. Typical plants include cabbage palm, laurel oak (*Quercus laurifolia*), red cedar (*Juniperus virginiana*), red maple (*Acer rubrum*), swamp bay (*Persea palustris*), sweetbay (*Magnolia virginiana*), water oak (*Quercus nigra*), southern magnolia (*Magnolia grandiflora*), wax myrtle (*Morella cerifera*), saw palmetto, bluestem palmetto (*Sabal minor*), needle palm (*Rhapidophyllum hystrix*), poison ivy (*Toxicodendron radicans*), dahoon holly (*Ilex cassine*), myrsine (*Myrsine floridana*), hackberry (*Celtis* spp.), sweetgum (*Liquidambar styraciflua*), American elm (*Ulmus americana*), peppervine (*Ampelopsis arborea*), and cinnamon fern (*Osmunda cinnamomea*). Historic land management practices are likely to have altered the site's hydrology resulting in a less frequently flooded water regime, however in general the site is minimally disturbed in this regard. Typical species in large, floodplain forests such as this include: several species of treefrogs, ground skink, barred owl, pileated woodpecker, red-eyed vireo, and woodrat, raccoon, and white-tailed deer.

Basin Swamp. There is one small wetland on the west side which has succeeded into willow (*Salix caroliniana*) and primrose willow (*Ludwigia peruviana*), a nuisance exotic species. The effects of fire suppression can be alleviated w/ the application of prescribed fire. Application of fire will restore this swamp to freshwater marsh as described below.

Depressional (Freshwater) Marsh. These basin-shaped wetlands dot the property and are predominantly dominated by habitats that exhibit zonation. The outer zone is typically dominated by prairie cordgrass (*Spartina bakeri*) and St. John's wort (*Hypericum fasciculatum*). The next zone in is dominated by maidencane (*Panicum hemotomum*), smartweed (*Polygonum* spp.), bog buttons, and spike rush (*Eleocharis* spp.), and the interior zone is dominated by pickerelweed and arrowhead (*Sagitarria lancifolia*). These areas, which are often void of fish (predation) are optimal breeding grounds for the listed gopher frog (*Rana capito*).

Wetland areas have also been mapped as per the U.S. Fish and Wildlife's National Wetland Inventory (See Figure 5).

3. 2 Wildlife

All wildlife species (terrestrial vertebrates) that are likely to occur at Prairie Creek Preserve are listed in Appendix B. Potential species occurrence is based on known geographic distribution and habitat utilization of each species. Federal and State listings as well as scientific names are provided within these four tables: B-1 Amphibians, B-2 Reptiles, B-3 Birds, and B-4 Mammals. Only bats were omitted from these tables because their foraging habitats occur over most habitats.

Inventory Needs

Well-managed scrub and scrubby flatwoods are relatively rare natural plant communities. Scrub and dry prairie (although in this case cut over pine flatwoods) are ranked by the Florida Natural Areas Inventory (FNAI) as G2, which is defined as: "imperiled globally because of rarity or because of vulnerability to extinction due to some natural or man-made factor." When a habitat is imperiled globally, it follows that endemic species adapted to life for all or a portion of their life cycle, are also in turn imperiled. Consequently, it is incumbent upon the County to coordinate with the local non-profit groups to ensure that all habitats, with special emphasis on scrub shall be inventoried.

Additionally, in a manner consistent with the monitoring strategies of other natural lands in Charlotte County, periodic monitoring assessments may be employed to identify baseline wildlife utilization and track changes in this utilization through time.

The County shall also conduct post-burn evaluations to assess the results of prescribed burning and track the response of each burn unit to the application of fire.

With respect to nuisance exotic species, County staff familiar with all potential nuisance exotic species shall identify any locations using a geographic positioning system (GPS) and treat using standards outlined by the Florida Exotic Pest Plant Council (FLEPPC).

In addition to these general monitoring activities, species-specific survey techniques can be employed to track species of interest, most notably species that are either listed or are indicators of healthy conditions in a given habitat. Collectively, application of the species-specific surveys such as those briefly described below can provide managers with key indicators to the health of the habitats and wildlife populations that inhabit the preserve.

Gopher frog

When surveying for tortoise, particularly in the vicinity of marsh habitats, surveyors should look for gopher frog, which live in tortoise burrows for a large portion of their life cycle. They may also be documented by listening for their snoring call in freshwater marsh systems that typically occur near xeric areas occupied by gopher tortoise. The snore call is most often heard after rains, particularly the rare winter rains that occur in December (Franz, 1986).

Gopher tortoise

Surveys should be conducted by burn unit subsequent to the application of a prescribed burn. This is the easiest time to survey and will provide the most accurate results. Burrow locations shall be recorded using GPS and burrow sizes may be measured to provide some idea with respect to the demographics of the existing population. Through time, monitoring the tortoise population may provide valuable feedback as to effectiveness of management (FWC, 2007).

Florida sandhill crane

In addition to the gopher frog, which may occur on site, due to the excellent breeding marshes and adjacent scrub, there are many depressional marshes that are suitable for sandhill crane nesting. The marshes are additionally good nesting habitat because of the close proximity of good foraging habitat – improved pasture is one of their preferred foraging habitats. When surveys are conducted in the depressional marshes, they should be surveyed between January and April to determine if cranes are nesting on site (Stys, 1997).

Florida scrub jay
(Figure 6)
In concert with the countywide scrub jay Habitat Conservation Plan (HCP) being developed for scrub jays, the scrub jay population at Prairie Creek needs to be monitored as prescribed in the approved HCP.

Southeastern American Kestrel

The subspecies of American kestrel that nests in Florida is a state-listed bird and good nesting and foraging habitat occur within the Preserve's boundaries. The kestrel may forage over open areas, such as hydric and pine flatwoods, palmetto prairie, open scrub and scrubby flatwoods, and improved pasture. The kestrel typically nests in abandoned pileated or red-bellied woodpecker holes in snags. When practicable, snags should be protected to provide nesting habitat for kestrels (Stys, 1993).

Bachman's sparrow

The Bachman's sparrow is an indicator of well-managed palmetto prairie and pine flatwoods. Spring surveys shall be conducted in each flatwoods polygon to determine absence/presence of this species. Singing males in the spring are an indication of nesting activity (USFWS, 1999).

3.3 Soils

(Figure 7)

There are twelve soil types on this site, categorized into three general soil moisture classifications: xeric, mesic, and hydric (Hyde, *et al.*, 1991).

Xeric

61 - Orsino Fine Sand. This is a nearly level, moderately well drained soil that occurs on ridges. In most years, under natural conditions, the water table is within 40 to 60 inches of the surface for about 3 months and between 60 and 80 inches of the surface for about 9 months. Permeability is rapid. This soil type corresponds with sand pine scrub on site.

76 - Electra Fine Sand. This is a nearly level, somewhat poorly drained soil that occurs on knolls and ridges. In most years, under natural conditions, the water table is within 24 to 40 inches of the surface for between 2 and 6 months and between 40 and 72 inches for 6 months or more. Permeability is rapid. This soil type corresponds with scrubby flatwoods on site.

Mesic

9 - Eugallie Fine Sand. This is a nearly level, poorly drained soil that typically occurs in pine flatwoods. In most years, under natural conditions, the water table is within 10 inches of the surface for 2 to 4 months and 10 to 40 inches below the surface for over 6 months. This soil type corresponds to pine flatwoods and palmetto prairie (cut over flatwoods).

11 - Myakka Fine Sand. This is a nearly level, poorly drained soil that typically occurs in pine flatwoods. In most years, under natural conditions, the water table is within 10 inches of the surface for 1 to 3 months and 10 to 40 inches below the surface for 2 to 6 months. This soil type corresponds to pine flatwoods.

28 – Immokalee Sand. This is a nearly level, poorly drained soil that typically occurs in pine flatwoods. In most years, under natural conditions, the water table is within 10 inches of the surface for 1 to 3 months and 10 to 40 inches below the surface for 2 to 6 months. This soil type corresponds to pine flatwoods.

33 – Oldsmar Sand. This is a nearly level, poorly drained soil that typically occurs in broad flatwoods areas. In most years, under natural conditions, the water table is within 10 inches of the surface for 1 to 3 months and 10 to 40 inches below the surface for more than 6 months. This soil type corresponds to pine flatwoods.

43 – Smyrna Fine Sand. This is a nearly level, poorly drained soil that typically occurs in broad flatwoods areas. In most years, under natural conditions, the water table is within 10 inches of the surface for 1 to 3 months and 10 to 40 inches below the surface for between 2 and 6 months. This soil type corresponds to pine flatwoods on site.

63 – Malabar Fine Sand, High. This is a nearly level, poorly drained soil that typically occurs in broad flatwoods areas. In most years, under natural conditions, the water table is within 10 to 40 inches of the surface for 4 to 6 months. This soil type corresponds to pine flatwoods.

Hydric

26 - Pineda Fine Sand. This is a nearly level, poorly drained soil that occurs in sloughs. In most years, the water table is within 10 inches of the surface for 2 to 4 months and within 10 to 40 inches for more than 6 months. During periods of heavy rainfall, this soil is covered by slowly moving shallow water for periods ranging from about one week to one month. This soil type corresponds to the bottomland forest on site.

34 – Malabar Fine Sand. This is a nearly level, poorly drained soil that occurs in sloughs. In most years, the water table is within 10 inches of the surface for 2 to 4 months and within 10 to 40 inches for more than 6 months. During periods of heavy rainfall, this soil is covered by slowly moving shallow water for periods ranging from about one week to one month. This soil type corresponds to hydric flatwoods and bottomland hardwoods on site.

40 - Anclote Sand, Depressional. This is a nearly level, very poorly drained soil that occurs in isolated depressions. that occurs in sloughs. In most years, under normal conditions, the soil is ponded for more than 6 months. This soil type corresponds with freshwater marsh on site.

53 – Myakka, Depressional. This is a nearly level, poorly drained soil that occurs in depressions. In most years, under natural conditions, the soil is ponded for between 3 and 6 months. On site, this soil type corresponds with freshwater marsh in the pine flatwoods areas.

3.4 Invasive/Exotic Species

Plants.

Prairie Creek Preserve is surrounded by agricultural and suburban land use. It is susceptible to invasive nuisance species dispersed by birds and other wildlife (e.g., feral hogs) as well as invasives introduced on adjacent or nearby lands that are dispersed by wind or water. Despite all of the opportunities, nuisance exotic encroachment is sparse and staff eradicates nuisance exotics upon documentation. This is the best method of controlling any exotics that typically spread aggressively. Application of the most recent treatment recommendations by species are available via the FLEPPC web site (http://www.fleppc.org/).

The following Category I and Category II nuisance exotic species (as defined by FLEPPC, 2009) have not all been documented on the site but may potentially occur. Staff familiar with these species by sight will continue to monitor the site and eradicate when identified.

Category I species: Invasive exotics that are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives.

Category II species: Invasive exotics that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species.

Category I Species

Potential Category 1 Species at Prairie Creek Preserve include: Asian sword fern (*Nephrolepis brownii*), Tuberous sword fern (*Nephrolepsis cordifolia*), Japanese climbing fern (Lygodium japonicum), Old World climbing fern (*Lygodium microphyllum*), water-lettuce (*Pistia stratiotes*), air potato (*Dioscorea bulbifera),* cogongrass (*Imperata cylindrical*), torpedograss (*panicum repens*), elephantgrass (*Pennisetum purpureum*), rose natalgrass (*rhynchelytrum repens*), paragrass (*Urochloa mutica*), common water-hyacinth (*Eichhornia crassipes*), Brazilian pepper (*Schinus terebinthifolius*), camphortree (*Cinnamomum camphora*), primrose willow (*Ludwigia peruviana*), carrotwood (*Cupaniopsis anacardioides*), skunkvine (*Paederia foetida),*and lantana (*Lantana camara*), and melaleuca (*Melaleuca quinquenervia*).

Category II Species

Potential Category 2 Species at Prairie Creek include: Senegal date palm (*Phoenix reclinata*), guineagrass (*Panicum maximum*), alligatorweed (*Alternantera philoxeroides*), elegant dutchman's-pipe (*Aristolochia littoralis*), wax begonia (*Begonia cucullata*), castorbean (*Ricinus communis*), Indian rosewood (*Dalbergia sissoo*), white leadtree (*Leucaena leucocephala*), ceaserweed (*Urena lobata*), chinaberrytree (*Melia azedarach*), twoleaf nightshade (*Solanum diphyllum*), and turkeyberry (*Solanum torvum*).

Prevention is of course the most effective method of control, and so, an early detection program and control of populations of these and future exotic nuisance species populations must be of primary concern to land managers. Currently, efforts to eradicate these Category I species closely parallel the exotic species control plans recommended by FLEPPC.

Feral Animal Control

The presence of feral animals on environmentally sensitive lands can prove to be detrimental. Feral animals cause damage to native habitats and compete with wildlife, resulting in reduced populations of desirable species. In a rural setting with multiple land uses such as where the Preserve is situated, there is the potential for a variety of feral animals to be encountered on site, including wild hogs (*Sus scrofa*), exotic iguanas and lizards, dogs, and cats.

Evidence of wild hogs has been observed on the Preserve. Regular visits by land management staff will include surveys for hogs and other feral animals. Should hog activity and populations reach destructive levels, a contract shall be secured for their live-trapping and removal from the Preserve.

3.5 Conservation Easement Management

Please refer to **Section 5. Management Needs**

3.6 Water Quality Protection

Prairie Creek is the distinguishing hydrologic feature on the Preserve. Historic oxbows are evident in the soil configurations. For the most part, Prairie Creek and its floodplain are defined by steep, well entrenched

and easily eroded banks that are topped by natural high, dry hardwood river hammock. Beyond this hammock, which extends along a natural river berm, are several hardwood swamps and intermittently flowing waterways that outlet on Prairie Creek. Prairie Creek is a major tributary to the Peace River, which eventually flows into Charlotte Harbor.

3.7 Connectivity to other Conservation Lands

(Figure 8)

Prairie Creek Preserve is isolated from other public lands but located within the acquisition priority area for both Charlotte County and the SWFWMD (See Figure 3). Within the Peace River watershed, there are several properties that are in public ownership: the Babcock/Webb Wildlife Management Area, portions of the Charlotte Harbor Buffer State Park, Charlotte County's Shell Creek Preserve, as well as District lands.

3.8 Archeological, Cultural, and Historical Resources

Because of the high, dry banks that extend along Prairie Creek, it is expected that Native Americans as well as Euro- and Afro-Americans utilized the site. A first phase survey
that identifies high probability sites is recommended within the next 5 years of management.

4.0 RESOURCE ENHANCEMENT

Prairie Creek Preserve has been actively managed with fire since the 1920's. There are very few resource enhancement needs. The primary resource enhancement objective is to reduce the effects of fire suppression and gradually transition the property from a land management objective conducive with agricultural uses to more ecological management. This shifts the majority of the prescribed burning to the growing season (through time) and increases the emphasis on the removal of nuisance exotic species. Once fuel reduction burns have been completed in the areas where fuel build up is significant, most burns will be conducted in the growing season.

5.0 MANAGEMENT NEEDS

The Interim Management Plan developed between the County (herein referred to as the Landlord) and the Ryals Citrus and Cattle, LLC outlined the requirements and limitations to continued use by Ryals Citrus and Cattle, LLC (herein referred to as the Tenant) in exchange for land management services and access road maintenance to be provided at no cost to the County. This agreement lasts until 2011 with options to continue for an additional two years.

<u>Responsibilities, Reservations and Approved Activities</u>

a. The Tenant will continue the 3-5 year fire regime as has been the custom since the 1920's. Figure 9 identifies the burn units and the location of firelines which shall be maintained by the Tenant. The County will review and approve burn prescriptions prior to burns being conducted;

b. The Tenant will be permitted to continue to graze the property. The annual stocking density shall be limited to 1 animal unit per 20 acres. A high intensity – low frequency grazing plan will be implemented. Continuous grazing will not be permitted. No supplemental feed or minerals will be brought in; which means that no more than 500 animal units will be grazed for no longer than two months per site;

c. Unrestrictive public access will be allowed in designated areas and specified trails/fire breaks. A public parking area has been constructed and is being maintained in the location as agreed upon by the Landlord and Tenant (See Figure 10).

d. The Landlord reserves the right to conduct or permit others to conduct ecological or cultural tourism activities on the property during the term of lease by appointment providing notice to the Tenant;

e. The Tenant currently maintains access roads pursuant to standards established by Landlord. The Tenant has already resurfaced the existing access road with a minimum twelve (12) foot wide, four (4) inch deep compacted shell. All construction activities were completed within the first 45 days of the lease period and maintenance shall continue throughout the term of lease;

f. The Tenant will continue feral hog removal during the term of the lease;

g. The Tenant and Landlord reserve the right to non restrictive vehicular access for the purpose of management. All other vehicular access will be limited to existing trails and firelines;

h. Landlord will be permitted unrestricted access to conduct ecological surveys;

i. An annual work plan will be submitted to Landlord. The work plan will report on the interim management plan objectives that have been completed over the course of the year;

j. Exotic vegetation control will continue to be diligently treated throughout lease area by the Tenant. The Landlord will provide an assessment of exotic vegetation on the property and provide technical assistance to the Tenant on the most effective control methods.

k. Landlord reserves all ecological mitigation rights of the property.

Fire Management
(See Figure 9)

Controlled fire has been utilized as a land management tool on the Ryals property, since the 1920's. Prescribed fire has been introduced on a 3-5 year fire regime in pine flatwoods and palmetto prairie habitats, and the surrounding pyrogenic communities have burned as accumulated fuel loads allow fire to carry from the pine flatwoods and palmetto prairies into habitats such as scrub, mesic hammock, and herbaceous and shrub wetlands. Scrub habitats are expected to burn when enough fuel has accumulated to allow fire to pass through these habitats from fires introduced into the pine flatwoods and palmetto prairie habitats. Generally, scrub habitats will burn every 7 - 20 years.

Burn Schedule

The Tenant will continue to implement a 3 to 5 year fire return interval program. Within this program it is anticipated that palmetto prairie and pine flatwoods communities will burn each time fire is introduced. As fuel loads and conditions dictate, scrub habitats will burn every 7 to 20 years. It is understood that continuation of this regime will result in incomplete burns by unit maintaining a habitat mosaic.

The property has been divided into 3 Burn Units as depicted in Figure 9. Efforts will be concentrated in one burn unit each year thereby establishing a possible 3 year interval. Up to two one-year extensions may be granted concurrent extension(s) of the initial lease period where necessary to accommodate under performance by Tenant on an annual basis due to conditions beyond the Tenant's control.

Challenges to fire management include development to the south in Prairie Creek Park and Estates subdivisions. Much overgrown habitat occurs along this south line as best practices preclude the "hot" fires required to safely manage.

Burn Unit	Sub Unit	Acres	Previous Burn Date	Projected Burn Date
1	A	191	February 2006	2010/2010
	B	268		2010/2010
	C	121		2011/2012
2	A	114	February 2008	2009
	B	90	"	2008
	C	107	"	2009
	D	148	"	2008
	E	162	February 2007	
3	A	156	February 2007 January 2010	2013/2014
	B	131	February 2003	2009-2011
	C	153	March 2010	2013-2014

Table 2. Burn Schedule

Fire Breaks

The perimeter burn lines are in place and have proven effective over the decades. Very few burn lines are present internally within the site and those present are utilized as access trails, and are disked prior to control burns. Figure 9 provides additional detail related to fire break locations. No additional permanent burn lines are proposed.

Other Management Techniques

In an effort to reduce or eliminate the effects of fire suppression the County reserves the right to apply several other mechanical treatment management strategies.

- Hydro-ax – The Southwest Florida Water Management District has had success conducting one-time only canopy reduction using a hydro-ax or tree mulcher that essentially mulches targeted trees thus reducing the canopy. The benefit to this method of mechanical thinning is that it leaves no large-fuel loads. The fuels are essentially reduced to mulch, which decompose quicker due to the increased surface to area ration. Those that have used it in the past recommend it as an initial phase in that repeated use of this, or any other heavy equipment tends to impact the micro-topography of the treatment unit. The use of a hydro-ax, or an equivalent tree mulcher, would require either rental of the equipment or hiring a contractor qualified to conduct this specialized treatment.
- Roller-chopping – This method has been applied at Tippicanoe Preserve and is also an effective mechanism for reducing canopy, particularly the shrub canopy strata. This does however leave fuels on site. The advantages to this method are that the necessary equipment to conduct roller chopping is already owned by the county. As with the hydr-ax, it is recommended as an initial phase in that repeated use of this, or any other heavy equipment tends to impact the micro-topography of the treatment unit.
- Selective removal of trees. This is a useful application on sites that have a dense tree canopy that needs to be thinned for the purposes of ecological management. It is an effective way to reduce canopy densities. It reduces canopy density, reduces fuel loads, and can actually pay for itself in that the timber/forestry company that removes the trees pays for the timber. This is only a useful mechanism where the trees being removed are of value commercially. The downside to the use of this application is that it can only be applied in selected situations and public perceptions are that logging of natural areas is not conducive to ecological management. If this approach is considered, the county should consider preliminary measures to inform the public of the benefits of this action from an ecological management perspective and a cost perspective.

5.1 Coordinated Management

In addition to coordinating all management practices between the County and the tenant, additional coordination shall occur with various entities.

Adjacent land owners

Any and all management strategies that have implications beyond the preserve's boundaries shall be coordinated with adjacent land owners.

US Fish and Wildlife Service

Once the County's scrub jay Habitat Conservation Plan is completed, all strategies identified in the plan related to the Prairie Creek Preserve shall be implemented. This may require ongoing coordination w/ the USFWS.

Volunteer Organizations

Coordination with local groups such as the Native Plant Society, Audubon Societies, and other non-profit groups can provide the County with both valuable data and valuable public-private partnerships. These

types groups may be able to assist the County in both establishing baseline species accounts as well as tracking the success of various management techniques.

Groups such as the Native Plant Society are able to assist with habitat surveys for listed species of plants and nuisance exotic species, both those recognized now, and those that may become an issue in the future.

Other local groups like the Audubon Society are able to assist with birds be surveys throughout the year. The Society may assist to establish routes for the Breeding Bird surveys, the Christmas Bird Counts, southeastern American kestrel surveys (between April and August) and Bachman's sparrow surveys in flatwoods (late spring, early summer).

5.2 Maintenance

Most site maintenance – roadways, access, gates, trails, parking area, nuisance exotic species removal – are the responsibility of the tenant for the term of the easement agreement.

5.3 Security

Security is the shared responsibility of the Charlotte County Sheriff's Department and the Florida Fish and Wildlife Conservation Commission. While both entities patrol, typically the Sherriff's office is responsible for acts of vandalism, unauthorized access, and violations of the Preserve's plainly visible rules. The FWC is patrolling for poaching and/or any other unauthorized actions regarding the preserve's wildlife resources.

5. 4 Staffing

Charlotte County staff is ultimately responsible for all listed species surveys, ecological management oversite, and monitoring activities above and beyond the conditions stipulated in the interim management agreement with the tenant.

At the time of this plan, there are four ecologists that work on the Prairie Creek Preserve.

6.0 COST ESTIMATE AND FUNDING SOURCES

From 2008-2011, with two one year options to extend the agreement, most day to day maintenance activities are the responsibility of the Ryals Cattle and Citrus, LLC. The cost to the County for this management arrangement is the allowance of the tenant to continue minimal agricultural activities on the preserve as stipulated in the management agreement. The additional costs to the County are in house costs associated with the time effort from staff to:

- Identify nuisance exotic species
- Conduct monitoring activities (pre- and post-burn, listed species, ecological assessments, etc.)
- Site Security (Charlotte County Sheriff's office)
- General patrolling

The additional costs that will probably need to be outsourced in the first five years of management is a cultural resources evaluation. The first phase of this exercise can be accomplished for less than $5,000.

7.0 PRIORITY SCHEDULE

Year	2010				2011				2012				2013				2014				2015				2016				2017				2018				2019			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Task																																								
Infrastructure Improvements	Completed																																							
Perscribed burning	Average 4 per year																																							
Monitoring	On going																																							
Archaeological Survey	First phase Assessment																																							
Target Species Monitoring	On going																																							
Exotic Species Monitoring	On going																																							
Exotic Species Control	On going																																							

Table 3. Time line for Management Strategies

8.0 MONITORING AND REPORTING

All management activities conducted by the tenant are reported in an annual report submitted to the County. The County shall also develop an annual report that documents all activities that occur throughout the year. The County annual report shall summarize the tenant's report and provide information related to:

- Prescribed burns and results
- Listed and target species surveys methods and results
- Any listed plant surveys conducted
- Breeding Bird Atlas and Christmas Bird Count results (if conducted)
- Any incidental observations
- Exotic species treatment and monitoring results
- Any other activities of note.

9.0 REFERENCES

Ashton, R.E and P.S. Ashton. 1988. Handbook of reptiles and amphibians of Florida. part one: the snakes. Windward Publishing Inc. Miami, FL.

Ashton, R.E and P.S. Ashton. 1988. Handbook of reptiles and amphibians of Florida. part two: lizards, turtles and crocodilians. Windward Publishing, Inc. Miami, FL.

Ashton, R.E and P.S. Ashton. 1988. Handbook of reptiles and amphibians of Florida. part three: the amphibians. Windward Publishing, Inc. Miami, FL.

Belden, R.C. 1997. Feral hogs: the Florida Experience, Florida Game and Fresh Water Fish Commission, Gainesville.

Burt, W.H. and R.P. Grossenheider (1998). A field guide to the mammals of North America north of Mexico. 3rd ed. 289 pp. The Peterson Field Guide Series. Houghton Mifflin Co. Boston.

Chafin, L. 200. Field guide to the rare plants of Florida. Florida Natural Areas Inventory, Tallahassee, FL

Coile, N. 2003. Notes on Florida's Endangered and Threatened Plants. 4th Ed. updated by M. Garland. http://www.virtualherbarium.org/EPAC/endangered.html

Conant, R. and J.T. Collins (1991). A field guide to reptiles and amphibians of eastern and central North America. 3rd ed. 450 pp. Peterson Field Guide Series. Houghton Mifflin Co. Boston and New York.

Crother, B. I. (2008). Scientific and standard English names of amphibians and reptiles of North America north of Mexico, with comments regarding confidence in our understanding. 6th ed. Society for the Study of Amphibians and Reptiles Herpetological Circular No. 37. 94 pp.

Dray, F.A. and T. D. Center. 2002. Invasive plants of the eastern United States. Water lettuce. http://www.invasive.org/eastern/biocontrol/5Waterlettuce.html

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

Florida Chapter Soil and Water Conservation Society. 1989 (revised). Twenty-six (26) Ecological Communities of Florida. Gainesville, FL 32602.

Florida Division of Forestry. nd. Basic Prescribed Fire Training Manual. Tallahassee, FL.

Florida Exotic Pest Plant Council (FLEPPC). 1999 (3rd Ed.) Melaleuca Management Plan. F. Laroche (ed.), Tallassee, FL.

FLEPPC. 2009. List of Florida's Invasive Plant Species. Florida Exotic Pest Plant Council. Internet: http://www.fleppc.org/list/09list.htm or *Wildland Weeds* Vol. 10(4), Fall 2009.

Florida Fish and Wildlife Conservation Commission, U.S. Fish and Wildlife Service, Florida Natural Areas Inventory, July 2009 (updated annually) Florida Wildlife Conservation Guide. [*Various Species Profiles]*., Tallahassee, FL or by web: http://myfwc.com/CONSERVATION/fwcg/index_files/

Florida Fish and Wildlife Conservation Commission (FWC), 2007. Gopher Tortoise Management Plan, Tallahassee, FL.

Florida Fish and Wildlife Conservation Commission. 2009. Scrub Management Guidelines for Peninsular Fl.: Using the Scrub-jay as Umbrella Species, Tallahassee, FL

Florida Natural Areas Inventory and Florida Department of Natural Resources. 1990. Guide to the natural communities of Florida, Florida Natural Areas Inventory, Tallahassee, FL

Franz, R. 1986. The Florida gopher frog and the Florida pine snake as burrow associates of the gopher tortoise in northern Florida. Pp. 16-20 *in* D.R. Jackson and R. J. Bryant (eds.). The gopher tortoise and its community. Proc. 5th Ann. Mtg. Gopher Tortoise Council.

Gruver, Bradley J., Ph.D., Listed Species Coordinator, Species of Conservation Planning Section, Division of Habitat and Species Conservation, Florida Fish and Wildlife Conservation Commission. 2009. Florida's Endangered Species, Threatened Species, and Species of Special Concern. Florida Fish and Wildlife Conservation Commission.

Hardin, S. 2007. Managing non-native wildlife in Florida: state perspective, policy and practice in Managing Vertebrate Invasive Species: Proceedings of an International Symposium (G. W. Witmer, W. C. Pitt,K. A. Fagerstone, Eds). USDA/APHIS/WS, National Wildlife Research Center, Fort Collins, CO

Henderson, W.G., 1984. Soil Survey of Charlotte County, FL. United States Department of Agriculture Soil Conservation Service in cooperation with the University of Florida, Institute of Food and Agricultural Sciences, Agricultural Experimental Stations, and Soil Science Department; and the Florida Department of Agriculture and Consumer Services, Sarasota Soil and Water Conservation District, Sarasota.

Jones Jr., J.K., R.S. Hoffman, D.W. Rice, C. Jones, R.J. Baker, and M.D. Engstrom. 1992. Revised Checklist of North American mammals north of Mexico, 2003. Occ. Papers Mus. Texas Tech. Univ. No. 229:1-24. Lubbock, Tex.

Kantola, A. T., and S. R. Humphrey. 1990. Habitat use by Sherman's fox squirrel (*Sciurus niger shermani*) in Florida. J. Mammal. 71:411-419.

Langleland K.A. and K.C. Burks (editors). 1998. Indentification and biology of non-native plants in Florida's natural areas. University of Florida, Gainesville.

Langleland, K.A. and R.K. Stocker. 1997, revised 2009. Control of non-native plants in natural areas of Florida, SP 252., Dept. of Agronomy, FL Coopeartive Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville.

Layne, J. L., J. A. Stallcup, G. E. Woolfenden, M. N. McCauley. 1977. Fish and wildlife inventory of the seven-county region included in the central Florida phosphate industry areawide environmental impact study. U. S. Fish and Wildlife Service Contract No. 14-16-0009-77-005.

Layne, J. L. 1990. The Florida mouse. pp 1-21. *in* Dodd, C. K., R. E. Ashton, Jr., R. Franz, E. Webster (eds.). Burrow associates of the gopher tortoise. Proc. 8th Ann. Mtg. Gopher Tortoise Council.

Mitsch, W.J., and J.G. Gosselink. 1993. Wetlands. ITP. New York, N.Y.

Moler, P.E. 1985. Distribution of the eastern indigo snake, *Drymarchon corais couperi*, in Florida. Herpetol. Rev. 16(2): 37-38.

Myers, R.L., J.J. Ewel. 1990. Ecosystems of Florida. University of Central Florida Press, Gainesville, FL.

Peterson, R.T. and V.M. Peterson (2002). A field guide to the birds of eastern and central North America. 5th ed. 429 pp. Peterson Field Guide Series. Houghton Mifflin Co. New York.

Robertson, Jr., W.B., G.E. Woolfenden. 1992. Florida bird species: an annotated list. Florida Ornithological Society, Special Pub. No. 6. Gainesville, FL.

Sibley, D. A. (2000). National Audubon Society The Sibley guide to birds. 545 pp. Chanticleer Press, Inc., Alfred A. Knopf, Inc. New York.

Stys, B. 1993. Ecology and habitat protection needs of the southeastern American kestrel (*Falco sparverius paulus*) on large-scale development sites in Florida. Florida Game and Fresh Water Fish Commission, Nongame Wildlife Program Technical Report No. 13. Tallahassee, FL.

Stys, B. 1997. Ecology of the Florida sandhill crane. Nongame Wildlife Technical Report No. 15. Office of Environmental Services, Florida Game and Fresh Water Fish Commission, Tallahassee, FL

United States Geological Survey, 2010. USGS Topographical Maps. http://www.terraserver.com/

U.S. Fish and Wildlife Service. 1999. South Florida multi-species recovery plan. USFWS, Southeast Region, Atlanta, GA.

Van Driesche, R., *et al.*, 2002, Biological Control of Invasive Plants in the Eastern United States, USDA Forest Service Publication FHTET-2002-04, 413 p.

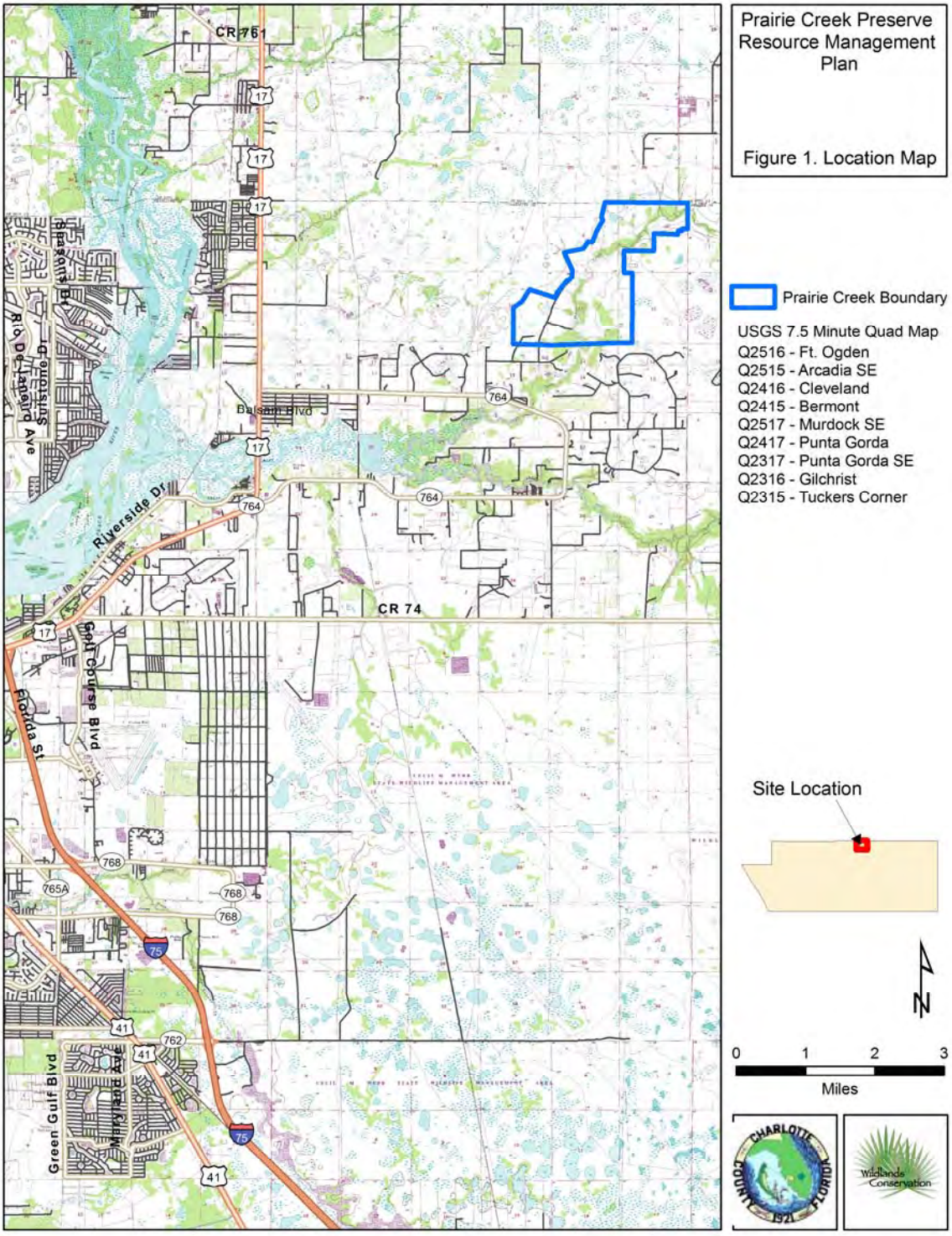
Wade, D.D. and J.D. Lunsford. 1989. A guide for prescribed fire in southern forests. USDA Forest Service Southern Region. Technical Publication R8-TP 11.

Woolfenden, G. E., and J. W. Fitzpatrick. 1996. Florida scrub-jay (*Aphelocoma coerulescens*). Account 228 *in* A. Poole and F. Gill, editors. The Birds of North America, The Academy of Natural Sciences, Philadelphia, Pennsylvania, and The American Ornithologists' Union, Washington, D.C., USA.

Wunderlin, R. P., and B. F. Hansen. 2003. *Guide to the Vascular Plants of Florida, Second Edition*. University Press of Florida, Gainesville.

Wunderlin, R. P., and B. F. Hansen. 2008. *Atlas of Florida Vascular Plants* (http://www.plantatlas.usf.edu/).[S. M. Landry and K. N. Campbell (application development), Florida Center for Community Design and Research.] Institute for Systematic Botany, University of South Florida, Tampa

FIGURES


Prairie Creek Preserve
Resource Management
Plan
Figure 1. Location Map
Prairie Creek Boundary
USGS 7.5 Minute Quad Map
Q2516 - Ft. Ogden
Q2515 - Arcadia SE
Q2416 - Cleveland
Q2415 - Bermont
Q2517 - Murdock SE
Q2417 - Punta Gorda
Q2317 - Punta Gorda SE
Q2316 - Gilchrist
Q2315 - Tuckers Corner
Site Location
N
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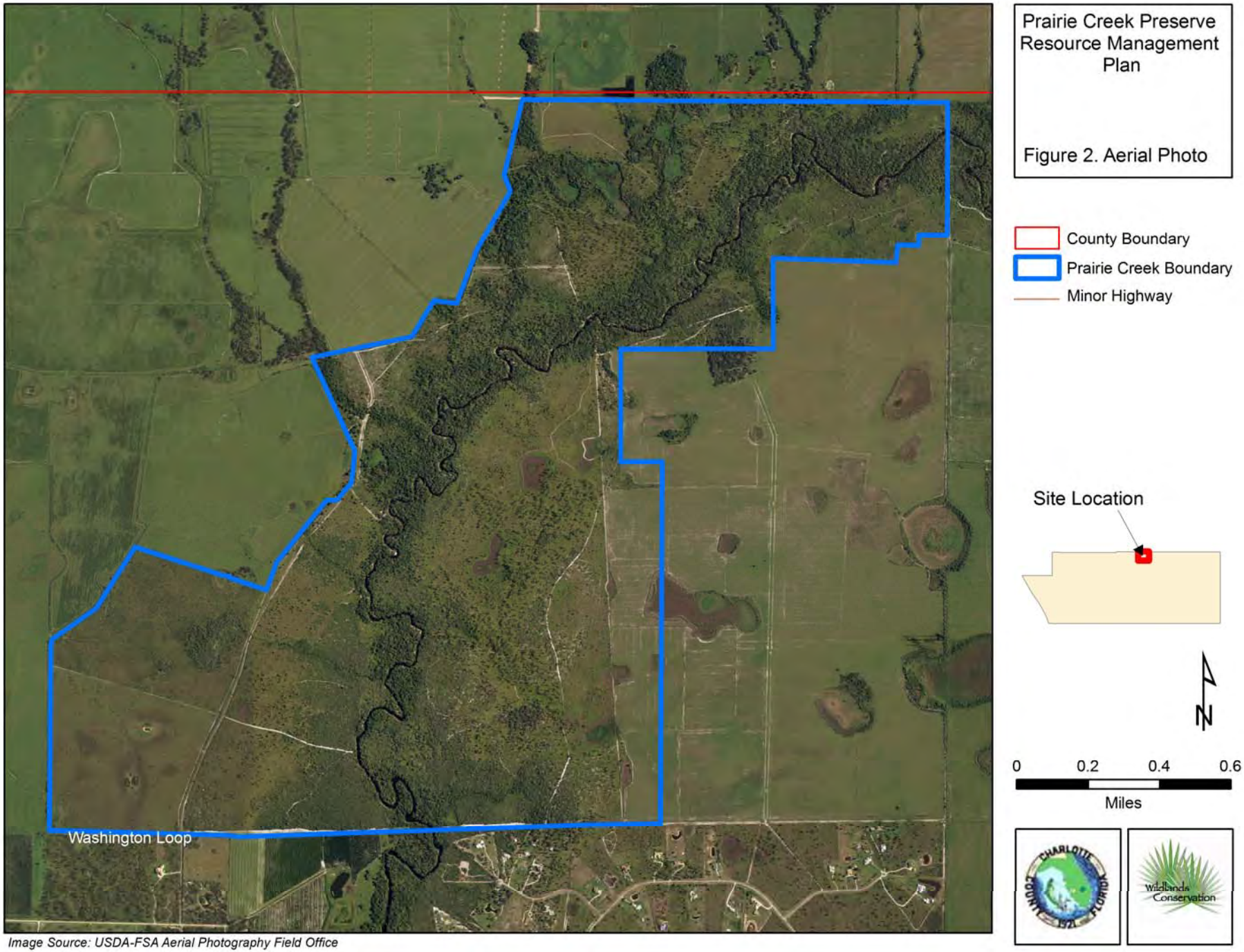

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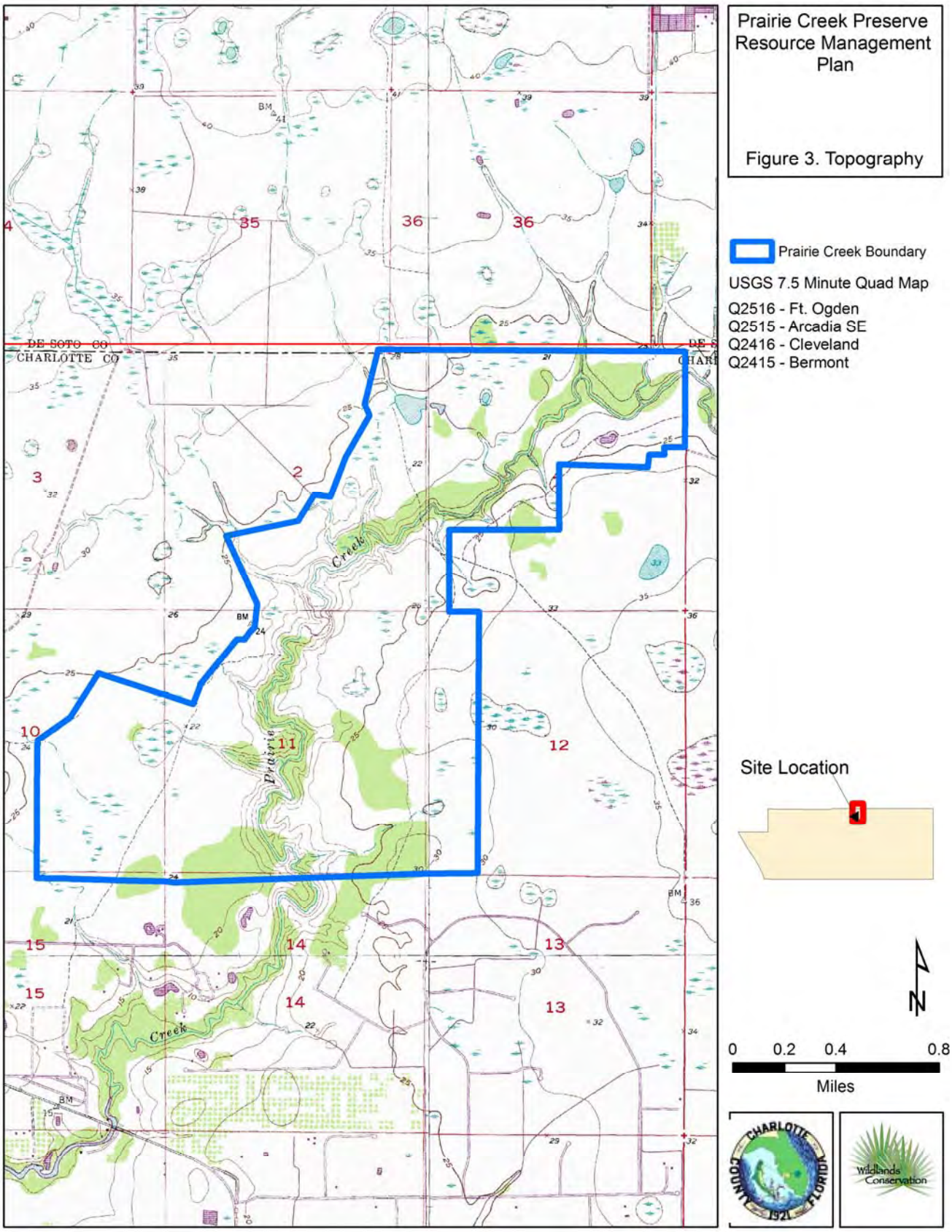
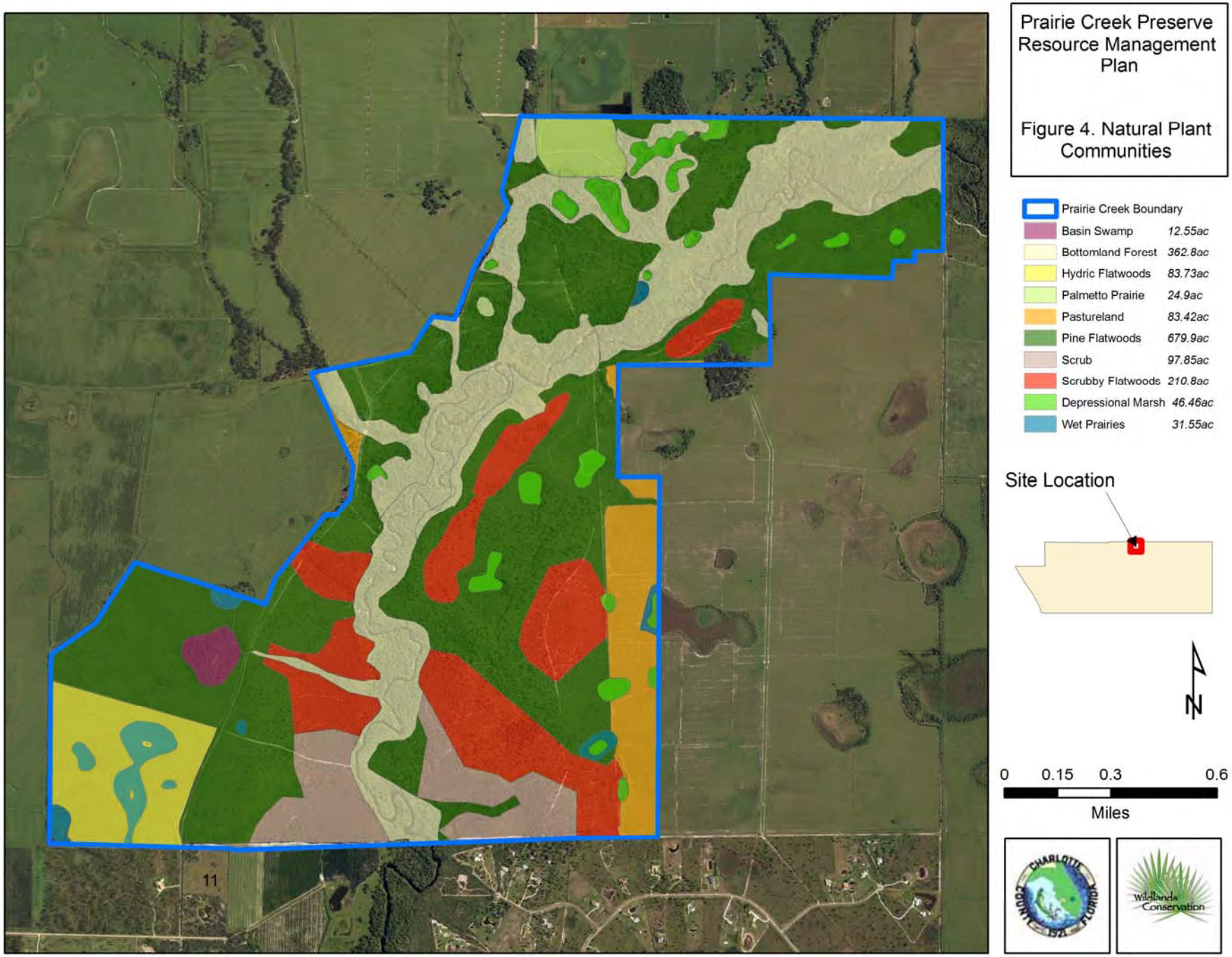
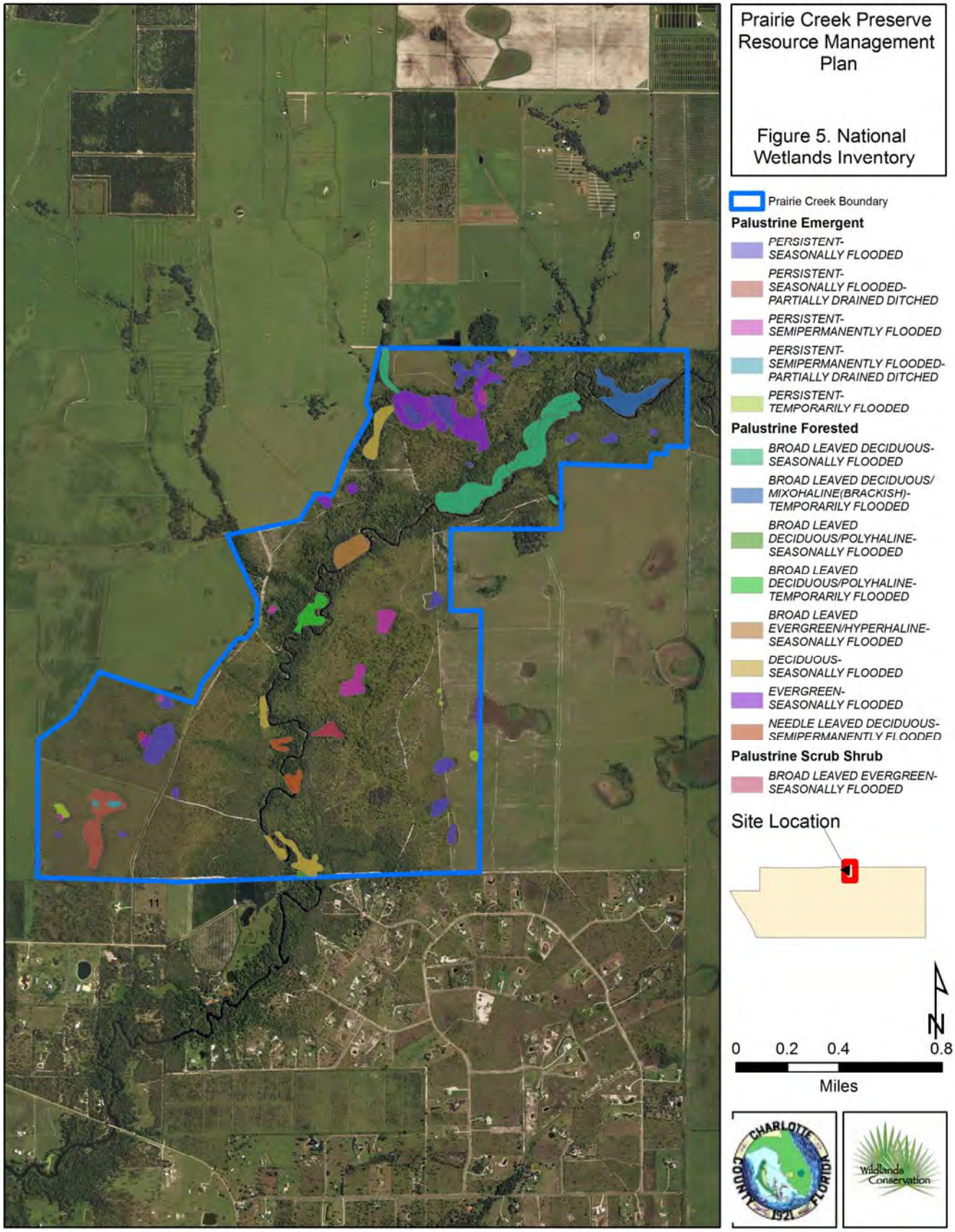
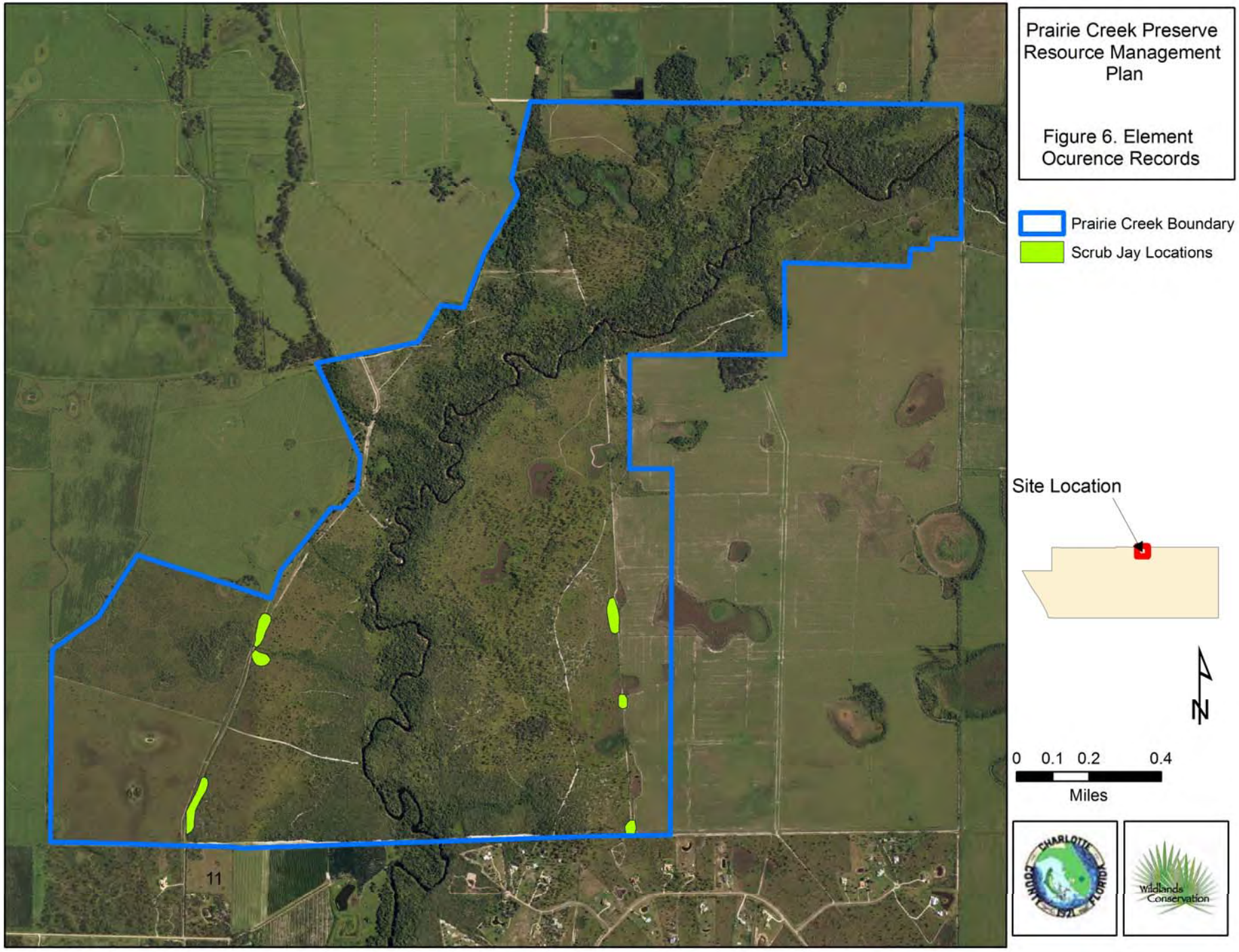

Prairie Creek Preserve
Resource Management
Plan
Figure 3. Topography
Prairie Creek Boundary
USGS 7.5 Minute Quad Map
Q2516 - Ft. Ogden
Q2515 - Arcadia SE
Q2416 - Cleveland
Q2415 - Bermont
DE SOTO CO
CHARLOTTE CO
Prairie Creek
Site Location
N
0 0.2 0.4 0.8
Miles
CHARLOTTE COUNTY FLORIDA 1921
Wildlands Conservation


Prairie Creek Preserve Resource Management Plan
Figure 4. Natural Plant Communities
Prairie Creek Boundary
Basin Swamp 12.55ac
Bottomland Forest 362.8ac
Hydric Flatwoods 83.73ac
Palmetto Prairie 24.9ac
Pastureland 83.42ac
Pine Flatwoods 679.9ac
Scrub 97.85ac
Scrubby Flatwoods 210.8ac
Depressional Marsh 46.46ac
Wet Prairies 31.55ac
Site Location
N
0 0.15 0.3 0.6
Miles
11
CHARLOTTE COUNTY FLORIDA
Wildlands Conservation


Prairie Creek Preserve Resource Management Plan
Figure 5. National Wetlands Inventory
Prairie Creek Boundary
Palustrine Emergent
PERSISTENT-SEASONALLY FLOODED
PERSISTENT-SEASONALLY FLOODED-PARTIALLY DRAINED DITCHED
PERSISTENT-SEMIPERMANENTLY FLOODED
PERSISTENT-SEMIPERMANENTLY FLOODED-PARTIALLY DRAINED DITCHED
PERSISTENT-TEMPORARILY FLOODED
Palustrine Forested
BROAD LEAVED DECIDUOUS-SEASONALLY FLOODED
BROAD LEAVED DECIDUOUS/MIXOHALINE(BRACKISH)-TEMPORARILY FLOODED
BROAD LEAVED DECIDUOUS/POLYHALINE-SEASONALLY FLOODED
BROAD LEAVED DECIDUOUS/POLYHALINE-TEMPORARILY FLOODED
BROAD LEAVED EVERGREEN/HYPERHALINE-SEASONALLY FLOODED
DECIDUOUS-SEASONALLY FLOODED
EVERGREEN-SEASONALLY FLOODED
NEEDLE LEAVED DECIDUOUS-SEMIPERMANENTLY FLOODED
Palustrine Scrub Shrub
BROAD LEAVED EVERGREEN-SEASONALLY FLOODED
Site Location
11
N
0 0.2 0.4 0.8
Miles
CHARLOTTE COUNTY FLORIDA 1921
Wildlands Conservation


Prairie Creek Preserve
Resource Management
Plan
Figure 6. Element
Ocurence Records
Prairie Creek Boundary
Scrub Jay Locations
Site Location
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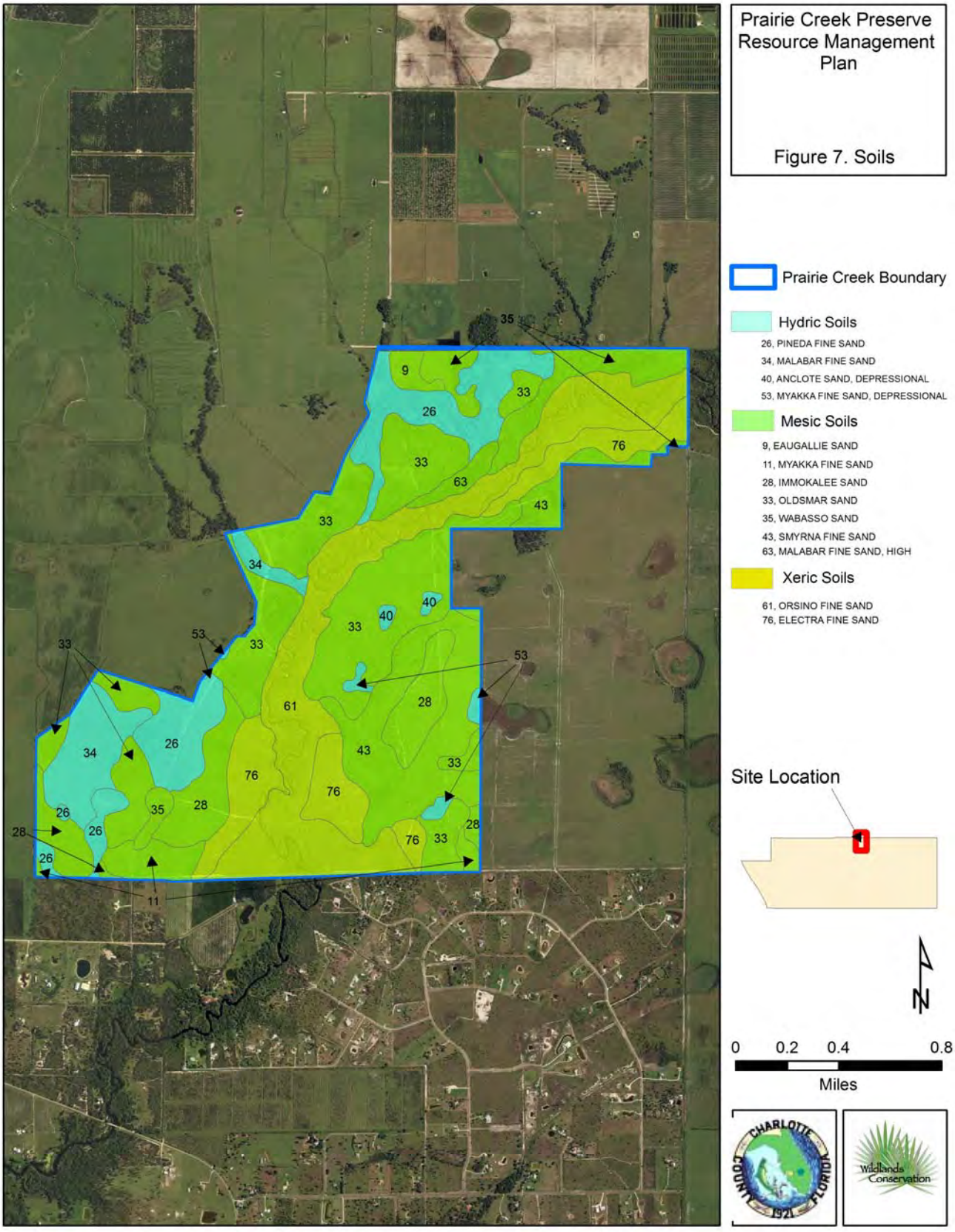
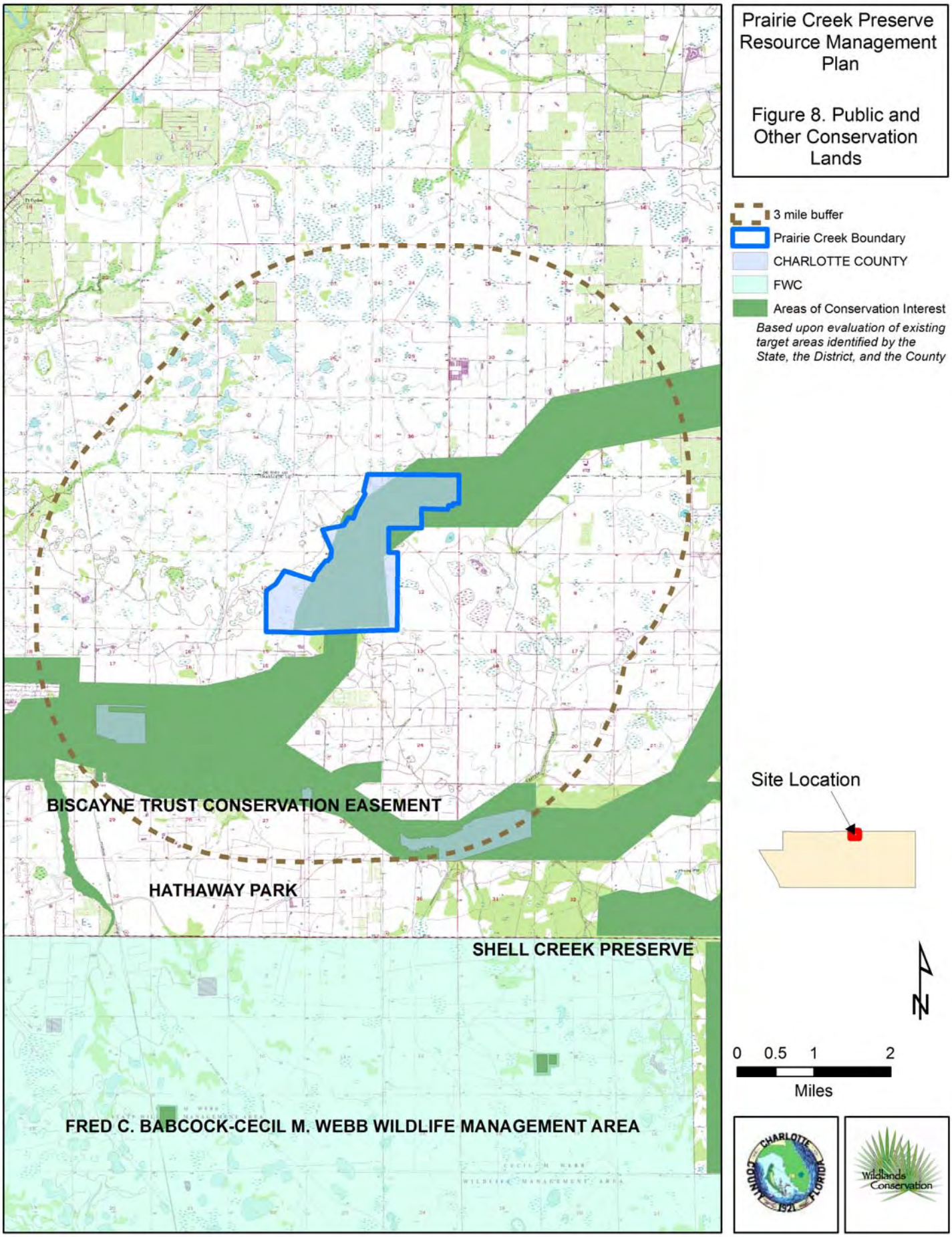
Miles
11
Wildlands
Conservation


Prairie Creek Preserve Resource Management Plan
Figure 7. Soils
Prairie Creek Boundary
Hydric Soils
26, PINEDA FINE SAND
34, MALABAR FINE SAND
40, ANCLOTE SAND, DEPRESSIONAL
53, MYAKKA FINE SAND, DEPRESSIONAL
Mesic Soils
9, EAUGALLIE SAND
11, MYAKKA FINE SAND
28, IMMOKALEE SAND
33, OLDSMAR SAND
35, WABASSO SAND
43, SMYRNA FINE SAND
63, MALABAR FINE SAND, HIGH
Xeric Soils
61, ORSINO FINE SAND
76, ELECTRA FINE SAND
Site Location
N
0 0.2 0.4 0.8
Miles
CHARLOTTE COUNTY FLORIDA 1921
Wildlands Conservation


Prairie Creek Preserve Resource Management Plan
Figure 8. Public and Other Conservation Lands
3 mile buffer
Prairie Creek Boundary
CHARLOTTE COUNTY
FWC
Areas of Conservation Interest
Based upon evaluation of existing target areas identified by the State, the District, and the County
BISCAYNE TRUST CONSERVATION EASEMENT
HATHAWAY PARK
SHELL CREEK PRESERVE
FRED C. BABCOCK-CECIL M. WEBB WILDLIFE MANAGEMENT AREA
Site Location
N
0 0.5 1 2
Miles
CHARLOTTE COUNTY FLORIDA 1921
Wildlands Conservation

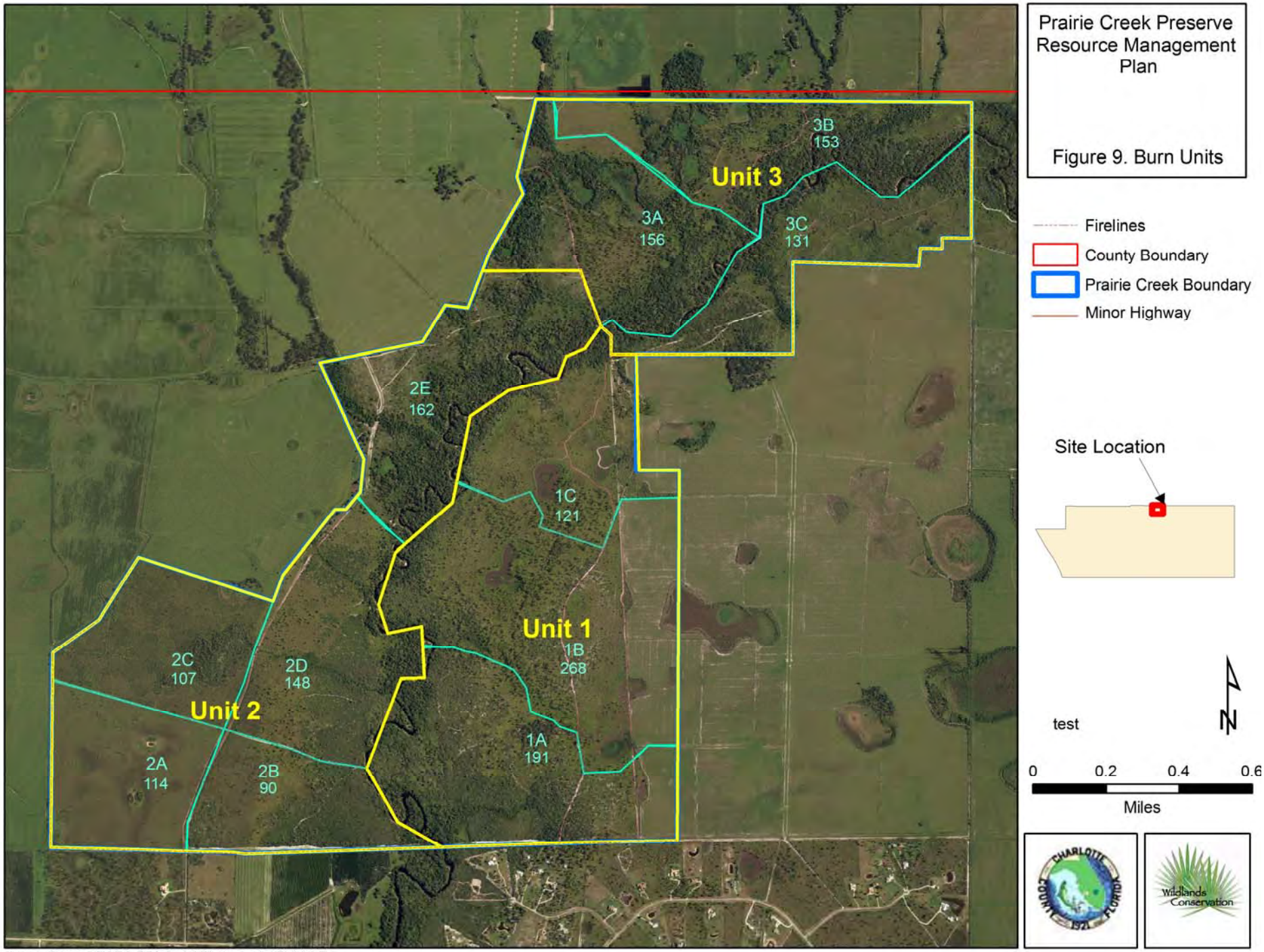


Image Source: USDA-FSA Aerial Photography Field Office

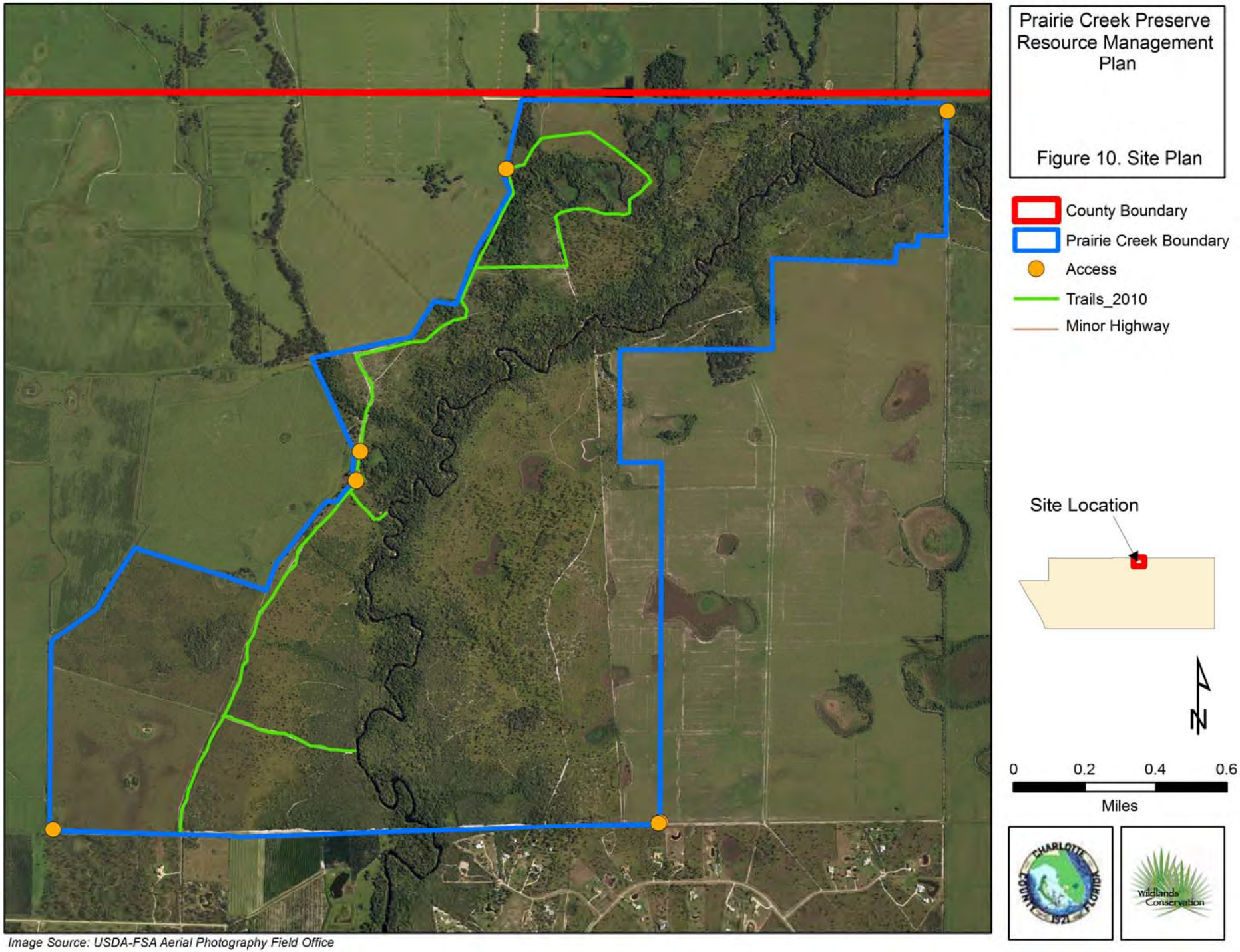
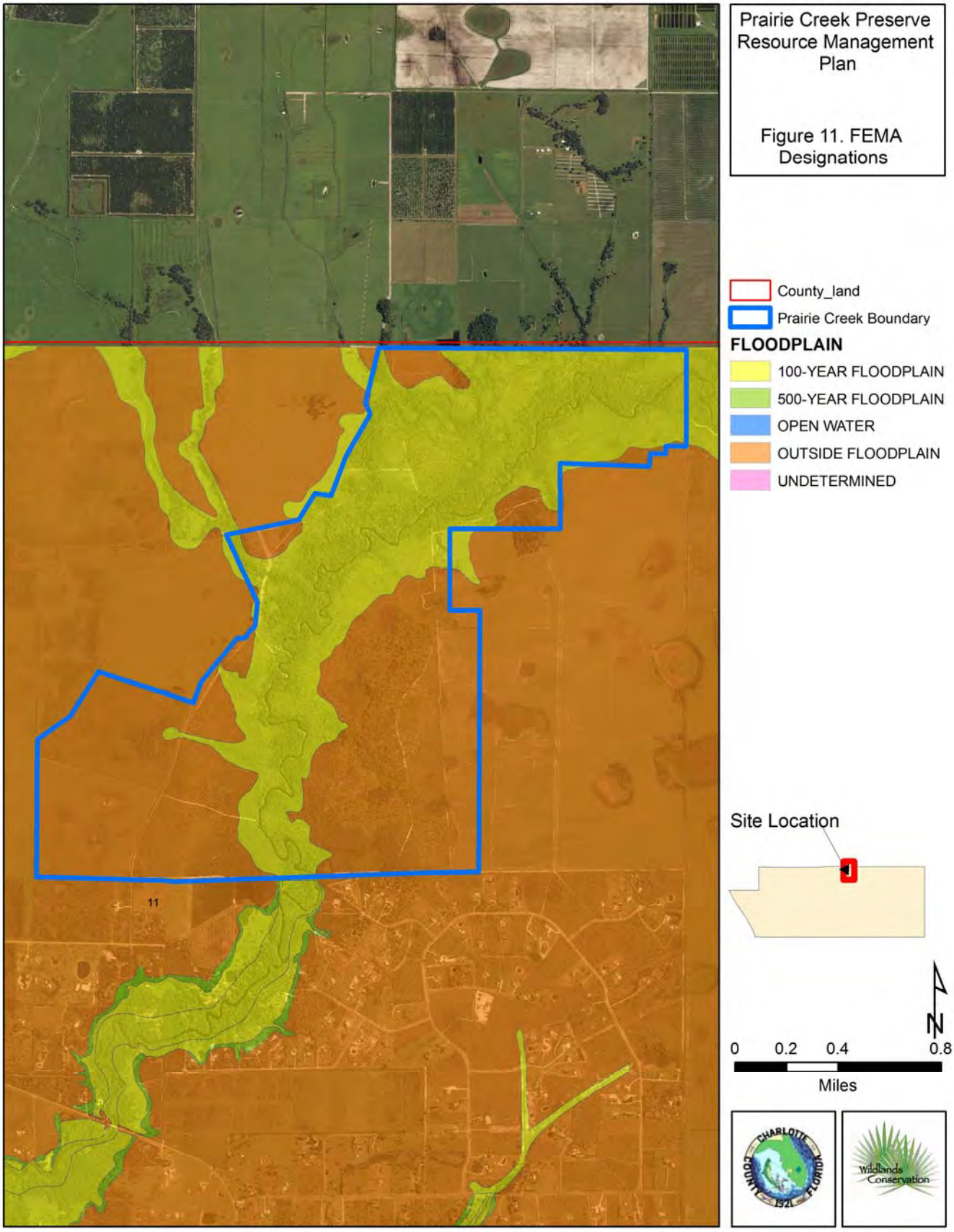
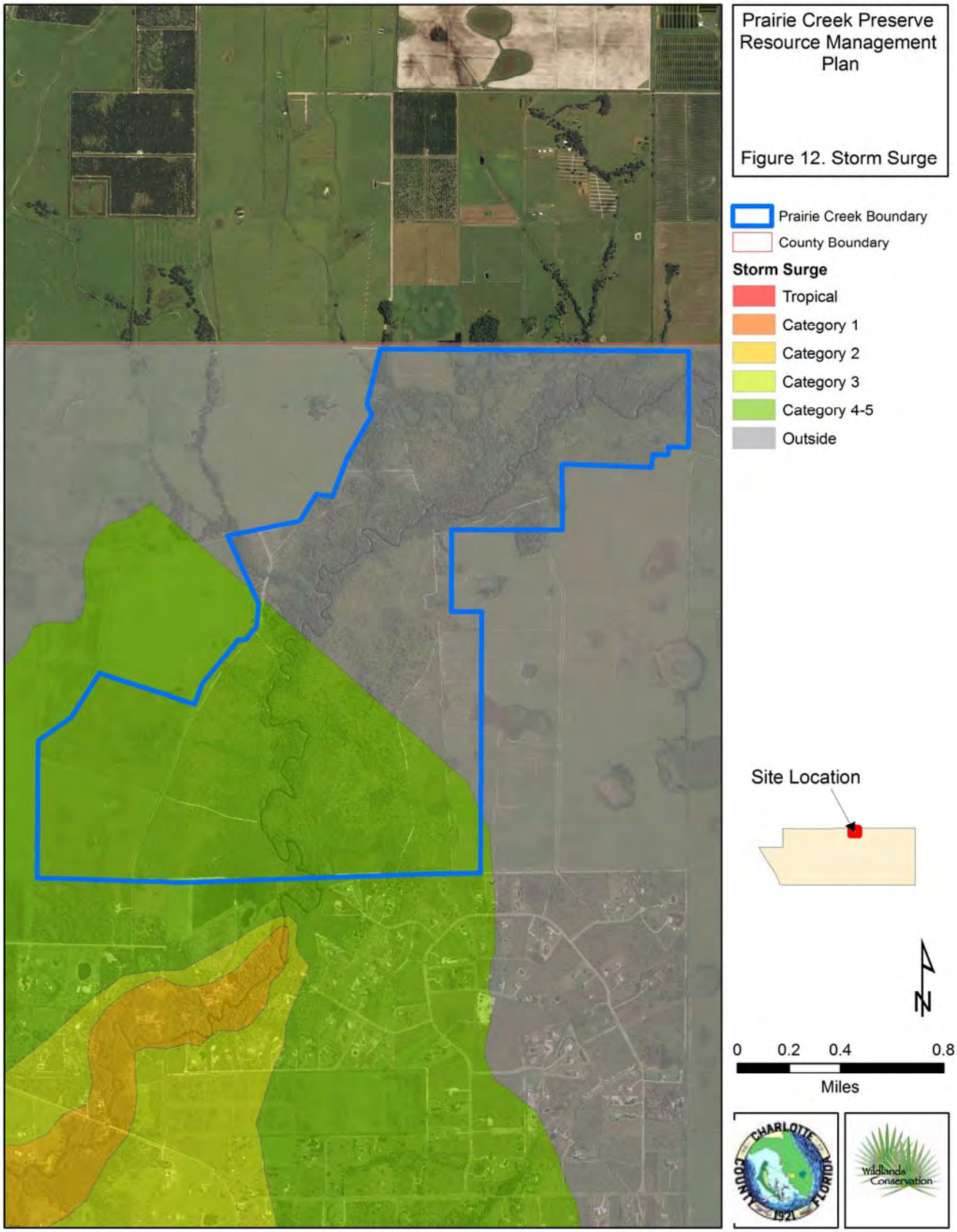
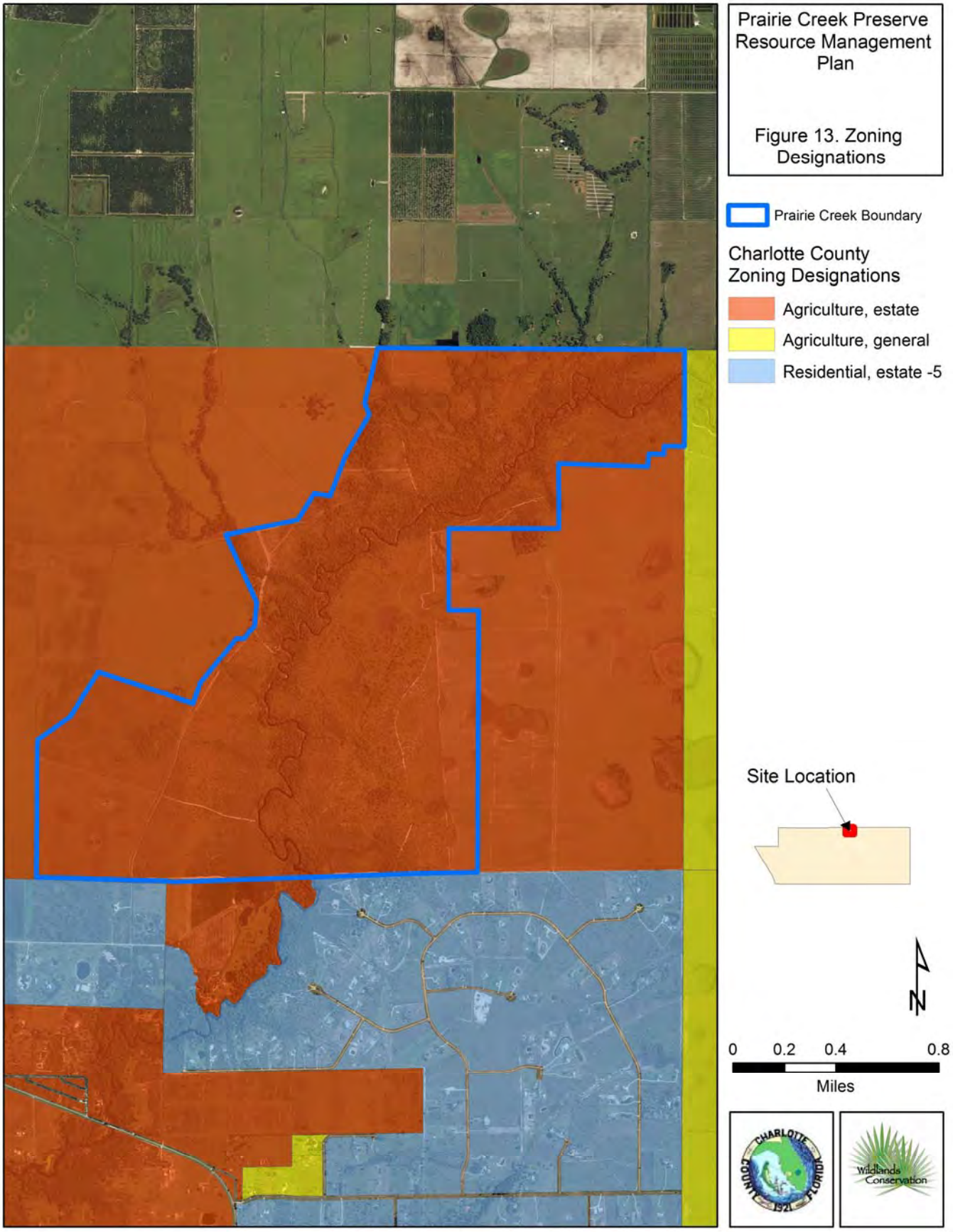
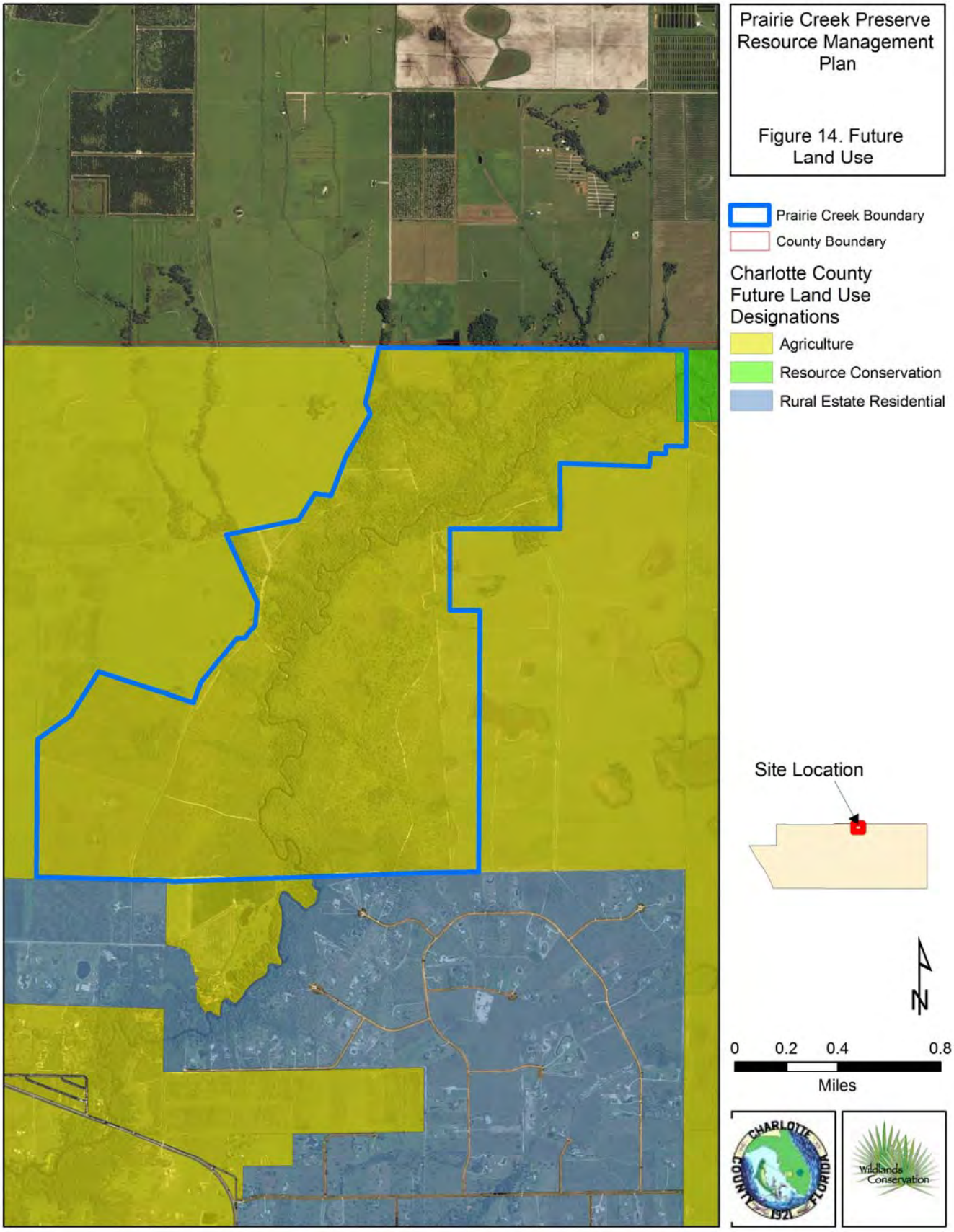


Image Source: USDA-FSA Aerial Photography Field Office


Prairie Creek Preserve Resource Management Plan
Figure 11. FEMA Designations
County_land
Prairie Creek Boundary
FLOODPLAIN
100-YEAR FLOODPLAIN
500-YEAR FLOODPLAIN
OPEN WATER
OUTSIDE FLOODPLAIN
UNDETERMINED
Site Location
11
N
0 0.2 0.4 0.8
Miles
CHARLOTTE COUNTY FLORIDA 1921
Wildlands Conservation


Prairie Creek Preserve
Resource Management
Plan
Figure 12. Storm Surge
Prairie Creek Boundary
County Boundary
Storm Surge
Tropical
Category 1
Category 2
Category 3
Category 4-5
Outside
Site Location
N
0
0.2
0.4
0.8
Miles
CHARLOTTE COUNTY FLORIDA 1921
Wildlands Conservation


Prairie Creek Preserve Resource Management Plan
Figure 13. Zoning Designations
Prairie Creek Boundary
Charlotte County Zoning Designations
Agriculture, estate
Agriculture, general
Residential, estate -5
Site Location
N
0 0.2 0.4 0.8
Miles
CHARLOTTE COUNTY FLORIDA 1921
Wildlands Conservation


Prairie Creek Preserve
Resource Management
Plan
Figure 14. Future
Land Use
Prairie Creek Boundary
County Boundary
Charlotte County
Future Land Use
Designations
Agriculture
Resource Conservation
Rural Estate Residential
Site Location
N
0 0.2 0.4 0.8
Miles
CHARLOTTE COUNTY FLORIDA 1921
Wildlands Conservation

APPENDIX A.
BISCAYNE TRUST
CONSERVATION EASEMENT DOCUMENTATION

APPENDIX B.
WILDLIFE KNOWN OR LIKELY TO OCCUR AT PRAIRIE CREEK PRESERVE

APPENDIX C.
MASTER LIST OF ALL OBERVED WILDLIFE
AT PRAIRIE CREEK PRESERVE

Wildlife Documented During the Development of this Management Plan (2009-2010)

Amphibians
Florida chorus frog
Florida cricket frog
Pinewoods treefrog
Green treefrog
Squirrel treefrog
Greenhouse frog (exotic)

Reptiles
Black racer
Gopher tortoise
Six-lined racerunner
Fence lizard

Birds
Anhinga
Great blue heron
Cattle egret
Great egret
Wood stork
White ibis
Red-tailed Hawk
Southern Bald eagle
Northern harrier
Osprey
Southeastern kestrel
Wild turkey
Florida sandhill crane
Mourning dove
Ground dove
Yellow-billed cuckoo
Belted kingfisher
Pileated woodpecker
Red-bellied woodpecker
Downy woodpecker
Great crested flycatcher
Eastern phoebe
Tree swallow
Blue jay
Florida scrub jay
Fish crow
Tufted titmouse

Carolina chickadee
Gray catbird
Brown thrasher
Carolina wren
American robin
Eastern bluebird
White-eyed vireo
Palm warbler
Prairie warbler
Northern parula
Common yellowthroat
Red-winged blackbird
Summer tanager
Bachman’s sparrow
American goldfinch

Mammals

White-tailed deer
Nine-banded armadillo
Feral hog
Opossum
Raccoon

APPENDIX D
SERENE ESTATES REPORT

APPENDIX E
FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION CONSULTATION

Table B-1. Prairie Creek Preserve. Potential Wildlife Use: Amphibians

AMPHIBIANS Common Name	*Scientific Name* [1]	Habitats				
		Scrub/Scrubby Flatwoods	Pine Flatwoods	Bottomland Forest	Prairie Creek	Depressional Marsh
Oak toad	*Bufo quercicus*	X	X	X		
Southern toad	*Bufo terrestris*		X			X
Florida cricket frog	*Acris gryllus dorsalis*			X	X	X
Green treefrog	*Hyla cinerea*	X	X	X	X	X
Squirrel treefrog	*Hyla squirella*	X	X	X	X	
Pinewoods treefrog	*Hyla femoralis*	X	X	X		
Barking treefrog	*Hyla gratiosa*	X	X	X		X
Cuban treefrog - Ex.	*Osteopilus septentrionalis*		X	X	X	X
Little grass frog	*Limnaoedus ocularis*		X	X		
Florida chorus frog	*Pseudacris nigrita verrucosa*		X	X		
Eastern spadefoot toad	*Scaphiopus holbrooki*	X				X
Eastern narrowmouth toad	*Gastrophryne carolinensis carolinensis*		X	X		
Bullfrog	*Rana catesbeiana*			X	X	X
Pig frog	*Rana grylio*			X	X	X
Southern leopard frog	*Rana utricularia*		X	X	X	X
Gopher frog - P	*Rana capito*	X				X
Two-toed amphiuma	*Amphiuma means*			X	X	X
Southern dusky salamander	*Desmognathus auriculatus*			X		
Eastern lesser siren	*Siren intermedia intermedia*			X	X	X
Greater siren	*Siren lacertina*			X	X	X
Greenhouse frog - Ex.	*Eleutherodactylus planirostris planirostris*	X	X	X		X

[1] Crother, B. I. (2008). Scientific and standard English names of amphibians and reptiles of North America north of Mexico, with comments regarding confidence in our understanding. 6th ed. Society for the Study of Amphibians and Reptiles 37. 94 pp Herpetological Circular No. 37, 94.pp

Ex = exotic, P = Protected

Shell Creek Preserve

Draft Management Plan

February 2008

Prepared By
Parks and Natural Resources Division
Community Services Department
25550 Harbor View Road, Suite 2
Port Charlotte, FL 33980-2503

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ABBREVATIONS AND ACRONYMS

ATV	All-terrain vehicle
CHEC	Charlotte Harbor Environmental Center
DEP	Florida Department of Environmental Protection
DNR	Florida Department of Natural Resources
DOF	Florida Department of Agriculture & Consumer Services Division of Forestry
Easement	Biscayne Trust Conservation Easement
FEMA	Federal Emergency Management Agency
Fire/EMS	Charlotte County Fire and Emergency Medical Services Department
FNAI	Florida Natural Areas Inventory
FWC	Florida Fish and Wildlife Conservation Commission
HCP	Habitat Conservation Plan
MP	Management Plan
Natural Resources	Charlotte County Parks and Natural Resources Division
NWI	National Wetlands Inventory
Reservoir	Shell Creek Reservoir
Serene Estates	Serene Estates Conservation Easement
SHCA	Strategic Habitat Conservation Area
Sheriff	Charlotte County Sheriff's Office
SWFWMD	Southwest Florida Water Management District
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service

1.0 INTRODUCTION

Shell Creek Preserve is a 370-acre tract of environmentally sensitive land located in north-central Charlotte County, southeast of Washington Loop Rd. (Figures 1 and 2). Shell Creek bisects the Preserve, and splits with Prairie Creek at the eastern boundary. Citrus groves and other forms of agriculture lie on any side of the Preserve. Access to the north side of the Preserve is available through Nellis Ln., and access on the south side is available through an unnamed easement. The Preserve is located in Township 40 South, Range 24 East, Section 25; and Township 40 South, Range 25 East, Section 30. The Preserve is within the United States Geological Survey (USGS) Quadrangles Cleveland and Bermont. The Preserve is within one mile of other government and non-profit organization preserve land (Figure 3).

This property was acquired to maintain and manage environmentally sensitive land for the Conservation Charlotte Program, including scrub, scrubby flatwoods, and bottomland hardwoods as well as the protection of water quality of Shell Creek. Listed species such as the Florida scrub jay (*Aphelocoma coerulescens coerulescens*), the gopher tortoise (*Gopherus polyphemus*), the gopher frog (*Rana capito*), eastern indigo snake (*Drymarchon corais*), Florida mouse (*Podomys floridanus*), Florida pine snake (*Pituophis melanoleucus mugitus*), American alligator (*Alligator mississippiensis*), black bear (*Ursus americanus*), and sandhill crane (*Grus canadensis*), have the potential to be present (Section 3.2).

This Management Plan (MP) outlines the monitoring and management activities for the Preserve. Key management strategies include exotic/invasive species removal (Section 3.4) and prescribed burns (Section 3.5). Activities such as garbage removal and site security will assist in restoring the Preserve to its native state (Section 4.0). The Preserve has good manageability potential. This property was purchased by Charlotte County in 2007 (Appendix A).

.

2.0 PURPOSE

The primary purpose in purchasing the Preserve is to assure that the property will be retained forever in its existing natural condition and to prevent any use of the property that will impair or interfere with the environmental value of the property. An important benefit to retaining the Preserve in its natural condition is the additional protection of water resources. Shell Creek provides much of the potable water supply for the city of Punta Gorda.

The purpose of this MP is to outline the natural resources of this area, monitoring and management objectives, and to provide a framework and schedule for management activities. This MP will be modified as necessary.

The secondary purpose for purchasing this Preserve is public recreation and education. This preserve provides opportunity for public passive recreation and enrichment through educational opportunity concerning Florida's natural communities and ecosystems. The future goal is to provide the public recreational opportunities that are compatible with the conservation of Charlotte County's natural lands.

3.0 NATURAL RESOURCES

The valuable natural resources in the Preserve include imperiled ecosystems and listed species. The most important tools for the management of the natural resources within the Preserve will include prescribed fire and invasive species removal.

All plant and animal species listed are included with their scientific names, and state and federal designations in Appendix B.

3.1 Natural Communities

This preserve is made up of four main habitats: Mesic Flatwoods, Mesic Hammock, Scrub/Scrubby Flatwoods and Bottomland Hardwoods. (Figure 4).

Mesic Flatwoods

The Preserve is made up of approximately 177 acres of Mesic Flatwoods with small pockets of dry prairie within the flatwoods. The Florida Natural Areas Inventory, (FNAI) estimates Mesic Flatwoods account for 30-50% of the state's uplands. However, very few undisturbed areas of Mesic Flatwoods exist because of habitat mismanagement and silvicultural, agricultural, or residential development.

Mesic Flatwoods are characterized as open canopy forest of widely spaced pine trees with little or no understory but a dense ground cover of herbs and shrubs. Several variations of Mesic Flatwoods are recognized, the most common association being longleaf pine-wiregrass-runner oak and slash pine-gallberry-saw palmetto. Other typical plants include: St. Johns-wort (*Hypericum perforatum*), dwarf huckleberry (*Gaylussacia dumosa*), fetterbush(*Lyonia lucida*), dwarf wax myrtle(*Myrica pusilla*), stagger bush (*Lyonia mariana*), blueberry (*Vaccinium darrowi*), gopher apple (*Licania michauxii*), tar flower (*Barjeria racemosa*), bog buttons (*Lachnocaulon* spp.), blackroot (*Leptandra virginica*), flase foxglove (*Agalinis tenuifolia*), white-topped aster (*Sericocarpus linifolius*), yellow-eyed grass (*Xyris difformis var. floridana*) and cutthroat grass (*Panicum abscissum*)(FNAI and DNR, 1990.)

Mesic Hammock

The Preserve is made up of approxiamately 155 acres of Mesic Hammock. Mesic Hammock is a hardwood forest community of open or closed canopy dominated by live oak (*Quercus virginiana*), with cabbage palm (*Sabal palmetto*) often present in the canopy and subcanopy. Epiphytes (ferns, orchids and bromeliads) are often found and may become abundant in undisturbed stands. Shrubby understory may be dense or open, tall or short and is composed of saw palmetto (*Serenoa repens*), beautyberry (*Callicarpa americana*), and wax myrtle (*Myrica cerifera*), with the addition of tropical shrubs, such as nakedwood (*Myrcianthes fragrans*) and wild coffee (*Psychotria nervosa*), in the south. The herb layer is often sparse or patchy and consists of various grasses, including low panic grasses (*Dichanthelium* spp.) and basket grass (*Oplismenus hirtellus*), and sedges. Mesic hammock usually occurs as fringes or small patches on the border of, or in higher parts of, rivers, swamps, marshes, and large lakes, and ranges from central and south Florida (Polk to Dade and Collier counties) northward along the Atlantic and Gulf coasts to North Carolina and Texas.

Scrub

The Preserve is made up of approximately 32 acres of scrub habitat with small pockets of scrubby flatwoods. The Florida Natural Areas Inventory (FNAI) ranks scrub habitat as imperiled both in-state and globally (FNAI and Florida Department of Natural Resources (DNR), 1990). Florida scrub communities are unique to the state, although several neighboring states have similar habitats (Myers and Ewel, 1992).

Scrub communities tend to be dominated by a closed to open canopy of sand pines (*Pinus clausa*), with an understory of scrubby oak species and shrubs. Groundcover, if any, consists of lichens and, rarely, herbs. Common vegetation includes sand live oak (*Quercus geminata*), myrtle oak (*Quercus myrtifolia*), Chapman's oak (*Quercus chapmanii*), scrub oak (*Quercus inopina*), saw palmetto (*Serenoa repens*), rosemary (*Ceratiola ericoides*), rusty lyonia (*Lyonia ferruginea*), scrub hickory (*Carya floridana*), scrub palmetto (*Sabal etonia*), hog plum (*Ximenia Americana*), silkbay (*Persea humilis*), beak rush (*Rhyncospora* spp.), milk peas (*Galactica* spp.), and staggerbush (*Lyonia* spp.) (FNAI and DNR, 1990).

Small pockets of scrubby flatwoods appear within the scrub. The FNAI ranks scrubby flatwoods as rare or uncommon and restricted (FNAI and DNR, 1990). This ecosystem is nearly endemic to Florida, but does appear in bordering states (Myers and Ewel, 1992). Scrubby flatwoods are characterized by an overstory of longleaf pine (*Pinus palustris*) and slash pine (*Pinus elliottii*), and a short, shrubby understory of saw palmetto, scrub oaks, wiregrass (*Aristida* spp.), gopher apple (*Licania michauxii*), rusty lyonia, lichens, and tarflower (*Bejaria racemosa*).

Bottomland Hardwoods

The Preserve contains approximately 6.1 acres of bottomland hardwoods, dominated by maples (*Acer* spp.), swamp bay (*Persea palustris*), water-tolerant oak (*Quercus* spp.), persimmon (*Diospyros virginiana*), and cypress (*Taxodium* spp.). Bottomland hardwoods are characterized by a low-lying, closed canopy forest that border streams with distinct banks, such that the water rarely overflows the stream channel to inundate the forest. The water table is high, but bottomland forests are only inundated during extreme floods or heavy rains. Bottomland hardwoods are stable communities that take 100 years or more to mature (FNAI and DNR, 1990).

The USFWS NWI classifies areas of the bottomland hardwoods area (Figure 5) as:

- PEM1C (Palustrine Persistent Emergent temporarily flooded wetland). These wetlands may be dominated by emergent species that remain standing at least until the beginning of the next growing season. Such species include cattails (*Typha* spp.), bulrushes (*Scirpus* spp.), saw grass (*Cladium mariscus ssp. jamaicense*), sedges (*Carex* spp.), dock (*Rumex* spp.), swamp loosestrife (*Decodon verticillatus*), smartweeds (*Polygonum* spp.), and true grasses such as common reed (*Phragmites australis*), and manna grasses (*Glyceria* spp.). Surface water is present for brief periods during the growing season, but the water table usually lies well below the soil surface for most of the season (Cowardin et al., 1979).

- PFO1A (Palustrine Persistent Forested temporarily flooded wetland). These wetlands may be dominated by trees and shrubs typically at least 6m tall. Such species include water oaks (*Quercus nigra*), live oak (*Quercus virginiana*), wax myrtle (*Myrica cerifera*), sweetgum (*Liquidambor* spp.) and cabbage palm (*Sabal palmetto*). Surface water is present for brief periods during the growing season, but the water table usually lies well below the soil surface for most of the season (Cowardin et al., 1979).
- PFO4A (Palustrine Persistent Forested temporarily flooded wetland). These wetlands may be dominated by trees and shrubs typically at least 6m tall. Such species include water oaks (*Quercus nigra*), live oak (*Quercus virginiana*), wax myrtle (*Myrica cerifera*), sweetgum (*Liquidambor* spp.) and cabbage palm (*Sabal palmetto*). Surface water is present for brief periods during the growing season, but the water table usually lies well below the soil surface for most of the season (Cowardin et al., 1979).

3.2 *Wildlife*

Typical animal species that inhabit mesic flatwoods include: oak toad (*Bufo quercicus*), little grass frog (*Psuedacris ocularis*), narrowmouth toad (*Gastrophryne carolinensis*), black racer (*Coluber constrictor*), red rat snake (*Elaphe guttata*), southeastern kestrel (*Falco sparverius paulus*), brown-headed nuthatch (*Sitta pusilla*), pine warbler (*Dendroica pinus*), Bachman's sparrow (*Aimophila aestivalis*), cotton rat (*Sigmodon hispidus*), cotton mouse (*Peromyscus gossypinus)*, black bear (*Ursus Americanus*), raccoon (*Procyon lotor*), gray fox (*Yrocyon cinereoargenteus*), bobcat (*Lynx rufus*) and white tailed deer (*Odocoileus virginianus*).

Typical animal species that inhabit scrub and scrubby flatwoods communities include the red-widow spider (*Latrodectus bishopi*), scrub wolf spider (Family Lycosidae), oak toad (*Bufo guercicus*), blue-tailed mole skink (*Eumeces eqregius lividus*), six-lined racerunner (*Cnemidophorus sexlineatus)*, coachwhip (*Masticophis flagellum*), common ground dove (*Columbina passerina)*, Florida scrub jay, loggerhead shrike (*Lanius ludovicinianus*), rufous-sided towhee (*Pipilo erythrophthalmus)*, and eastern spotted skunk (*Spilogale putorius*) (FNAI and DNR, 1990). Several species that utilize these habitats are endemic to the state of Florida, including the Florida scrub jay, the Florida mouse, the Florida scrub lizard (*Sceloporus woodi*), and sand skink (*Neoseps reynoldsi*) (Hipes et al., 2001). However, the Florida scrub lizard and the sand skink are not known to occur in this part of the state.

Typical animals species that inhabit bottomland hardwoods include various salamanders (Family Salamandridae), five lined skink (*Eumeces fasciatus*), southern ringneck snake (*Diadophis punctatus*), gray rat snake (*Elaphe spiloides*), eastern king snake (*Lampropeltis getula*), cottonmouth (*Agkistrodon piscivorus conanti*), wood duck (*Aix sponsa*), red-tailed hawk (*Buteo jamaicensis*), turkey (*Meleagris gallopavo*), yellow-billed cuckoo (*Coccyzus americanus*), screech owl (*Megascops asio*), great horned owl (*Bubo virginianus*), Acadian flycatcher (*Empidonax virescens*), pileated woodpecker

(*Dryocopus pileatus*), hermit thrush (*Catharus guttatus*), cedar waxwing (*Bombycilla cedrorum*), opossum (*Didelphis virginiana*), gray squirrel (*Sciurus carolinensis*), flying squirrel (*Glaucomys volans*), raccoon (*Procyon lotor*), mink (*Neovison vison*), gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*), and white-tailed deer (*Odocoileus virginianus*) (FNAI and DNR, 1990).

A master list of all wildlife observed within the Preserve is included in Appendix C and will be updated as necessary. All federally and state listed species that have been observed are included in Figure 7.

Gopher Tortoises

A baseline survey for gopher tortoises, a Florida Fish and Wildlife Conservation Commission (FWC) threatened species, was conducted for 30% of the suitable habitat in January 2008. Several gopher tortoise burrows have been observed throughout the Preserve.

An additional survey was conducted in November 2008 with approximately 80% of the property surveyed. The results of the survey were 66 active and 57 inactive gopher tortoise burrows.

Scrub Jays

A baseline survey for scrub jays, a FWC and USFWS Threatened species, was conducted by the Center for Avian Conservation, Inc. September 2001-February 2002 (Miller and Stith, 2002). The survey documented 55 scrub jays (in 13 family groups) within the Washington Loop population of the Eastern Metapopulation (M7). The Preserve is located within this population's range. There was no populations change from the jays documented for the same study area in 1992 as part of a Statewide Mapping Project.

The USFWS identifies the Preserve as being in a scrub jay review area (USFWS, 200b). This area is defined by a 850-foot buffer around the sighting a jay, which provides a reasonable estimate of the area in which their territory is likely to be found (Souza, 2007). USFWS has recorded four scrub jay sightings within 850 feet on the Preserve boundary, although none of these sightings are within the boundaries.

The FWC identified the majority of the Preserve as a Strategic Habitat Conservation Area (SHCA) for scrub jays (Appendix E). SHCA lands are essential to providing some of the state's rarest animals, plants, and natural communities with the land base necessary to sustain populations into the future (Cox et al., 1994). FWC also has identified nine scrub jay sightings in the vicinity of the Preserve, although none of these sightings were within the review zone or the Preserve boundaries.

Management and monitoring (Section 3.5) of the Preserve will assess the value of the habitat for scrub jays. Currently, staff surveys have determined that overall, the habitat meets some scrub jay requirements, but falls short of others due to fire suppression (Section 3.5).

Other Listed Species

Correspondence with the FWC detailed target species that may be in and around the Preserve. The FWC identified the majority of the Preserve as a SHCA for Cooper's

Hawk (*Accipiter cooperii*). The Coopers Hawk is not state or federally listed. FWC also recorded a black bear fatality in 1991 within a few miles of the Preserve (Allison, 2007) (Appendix E). Because black bear home ranges may vary from 10 to 120 square miles, depending on gender (FWC, 2007), this may be evidence that black bears utilize the Preserve. Furthermore, the FWC identified the majority of the Preserve as a "Biodiversity Hotspot", supporting 3 to 13 species. These areas support rare plant and wildlife communities and co-occurring species selected by the FWC (Cox et al., 1994). FWC also identified three classes of Priority Wetlands within the Preserve, supporting one to six focal wildlife species (Appendix E).

Other listed species that may occur throughout the Preserve (based on their geographical ranges) include the American alligator, Florida mouse, sandhill crane, gopher frog, eastern indigo snake, and Florida pine snake. Their state and federal rankings are included in Appendix B. Species that have the potential to associate with gopher tortoise burrows within Charlotte County, such as the Florida mouse, gopher frog, eastern indigo snake, and pine snake (Hipes et al., 2001), and will be surveyed for with a burrow scope.

Information on listed or rare species that have been previously unrecorded in Charlotte County will be submitted to FNAI (Appendix F).

3.3 Soils

The mesic flatwoods (Figure 4) is dominated by Immokalee sand and Myakka fine sand. These soils are typically associated with flatwoods habitat are populated with saw palmetto and slash pine. This is consistent with the plant communities existing onsite currently.

The scrub habitat with pockets of scrubby flatwoods (Figure 4) is dominated by oldsmar sand, electra fine sand, Immokalee sand, and Orsino fine sand (Appendix G). These soils are typically associated with south Florida flatwoods and sand pine scrub (Soil Survey Staff, 2007), which is consistent with the field verification.

The bottomland hardwoods habitat (Figure 4) is dominated by Copeland sand loam, Immokalee sand, and Florida sand (Appendix G). These soils are typically associated with freshwater ponds and marshes, and south Florida flatwoods (Soil Survey Staff, 2007). This was inconsistent with field verification. This discrepancy may be due to a lack of ground-truthing during the soil survey or a change in wetland structure after the construction on the Reservoir (Section 3.6).

3.4 Invasive/Exotic Species

Exotic, or nonnative, plants reduce the quantity and quality of habitat available for native flora and fauna, especially when those exotic species become invasive and outcompete the native habitats. Exotic species should be removed to benefit the listed species observed and the listed species that have the potential to be present. To date the exotics occurring on the property are cogon grass and feral swine.

Charlotte County Natural Resources began chemical treatment of cogon grass in 2009 and continue today. As a followup staff will integrate fire and chemical treatment in effort to control the growth of cogon grass in the Preserve.

Natural Resources staff initiated a feral swine trapping program in coordination with a local licensed trapper. Swine are trapped in metal cages baited with corn and removed from the property when captured.

3.5 Preserve Management

Fire will be one of the key management strategies within the Preserve. A prescribed fire was conducted on the Preserve south of Shell Creek in 2008. For the purpose of this MP, it will be referred to as the 2007 prescribed fire. Additional prescribed burns will be set for the remaining burn tracts annually over the next four years (Figure 8). The perimeters of the proposed burn tracts will utilize existing roads and all-terrain vehicle (ATV) trails as fire breaks.

In the instances where the Preserve borders a residence, mechanical thinning will be conducted within a reasonable buffer of the residence. This buffer will be based on the locations of fire breaks and will be field-determined prior to that year's prescribed fire. A mechanical reduction was conducted in December of 2009. The purpose of the reduction was restoration of scrub community with significant reduction in the overstory.

Prescribed fires will follow those guidelines and meet those requirements set forth by the Florida Department of Agriculture & Consumer Services Division of Forestry (DOF), Florida Statute Chapter 590, and Florida Administrative Code 51-2. These requirements include drafting a burn plan with the DOF, and using existing fire breaks (such as roads or trails) along the perimeters of the burn. If fire breaks are not present, they shall be constructed. As part of an outreach program, all residents within at least a half-mile buffer will be notified of the fire and given the opportunity to meet with Natural Resources staff at a public meeting to discuss why prescribed burns are conducted and to ask questions.

The DOF has not documented any fires within the Preserve between 1981 and the present (DOF, 2007).

In addition to prescribed fire other management activities will be utilized when appropriate for the management of the Preserve. Some of those activities include but are not limited to mechanical reduction of vegetation and overstory trees.

Mesic Flatwoods

Mesic flatwoods is a fire-maintained community. Without fire mesic flatwoods communities are expected to succeed into hardwood dominated forests with a closed canopy, eliminating groundcover herbs and shrubs. In the absence of fire fuel loading can create potentially dangerous conditions. Accumulation of duff and pine needles can contribute to potentially catastrophic wildfires. For this reason it is important that this

community is managed when possible with fire. Historical data indicates this habitat type burned every 3-10 years (FNAI, 1989). With regular application of fire the chances of crown fire decrease. This practice will maintain the natural community in it's present state.

Scrub and Scrubby Flatwoods

Both scrub and scrubby flatwoods are fire-maintained communities. In the absence of fire, these communities may succeed into a xeric or mesic hardwood hammock (Myers and Ewel, 1992). Because scrub habitat is ranked as imperiled (FNAI and DNR, 1990) and scrubby flatwoods is ranked as rare (FNAI and DNR, 1990), it is imperative that these habitats receive the proper burn regime for conservation and the benefit of the wildlife that live in these ecosystems.

Fitzpatrick et al. (1991) recommends burning oak scrub every five to 20 years in order to allow the scrub oaks to produce a mast acorn crop that is sufficient to support jays. Scrubby flatwoods commonly burn between every one to eight years (Behm and Duryea, 2003). Post- management surveys will help determine the timing of the next burn or mechanical thinning regime.

Surveys will be taken pre-management and post-management to assess the value of the habitat for scrub jays. These surveys will measure the following categories at each transect: height of the shrub layer, the areal coverage of shrub layer, the percentage of scrub oaks in the shrub layer, the maturity of the oaks (production of a mast crop, which will not occur until at least three years after a burn or mechanical thinning), the areal coverage of bare substrate, the canopy cover, and the canopy species. Photopoints will be established at each of these transects with rebar. Photographs will be taken at the same height, in each of the four cardinal directions. This data will be compared to an ideal scrub jay habitat data set (Appendix H), as defined by Fitzpatrick et al. (1991). Each category will receive a rating of red, yellow, or green. A red category does not meet scrub jay habitat requirements. A yellow category meets some scrub jay habitat requirements. A green category meets or exceeds scrub jay requirements. Pre-management surveys will occur once at each management tract prior to the first prescribed burn or mechanical thinning. The first post-management surveys will occur within three months after the initial management to check on conditions and scrub jay utilization. Thaxton and Hingtgen report immediate foraging use by scrub jays of newly burned sites (1994). These post-management surveys should be conducted annually in October. At this time, not only are acorns appearing and maturing (Arny, 2006), but scrub jays are also conducting frequent and vigorous territorial displays (Fitzpatrick et al., 1991).

One pre-management survey was conducted in July 2007 (Appendix H). The survey determined that most values that were measured met some scrub jay requirements, such as presence of scrubs oaks, and the lack of a canopy cover. However, on average, the shrub layer was too high and the percentage of bare substrate was too low. Survey points are also depicted in Figure 8.

Bottomland Hardwoods
Because the canopy is dense and closed, creating low air movement and thus high humidity, bottomland hardwoods rarely burn (FNAI and DNR, 1990). When they do burn, it is typically a low intensity fire every 30 to 50 years. A trail separates the scrub habitat from the bottomland hardwoods habitat, which will likely be utilized as a firebreak. The bottomland hardwoods habitat will not be included in the prescribed fire regime.

3.6 Water Quality Protection

Shell Creek and Prairie Creek were impounded in 1964 by the Hendrickson Dam to create the Reservoir. Historical photos show what the Preserve looked like before and shortly after dam construction (Appendix I). The entire Reservoir measures 853 acres (Peace River Manasota Regional Water Supply Authority, 2007). The water plant first drew water out of the Reservoir on January 19, 1965 (Fuller, 2007). The Shell Creek Water Treatment Facility currently draws water out of this Reservoir, supplying 8 million gallons of water per day to Punta Gorda residents. This facility has treated over one billion gallons of water from Shell Creek. Conservation of this Preserve will help to protect the water quality of the potable water supply.

Maintaining the natural condition of the Preserve ensures continued protection for the potable water supply for the citizens of Punta Gorda.

The Federal Emergency Management Agency (FEMA) has categorized the wetland portion of the Preserve, as "A Zone" and the upland portion of the Preserve as a "X Zone" (Figure 9). "A Zones" are in high risk of flooding. These areas have a 1% annual chance of flooding and a 26% chance of flooding over 30 years. "X Zones" have a low to moderate chance of flooding and fall outside of this 1% annual flood probability. The Preserve is within a Category 2 and 3 Storm Surge (Figure 10).

The Southwest Florida Water Management District (SWFWMD) has designated the Shell Creek and it's immediate banks as a land acquisition priority area. Shell Creek met all SWFWMD criteria relating to water management importance: water supply, water quality, flood protection, and natural systems. The Preserve is included within this designation (Figure 11).

3.7 Connectivity to other Conservation Lands

The Preserve envelops CHEC's Serene Estates (Figure 2). Serene Estates is made up of 20 acres of scrub habitat, which will be conserved and managed in perpetuity for scrub jays.

Several other public lands lie within several miles of the Preserve including Babcock Ranch to the south, SWFWMD property to the west, and Hathaway Park and Shell Creek Preserve upstream (southeast) (Figure 2).

The corridors to these conservation lands are primarily agricultural, although there is zoning for primarily low-density residential areas (Figure 12). These residential areas are zoned for one unit every 1 acre to every 10 acres. This area's future land use is fairly similar, except that the majority of the preserve has been changed to Preservation and some of the residential areas may become denser (Figure 13). There are no plans to change the existing zoning designation or the future land use at this time (Williams, 2007).

3.8 Archeological, Cultural, and Historical Resources

Several sites were surveyed within the preserve. Initial analysis of the data indicates a statistical probability for archeological significance but further sampling and analysis is required.

4.0 RESOURCE ENHANCEMENT

Due to the present quality of the Preserve, there is not much restoration needed.

Existing physical structures include:

- Several dirt roads – may fragment habitat and expose small animals to collisions with vehicular traffic. The dirt roads will likely remain in place to serve as firebreaks during prescribed burns.
- Illegally dumped debris - Debris may provide a hazard to wildlife and pedestrians by way of sharp edges, presenting a tripping hazard, a trapping hazard (reptiles, amphibians, or small rodents falling in a water-filled tub and drowning, e.g.), accidental ingestion (Especially of small glass or metal pieces while grazing), and releasing hazardous materials into a sensitive environment. Currently, the amount of illegally dumped debris is minimal. Garbage may be removed by hand.
- ATV trails - ATVs may further fragment habitat. As ruts from former ATV trails become deeper and wider, they become unsuitable for travel, at which point ATV users may create new trails. ATVs compact soil, destroy groundcover, and may collide with small wildlife such as reptiles and amphibians. ATV trails may create openings for colonization of exotic/invasive species. Natural Resources staff will be coordinating with FWC to curb ATV traffic. Perimeter fences and "No trespassing" signs may be installed.

5.0 MANAGEMENT NEEDS

5.1 Coordinated Management

Management activities will be coordinated with local and state agencies as follows

- The **USFWS** will be coordinated with to ensure federal regulations regarding wildlife are enforced within the Preserve boundaries. USFWS guidance and expertise may also be sought in habitat restoration and management of federally listed wildlife species utilizing the Preserve.
- Water agencies, such as **SWFWMD** and the **South Florida Water Management District** will be given the opportunity to review the MP.
- The **DOF** will be asked to assist in prescribed burning, as may be necessary, and for the required authorizations to conduct such burns. They will also be called upon to assist with wildland fire emergencies.
- The **FWC** will be coordinated with to ensure state regulations regarding wildlife are enforced within the park boundaries. FWC guidance and expertise may also be sought in habitat restoration and management of state listed wildlife species utilizing the Preserve. FWC will be coordinated with to curb ATV traffic within the Preserve.
- The **Charlotte County Sheriff's Office** (Sheriff) may be asked for assistance with security and vandalism concerns.
- The **Charlotte County Animal Control** may be asked for assistance with the removal of stray or feral animals.
- The **Charlotte County Fire and Emergency Medical Services Department** (Fire/EMS) will be asked for assistance in conducting prescribed burning and responding to emergencies as necessary.
- **CHEC** may be coordinated with for management activities.
- Adjacent **property owners** will be asked to report suspicious activity.

5.2 Maintenance

The maintenance objectives for the Preserve are employee health, safety, and welfare while assessing the site, maintenance of aesthetic qualities, and protection of natural resource values.

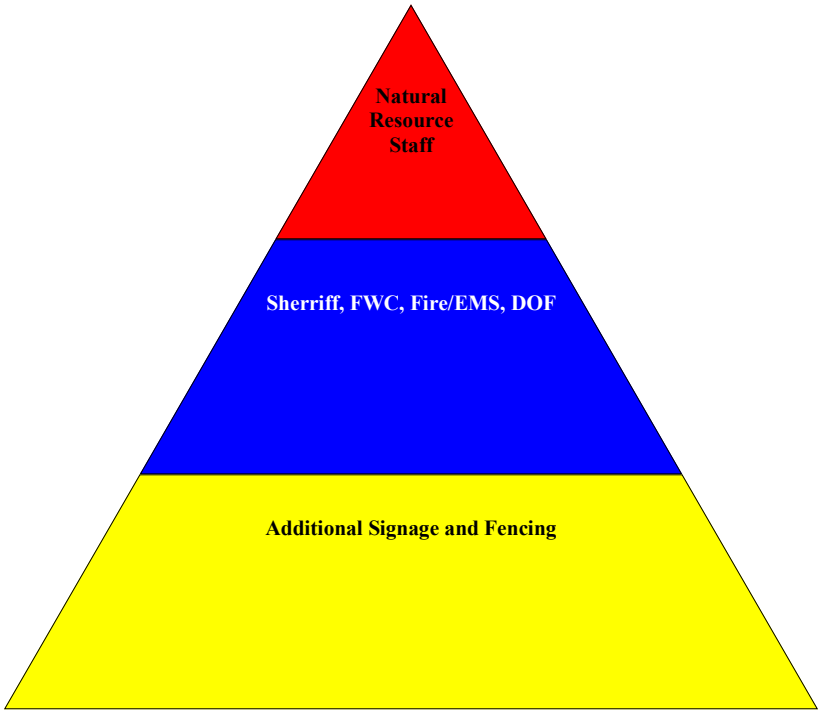
Natural Resources staff has the responsibility for managing and maintaining the Preserve. The site will have a dedicated contracted staff or volunteer/community service workers to perform routine maintenance tasks, including

- Mowing and pruning of vegetation around the fire breaks
- Upkeep and cleaning of any facilities including fencing and signage
- Garbage and debris removal
- Land Management (including removal of exotic species and controlled burns)

5.3 Security

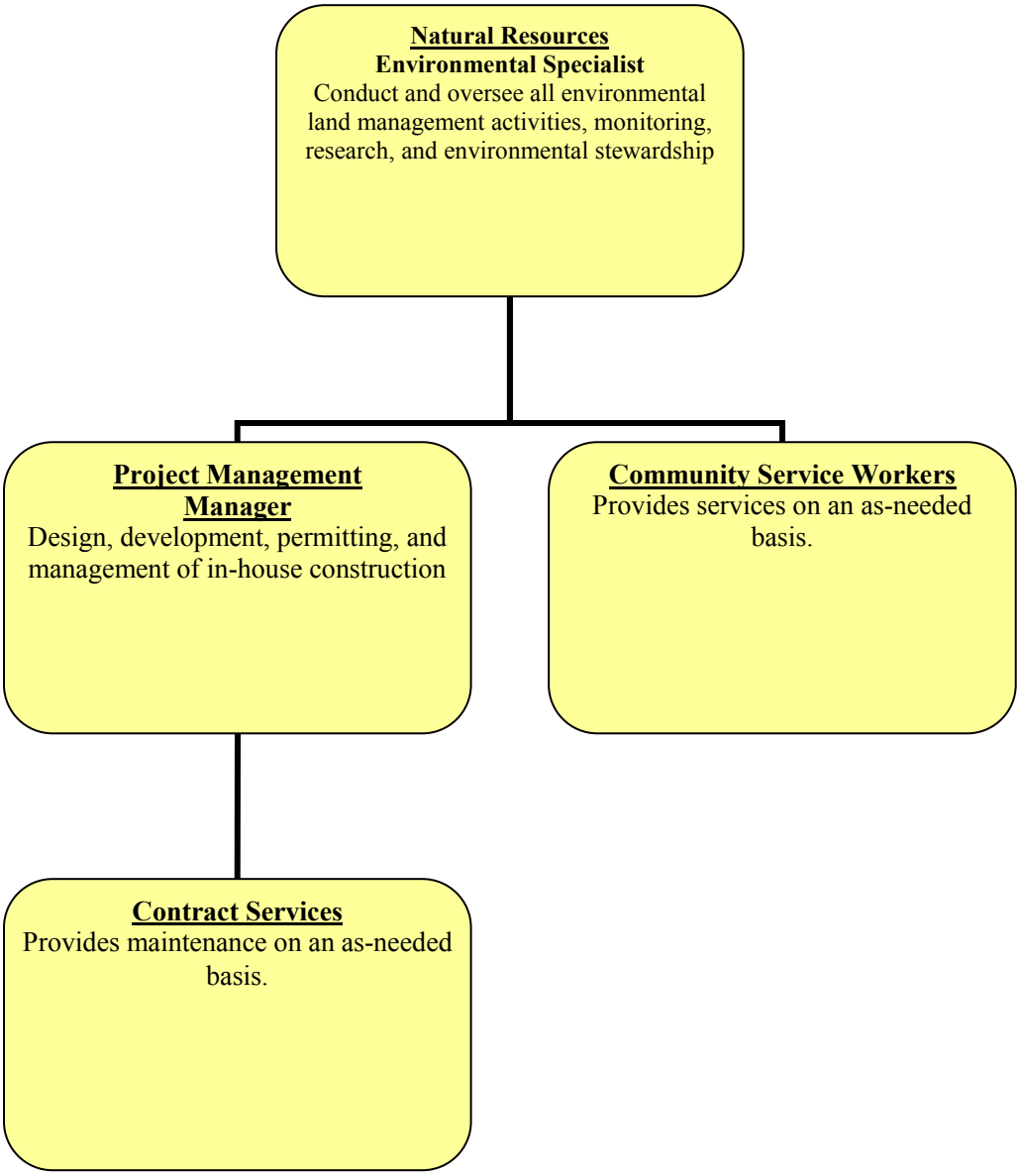
Natural Resources ultimately has the responsibility for site security, including prevention of vandalism, property damage, unauthorized vehicle access, and trespassing. A three-tiered approach to site security will be employed by Natural Resources:

- **Staff** – Natural Resources staff shall monitor the integrity of any fences, repair damage by vandalism, monitor the site for evidence of ATV use, and take measures to clarify restricted areas and activities to citizens with signage
- **Sheriff, FWC, Fire/EMS, and DOF** – Shall respond to emergency calls or ATV reports from citizens
- **Signage and Fencing** – Fencing may be installed to restrict ATV and vehicle access. Signage to clarify restricted areas, times, and activities is being considered.



5.4 Staffing

Natural Resources will provide staffing, management, and maintenance for the Preserve. The following full-time staff positions and their areas of responsibilities will be provided.



6.0 COST ESTIMATE AND FUNDING SOURCES

There are several agencies that may award grants for management activities, including USFWS, FWC, and SWFWMD.

Grants that have been applied for include:

- Scrub Restoration Grant from USFWS that funded the 2007 prescribed fire
- The Section 6 Habitat Conservation Plan (HCP) Development Grant for a County-wide Florida Scrub Jay HCP was awarded because the scrub in the Preserve may serve as scrub inventory for a county-wide scrub jay HCP for Charlotte County.
- A WHIP Grant funded the mechanical reduction conducted in 2009 as the first phase in the restoration of the scrub community.

7.0 PRIORITY SCHEDULE

A priority schedule that details a timeline for major events is included in Appendix J. This priority schedule covers 2005-2014. A new schedule will be released after 2014, or when the MP is updated.

8.0 MONITORING AND REPORTING

The goals of habitat assessment monitoring are to evaluate management efforts to ensure they are meeting ideal habitat requirements for scrub jays and other listed species. Management activities are outlined in Section 3.5. This MP will be updated as necessary.

9.0 REFERENCES

Allison, C. 2007. Florida Fish and Wildlife Conservation Commission, Southwest Region. Telephone conversation with Kim Hermann, Charlotte County Environmental & Extension Services, Natural Resources Division. October 22.

Arny, N. 2006. *Common oaks of Florida*. FOR51. University of Florida, IFAS Extension. Behm, A. and M. Duryea. 2003. *Fire in the wildland-urban interface: considering fire in Florida's ecosystems*. University of Florida Institute of Food and Agricultural Services.

Cowardin L., V. Carter, F. Golet, and E. LaRoe. 1979. *Classification of wetlands and deepwater habitats of the United States*. Performed for the U.S. Department of the Interior, Fish and Wildlife Services. FWS/OBS-79/31. December.

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

Eggers, Steve D., and Donald M. Reed. 1997. *Wetland plants and communities of Minnesota and Wisconsin*. U.S. Army Corps of Engineers, St. Paul District. Jamestown, ND: Northern Prairie Wildlife Research Center Online. http://www.npwrc.usgs.gov/resource/plants/mnplant/index.htm (Version 03SEP1998).

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

Florida Department of Environmental Protection, 2006. *Wetland delineation chapter 62-340, F.A.C.* Wetland Evaluation and Delineation Section.

FWC, 2007. The "bear" facts. Behavior. Available at http://myfwc.com

DOF. 2007. *Fires by Section/township/range*. Florida. Myakka River District. August 21. Available online at http://www.fl-dof.com/

FNAI and DNR. 1990. *Guide to the natural communities of Florida*. February.

Fuller, B. 2007. City of Punta Gorda, Utility Department. Telephone Conversation with Kim Hermann, Charlotte County Environmental & Extension Services, Natural Resources Division. October 22.

Hipes, D., D. Jackson, K. NeSmith, D. Printiss, and K. Brandt. 2001. *Field guide to the rare animals of Florida*. Florida Natural Areas Inventory.

Miller, K. and B. Stith. 2002. *Florida scrub–jay distribution and habitat in Charlotte County*. Final Report. Center for Avian Conservation, Inc. Contract # 2001000116: Scrub-Jay Survey. December.

Myers, R. and J. Ewel. 1992. *Ecosystems of Florida*. University of Central Florida Press.

National Park Service. 2007. National Register of Historic Places. National Register Information System database. November 14. Available online at http://www.nps.gov/nr/

Peace River Manasota Regional Water Supply Authority. 2007. *Shell Creek Feasibility Study*.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. *Web Soil Survey*. Available online at http://websoilsurvey.nrcs.usda.gov/ accessed 8/22/2007.

Souza, P. USFWS, South Florida Ecological Services Office. Letter to Bruce Loucks, Charlotte County. March 12.

Thaxton, J. and T Hingtgen. 1994. *Response of Florida scrub jays to management of previously abandoned habitat, OSSP -1- DO*. Florida Park Service Annual Report. District 4 Research.

USFWS. 2007a. *National wetlands inventory maps, USGS Quadrangle Cleveland*. Available online at http://www.fws.gov/nwi/

USFWS. 2007b. Scrub jay territory search. Charlotte County. Available online at http://charlottefl.com/ScrubJaySearch/

Williams, I. 2007. Charlotte County, Growth Management Department. Email to Kim Hermann, Charlotte County Natural Resources. December 28.

Figures

Appendix A

Appendix B

Appendix C

Appendix D

Appendix E

Appendix F

Appendix G

Appendix H

Appendix I

Appendix J

Appendix 6

Charlotte County Scrubjay HCP

Economic & Funding Analysis Funding Model Spreadsheets

10/12/2012

Charlotte County Scrub-Jay HCP - Economic Analysis

Assumptions

Parameter	Value	Notes
** HCP land acqusiition costs only apply to private lands	--	See property list; not link'd in formulas
HCP Timeframe	30	30-year permit period
Development Timeframe	30	Same as HCP
Conservation Timeframe	30	Same as HCP
Financing Timeframe	30	for MSTU / MSBU analysis
Number of LOTS of habitat "take"	17,984	Based on County assumptions re: take; assumes full buildout; mtg (6-25-12)
Development Rate (Annual)	3.3%	Proportional development over 30-year HCP timeframe
Development Rate (5-Year Period)	16.7%	Proportional development over 30-year HCP timeframe
Conservation Rate - 1st 10 years (Annual)	5.0%	Conservation of private lands NOT at same rate as development
Conservation Rate - 1st 10 years (5-Year Period)	25.0%	Conservation of private lands NOT at same rate as development
Conservation Rate - 2nd 20 years (Annual)	2.5%	Conservation of private lands NOT at same rate as development
Conservation Rate - 2nd 20 years (5-Year Period)	12.5%	Conservation of private lands NOT at same rate as development
Total Number of Property Groups	17	Groupings of similar properties - location-based
Total Number of Property Groups - Private	6	--
Total Number of Property Groups - Public	11	--
Contingency Costs (%)	10.0%	Applies to all categories, except "remedial measures"
Remedial Measure Cost (% of mgmt)	10.0%	Applies as % of management costs only
Return on Investment (ROI)	6.0%	Assumption - used to calculate endowment
Inflation Rate	3.0%	Assumption - used to calculate endowment
Capitalization Rate	3.0%	ROI minus Inflation
Conservation Easements - Use in Reserve Acquisition (%)	0%	Assumption (0% = all fee title)
Conservation Easement Value - % of Fee-Title	30%	Assumption (not applicable if no easements used)
Land Values	Average	Low, Average, High (link'd to acquisition worksheet)
Land Values - premium to provide incentive to sell land within Reserve	15%	Based on coordination w/ County staff (6-7-12)
Initial Habitat Improvements - Applicability to Private Properties	1	Assumption - applicability to existing private properties
Initial Habitat Improvements - Applicability to Public Properties	0	Assumption - applicability to existing public properties
Habitat Management - Applicability to Private Properties	1	Assumption - applicability to existing private properties
Habitat Management - Applicability to Public Properties	1	Assumption - applicability to existing public properties
Monitoring - Applicability to Private Properties	1	Assumption - applicability to existing private properties
Monitoring - Applicability to Public Properties	1	Assumption - applicability to existing public properties
Remedial Measures - Applicability to Private Properties	1	Assumption - applicability to existing private properties
Remedial Measures - Applicability to Public Properties	1	Assumption - applicability to existing public properties
Management Plan - Applicability	--	Applicability: 0=No, 1=Yes
Biscayne Trust (CE and Private)	1	
Burchers Tract CE	1	
Deep Creek Public	1	
Hathaway Park	1	
Lee Branch Private	1	
Prairie Creek Preserve	1	
Prairie Creek Private (incl. CE)	1	
Prairie Creek West Private (incl. Large)	1	

Parameter	Value	*Notes*
Shell Creek Delta	1	
Shell Creek Preserve	1	
Shell Creek West Private	1	
Washington Loop Private (incl. CE)	1	
Amberjack Environmental Park	1	*added 5-30-12*
Rotunda Mitigation Area	1	*added 5-30-12*
Tippacanoe Environmental Park	1	*added 5-30-12*
Tippacanoe II Mitigation Area	1	*added 5-30-12*
San Casa Environmental Park	1	*added 5-30-12*
Fencing, New: % properties that require fencing	50.0%	*Assumption*
Fence Removal: % properties with existing fence	25.0%	*Assumption*
Fence Removal: % fencing requiring removal	33.3%	*Assumption*
Gates: % properties that require new gates	50.0%	*Assumption (matches assumption for new fencing)*
Gates: # gates per reserve property (average)	1	*Assumption*
Signage: # signs per "propertty group"	1	*Assumption*
Signage: applies to property "group"	--	*Applicability: 0=No, 1=Yes*
Biscayne Trust (CE and Private)	0	
Burchers Tract CE	0	
Deep Creek Public	0	
Hathaway Park	0	
Lee Branch Private	1	
Prairie Creek Preserve	0	
Prairie Creek Private (incl. CE)	1	
Prairie Creek West Private (incl. Large)	1	
Shell Creek Delta	1	
Shell Creek Preserve	0	
Shell Creek West Private	1	
Washington Loop Private (incl. CE)	1	
Amberjack Environmental Park	0	*added 5-30-12*
Rotunda Mitigation Area	0	*added 5-30-12*
Tippacanoe Environmental Park	0	*added 5-30-12*
Tippacanoe II Mitigation Area	0	*added 5-30-12*
San Casa Environmental Park	0	*added 5-30-12*
Parking (Road Base): # tons per parking area (average)	46.3	*50 x 50 x 4 inches // 1.5 tons per cubic yard*
Parking (Road Base): # parking areas per property group	1.0	*Assumption*
Parking (Road Base): applies to property "group"	--	*Applicability: 0=No, 1=Yes*
Biscayne Trust (CE and Private)	0	
Burchers Tract CE	0	
Deep Creek Public	0	
Hathaway Park	0	
Lee Branch Private	1	
Prairie Creek Preserve	0	
Prairie Creek Private (incl. CE)	0	
Prairie Creek West Private (incl. Large)	0	
Shell Creek Delta	0	
Shell Creek Preserve	0	
Shell Creek West Private	1	
Washington Loop Private (incl. CE)	0	
Amberjack Environmental Park	0	*added 5-30-12*
Rotunda Mitigation Area	0	*added 5-30-12*
Tippacanoe Environmental Park	0	*added 5-30-12*
Tippacanoe II Mitigation Area	0	*added 5-30-12*
San Casa Environmental Park	0	*added 5-30-12*

Parameter	Value	Notes
Trail Clearing & Maintenance: length of trail per property group (feet)	13,200	*Assumption (5 miles total; 2.5 miles each property)*
Trail Clearing & Maintenance: applies to property "group"	--	*Applicability: 0=No, 1=Yes*
Biscayne Trust (CE and Private)	0	
Burchers Tract CE	0	
Deep Creek Public	0	
Hathaway Park	0	
Lee Branch Private	1	
Prairie Creek Preserve	0	
Prairie Creek Private (incl. CE)	0	
Prairie Creek West Private (incl. Large)	0	
Shell Creek Delta	0	
Shell Creek Preserve	0	
Shell Creek West Private	1	
Washington Loop Private (incl. CE)	0	
Amberjack Environmental Park	0	*added 5-30-12*
Rotunda Mitigation Area	0	*added 5-30-12*
Tippacanoe Environmental Park	0	*added 5-30-12*
Tippacanoe II Mitigation Area	0	*added 5-30-12*
San Casa Environmental Park	0	*added 5-30-12*
Habitat Enhancement - Initial: % property subject to treatment	20%	*Assumption (initial, one-time costs)*
Exotic Removal - Initial (mechanical): % property subject to treatment	20%	*Assumption (initial, one-time costs)*
Exotic Removal - Initial (herbicide): % property subject to treatment	20%	*Assumption (initial, one-time costs)*
Translocation of Scrubjays: applies to property "group"	20	*Applicability: 0=No; #=Yes (number events)*
Biscayne Trust (CE and Private)	1.2	*equal probability of translocation event*
Burchers Tract CE	1.2	*equal probability of translocation event*
Deep Creek Public	1.2	*equal probability of translocation event*
Hathaway Park	1.2	*equal probability of translocation event*
Lee Branch Private	1.2	*equal probability of translocation event*
Prairie Creek Preserve	1.2	*equal probability of translocation event*
Prairie Creek Private (incl. CE)	1.2	*equal probability of translocation event*
Prairie Creek West Private (incl. Large)	1.2	*equal probability of translocation event*
Shell Creek Delta	1.2	*equal probability of translocation event*
Shell Creek Preserve	1.2	*equal probability of translocation event*
Shell Creek West Private	1.2	*equal probability of translocation event*
Washington Loop Private (incl. CE)	1.2	*equal probability of translocation event*
Amberjack Environmental Park	1.2	*added 5-30-12; equal probability*
Rotunda Mitigation Area	1.2	*added 5-30-12; equal probability*
Tippacanoe Environmental Park	1.2	*added 5-30-12; equal probability*
Tippacanoe II Mitigation Area	1.2	*added 5-30-12; equal probability*
San Casa Environmental Park	1.2	*added 5-30-12; equal probability*
Management Plan - Update: % of initial plan costs	50%	*Assumption*
Management Plan - Update: frequency (every __ years)	10	*Assumption*
Fencing Repair: % of fence requiring repair per parcel	40%	*Assumption*
Fencing Repair: frequency (every __ years)	20.0	*Assumption*
Trail maintenance: % trails needing maintenance	50.0%	*Assumption*
Trail maintenance: frequency (every __ years)	1	*Assumption*
Exotic removal (mechanical) - Ongoing: frequency	5	*Assumption*
Exotic removal (mechanical) - Ongoing: % property subject to treatment	10%	*Assumption*
Exotic removal (herbicide) - Ongoing: frequency	5	*Assumption*
Exotic removal (herbicide) - Ongoing: % property subject to treatment	10%	*Assumption*

Parameter	Value	*Notes*
Mechanical Treatment (Mowing) - Ongoing: frequency	4.0	*3-5 years*
Mechanical Treatment (Mowing) - Ongoing: % property subject to treatment	20%	*Assumption*
Prescribed Burns - Ongoing: frequency	6.0	*Assumption (3-5 years; 5-10 years)*
Prescribed Burns - Ongoing : % property subject to treatment	100%	*Assumption*
Monitoring: frequency (every __ years)	1	*Assumption*
Monitoring: % property subject to monitoring	30%	*Assumption (per call w/ county on 5-29-12)*

Charlotte County Scrub-Jay HCP - Economic Analysis			
Scrubjay Management Costs			
Management Activity	Cost	Unit	Type / Frequency
Fencing, New	$2.00	linear foot	Initial Mgmt (One-Time)
Gates, New	$150.00	gate	Initial Mgmt (One-Time)
Parking Area Base	$7.73	ton	Initial Mgmt (One-Time)
Trail Clearing & Mulch	$4.80	linear foot	Initial Mgmt (One-Time)
Signage	$1,080.00	site	Initial Mgmt (One-Time)
Surveys (Boundary)	$75.00	$6,000 per 80 acres	Initial Mgmt (One-Time)
Fence removal	$2.00	linear foot	Initial Mgmt (One-Time)
Initial Biological Assessment	$125.00	acre	Initial Mgmt (One-Time)
Management Plan (Property "Group")	$2,000.00	property group	Initial Mgmt (One-Time)
Habitat enhancements	$130.00	acre	Initial Mgmt (One-Time)
Translocation of birds	$75,000	event	Initial Mgmt (One-Time)
Exotic removal (mechanical)	$2,250.00	acre	Initial & Long-Term Mgmt
Exotic removal (herbicide)	$725.00	acre	Initial & Long-Term Mgmt
Fence/gate repair	$0.90	linear foot	Long-Term Mgmt
Trail maintenance	$4.80	linear foot	Long-Term Mgmt
Prescribed burns	$32.00	acre	Long-Term Mgmt
Mechanical Treatment (Mowing)	$24.00	acre	Long-Term Mgmt
Species Monitoring & Inventory (new properties)	$30.00	acre	Long-Term Mgmt
Species Monitoring & Inventory (public properties)	$10.00	acre	Routine Mgmt; per call with County on 5-29-12
HCP Administration (Permit Period)	$65,000	year	Permit Period
HCP Administration (Post-Permit Period)	$65,000	year	Post-Permit Period
HCP Administration (Pre-Permit Period)	$0	year	Pret-Permit Period
Transaction Costs - Private Acquisition ($/transaction)	$2,000	*transaction*	Permit Period
Transaction Costs - Public Acquisition ($/transaction)	N/A	*transaction*	*Not applicable (excluded from model)*
Transaction Costs - Easement Acquisition ($/transaction)	N/A	*transaction*	*Not applicable (excluded from model)*

Charlotte County Scrub-Jay HCP - Economic Analysis

Land Values

		Parcel Size		Land Value					
Property Group	**Ownership**	**Acres (Min)**	**Acres (Max)**	**Value/Ac (Min)**	**Value/Ac (Max)**	**Value/Ac (Average)**	**Easement Value (%)**	**Value-Model (FEE)**	**Value-Model (CE)**
Biscayne Trust CE	Public	4.14	132.19	--	--	--	--	**--**	**--**
Biscayne Trust Private	Public	20.12	20.12	--	--	--	--	**--**	**--**
Burchers Tract CE	Public	0.20	217.35	--	--	--	--	**--**	**--**
Deep Creek Public	Public	0.17	20.11	--	--	--	--	**--**	**--**
Hathaway Park	Public	28.90	28.90	--	--	--	--	**--**	**--**
Lee Branch Private	Private	6.76	67.29	$23,000	$23,000	$23,000	30%	**$23,000**	**$6,900**
Prairie Creek Preserve	Public	135.85	668.86	--	--	--	--	**--**	**--**
Prairie Creek Private-Easement	Private	5.16	5.68	$6,900	$10,350	$8,625	30%	**$8,625**	**$2,588**
Prairie Creek Private	Private	4.89	10.30	$6,900	$10,350	$8,625	30%	**$8,625**	**$2,588**
Prairie Creek West Private	Private	0.50	48.56	$6,900	$11,500	$9,200	30%	**$9,200**	**$2,760**
Prairie Creek West Private (Large)	Private	0.19	104.61	$6,900	$11,500	$9,200	30%	**$9,200**	**$2,760**
Shell Creek Delta	Private	103.68	103.68	$6,900	$11,500	$9,200	30%	**$9,200**	**$2,760**
Shell Creek Preserve	Public	1.26	99.30	--	--	--	--	**--**	**--**
Shell Creek West Private	Private	7.88	187.37	$6,900	$11,500	$9,200	30%	**$9,200**	**$2,760**
Washington Loop Private	Private	0.67	8.70	$8,625	$11,500	$10,063	30%	**$10,063**	**$3,019**
Washington Loop Private - Easement	Private	2.38	5.34	$8,625	$11,500	$10,063	30%	**$10,063**	**$3,019**
Amberjack Environmental Park	Public	102.00	102.00	--	--	--	--	**--**	**--**
Rotunda Mitigation Area	Public	34.00	34.00	--	--	--	--	**--**	**--**
Tippacanoe Environmental Park	Public	300.00	300.00	--	--	--	--	**--**	**--**
Tippacanoe II Mitigation Area	Public	182.80	182.80	--	--	--	--	**--**	**--**
San Casa Environmental Park	Public	66.90	66.90	--	--	--	--	**--**	**--**
All Parcels (General)	--	2.00	5.00	$6,900	$11,500	$9,200	30%	**$9,200**	**$2,760**

Charlotte County Scrub-Jay HCP - Economic Analysis		
HCP Fee Summary		
Component of Mitigation Fee	**Mitigation Fee ($/lot)**	**% of Total**
Land Acquisition	$1,234	44.0%
Habitat Assessment, Planning, & Enhancement	$204	7.3%
Habitat Management	$1,017	36.3%
Habitat Monitoring & Adaptive Management	$59	2.1%
Changed Circumstances-Remedial Measures	$92	3.3%
Plan Administration	$197	7.0%
Total Development Fee - Single Fee ($/lot):	**$2,803**	**100.0%**
Total HCP Costs	**Total Cost - Permit Term ($)**	**% of Total**
Land Acquisition	$20,608,816	53.7%
Habitat Assessment, Planning, & Enhancement	$3,406,469	8.9%
Habitat Management	$10,631,252	27.7%
Habitat Monitoring & Adaptive Management	$615,582	1.6%
Changed Circumstances-Remedial Measures	$966,477	2.5%
Plan Administration	$2,145,000	5.6%
Total Cost:	**$38,373,596**	**100.0%**

Charlotte County Scrub-Jay HCP - Economic Analysis	
HCP Fee Calculation (Single Mitigation Fee)	
Total Costs & Per-Lot Fees	**Value ($)**
FIXED COSTS	
Land Acquisition Costs (Land Preservation)	$20,608,816
Fee per Developed Lot	$1,234
Habitat Assessment, Planning & Enhancement Costs	$3,406,469
Fee per Developed Lot	$204
ONGOING COSTS	
Habitat Management & Maintenance (Permit Term)	$10,631,252
Fee per Developed Lot	$1,017
Monitoring & Adaptive Management (Permit Term)	$615,582
Fee per Developed Lot	$59
Changed Circumstances/Remedial Measures (Permit Term)	$966,477
Fee per Developed Lot	$92
Plan Administration	$2,145,000
Fee per Developed Lot	$197
Development Fee ($/lot)	**$2,803**
Fixed Costs (Permit Term)	***$2,198***
Endowment Contribution (Post Permit)	***$605***

Charlotte County Scrub-Jay HCP - Economic Analysis

HCP Fee Summary by TIER *(entire lot assumed to be habitat take)*

Acreage Tier	# Lots	Total Acres	Ave. Lot Size		FEE ($/lot)
1: 0.00 - 0.22 acres	5,239	630	0.12		**$1,070**
2: 0.22 - 0.49 acres	12,120	2,965	0.24		**$2,176**
3: 0.50 - 1.00 acres	209	129	0.62		**$5,474**
4: 1.00 - 3.00 acres	321	461	1.44		**$12,789**
5: 3.00 - 5.00 acres	22	84	3.83		**$34,092**
6: 5.00 - 20.00 acres	60	517	8.62		**$76,677**
7: 20.00 - 99.99 acres	9	323	35.86		**$319,035**
8: > 100.00 acres	4	557	139.36		**$1,239,983**
TOTAL	**17,984**	**5,666**	**0.32**		**--**
				Total Fees Paid:	**$50,413,747**

Charlotte County Scrub-Jay HCP - Economic Analysis

HCP Fee Summary by TIER *(partial habitat "take")*

Acreage Tier	# Lots		Ave. Lot Size	Take %	Take Acres	FEE ($/lot)
1: 0.00 - 0.22 acres	5,239		0.12	100%	630	**$1,675**
2: 0.22 - 0.49 acres	12,120		0.24	75%	2,223	**$2,557**
3: 0.50 - 1.00 acres	209		0.62	75%	96	**$6,430**
4: 1.00 - 3.00 acres	321		1.44	50%	231	**$10,016**
5: 3.00 - 5.00 acres	22		3.83	50%	42	**$26,698**
6: 5.00 - 20.00 acres	60		8.62	50%	259	**$60,047**
7: 20.00 - 99.99 acres	9		35.86	25%	81	**$124,921**
8: > 100.00 acres	4		139.36	10%	56	**$194,211**
TOTAL	**17,984**		**0.32**	**--**	**3,618**	**--**
				Total Fees Paid:		**$50,413,747**

Charlotte County Scrub-Jay HCP - Economic Analysis						
Summary of HCP Costs						
Type of Cost	**Total Cost (HCP Timeframe)**	**%**	**Average Annual Cost (Permit Term)**	**Average Annual Cost (Post Permit)**	**%**	**Endowment**
Land Acquisition (Land Preservation)	$20,608,816	*53.7%*	$686,961	$0	*0.0%*	$0
Habitat Assessment, Planning & Enhancement	$3,406,469	*8.9%*	$113,549	$0	*0.0%*	$0
Habitat Management	$10,631,252	*27.7%*	$354,375	$402,177	*75.4%*	$13,405,885
Monitoring & Adaptive Management	$615,582	*1.6%*	$20,519	$23,287	*4.4%*	$776,241
Change Circumstances (Remedial Measures)	$966,477	*2.5%*	$32,216	$36,562	*6.9%*	$1,218,717
Plan Administration	$2,145,000	*5.6%*	$71,500	$71,500	*13.4%*	$2,383,333
Total:	**$38,373,596**	*100.0%*	**$1,279,120**	**$533,525**	*100.0%*	**$17,784,176**
					Total HCP Cost:	**$56,157,772**

Charlotte County Scrub-Jay HCP - Economic Analysis

Summary of Implementation Budget Over Time

	Total Cost per Implementation Period									
Budget Category	**0**	**1-5**	**6-10**	**11-15**	**16-20**	**21-25**	**26-30**	**Total**	**Annual Ave (Permit)**	**Annual Ave (Post-Permit)**
Land Acquisition (Land Preservation)	$0	$5,152,204	$5,152,204	$2,576,102	$2,576,102	$2,576,102	$2,576,102	**$20,608,816**	**$686,961**	**$0**
Habitat Assessment, Planning, & Enhancement	$0	$871,332	$845,046	$422,523	$422,523	$422,523	$422,523	**$3,406,469**	**$113,549**	**$0**
Habitat Management	$0	$1,502,992	$1,652,372	$1,756,937	$1,831,627	$1,906,317	$1,981,007	**$10,631,252**	**$354,375**	**$402,177**
Monitoring & Adaptive Management	$0	$87,028	$95,677	$101,732	$106,057	$110,382	$114,706	**$615,582**	**$20,519**	**$23,287**
Change Circumstances (Remedial Measures)	$0	$136,636	$150,216	$159,722	$166,512	$173,302	$180,092	**$966,477**	**$32,216**	**$36,562**
Plan Administration	$0	$357,500	$357,500	$357,500	$357,500	$357,500	$357,500	**$2,145,000**	**$71,500**	**$71,500**
TOTAL (incl. contingency)	**$0**	**$8,107,692**	**$8,253,014**	**$5,374,516**	**$5,460,320**	**$5,546,125**	**$5,631,929**	**$38,373,596**	**$1,279,120**	**$533,525**
Contingency	*$0*	***$724,641***	***$736,618***	***$474,072***	***$481,255***	***$488,438***	***$495,622***	***$3,400,647***	***$113,355***	***$45,179***

Charlotte County Scrub-Jay HCP - Economic Analysis																																
HCP Cash Flow																																
Year:	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	***31+***
Initial Balance:	$0	$0	$65,261	$152,690	$235,879	$314,698	$389,018	$458,703	$523,614	$583,608	$638,538	$688,251	$1,353,740	$2,035,761	$2,734,811	$3,451,400	$4,186,055	$4,939,317	$5,711,745	$6,503,914	$7,316,415	$8,149,859	$9,004,875	$9,882,108	$10,782,227	$11,705,917	$12,653,885	$13,626,860	$14,625,593	$15,650,855	$16,703,443	*$17,784,176*
Collect (Fees):	$0	**$1,680,458**	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	*$0*
Collect (Other):	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	*$0*
Spending:																																
Land Acquisition (Land Preservation)	*$0*	*$1,030,441*	*$1,030,441*	*$1,030,441*	*$1,030,441*	*$1,030,441*	*$1,030,441*	*$1,030,441*	*$1,030,441*	*$1,030,441*	*$1,030,441*	*$515,220*	*$515,220*	*$515,220*	*$515,220*	*$515,220*	*$515,220*	*$515,220*	*$515,220*	*$515,220*	*$515,220*	*$515,220*	*$515,220*	*$515,220*	*$515,220*	*$515,220*	*$515,220*	*$515,220*	*$515,220*	*$515,220*	*$515,220*	*$0*
Habitat Assessment, Planning, and Enhancement	*$0*	*$195,296*	*$169,009*	*$169,009*	*$169,009*	*$169,009*	*$169,009*	*$169,009*	*$169,009*	*$169,009*	*$169,009*	*$84,505*	*$84,505*	*$84,505*	*$84,505*	*$84,505*	*$84,505*	*$84,505*	*$84,505*	*$84,505*	*$84,505*	*$84,505*	*$84,505*	*$84,505*	*$84,505*	*$84,505*	*$84,505*	*$84,505*	*$84,505*	*$84,505*	*$84,505*	*$0*
Habitat Management and Maintenance	*$0*	*$288,648*	*$294,623*	*$300,598*	*$306,574*	*$312,549*	*$318,524*	*$324,499*	*$330,474*	*$336,449*	*$342,425*	*$345,412*	*$348,400*	*$351,387*	*$354,375*	*$357,363*	*$360,350*	*$363,338*	*$366,325*	*$369,313*	*$372,301*	*$375,288*	*$378,276*	*$381,263*	*$384,251*	*$387,239*	*$390,226*	*$393,214*	*$396,201*	*$399,189*	*$402,177*	*$402,177*
Monitoring & Adaptive Management	*$0*	*$16,714*	*$17,060*	*$17,406*	*$17,752*	*$18,098*	*$18,444*	*$18,789*	*$19,135*	*$19,481*	*$19,827*	*$20,000*	*$20,173*	*$20,346*	*$20,519*	*$20,692*	*$20,865*	*$21,038*	*$21,211*	*$21,384*	*$21,557*	*$21,730*	*$21,903*	*$22,076*	*$22,249*	*$22,422*	*$22,595*	*$22,768*	*$22,941*	*$23,114*	*$23,287*	*$23,287*
Changed Circumstances (Remedial Measures)	*$0*	*$26,241*	*$26,784*	*$27,327*	*$27,870*	*$28,414*	*$28,957*	*$29,500*	*$30,043*	*$30,586*	*$31,130*	*$31,401*	*$31,673*	*$31,944*	*$32,216*	*$32,488*	*$32,759*	*$33,031*	*$33,302*	*$33,574*	*$33,846*	*$34,117*	*$34,389*	*$34,660*	*$34,932*	*$35,204*	*$35,475*	*$35,747*	*$36,018*	*$36,290*	*$36,562*	*$36,562*
Plan Administration	*$0*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*	*$71,500*
Total Spending	**$0**	**-$1,628,839**	**-$1,609,417**	**-$1,616,281**	**-$1,623,145**	**-$1,630,010**	**-$1,636,874**	**-$1,643,738**	**-$1,650,603**	**-$1,657,467**	**-$1,664,332**	**-$1,068,039**	**-$1,071,471**	**-$1,074,903**	**-$1,078,335**	**-$1,081,767**	**-$1,085,200**	**-$1,088,632**	**-$1,092,064**	**-$1,095,496**	**-$1,098,928**	**-$1,102,361**	**-$1,105,793**	**-$1,109,225**	**-$1,112,657**	**-$1,116,089**	**-$1,119,521**	**-$1,122,954**	**-$1,126,386**	**-$1,129,818**	**-$1,133,250**	***-$533,525***
Interest:	$0	$13,642	$16,388	$19,011	$21,507	$23,871	$26,101	$28,191	$30,139	$31,938	$33,586	$53,070	$73,034	$93,495	$114,466	$135,964	$158,004	$180,602	$203,774	$227,539	$251,914	$276,918	$302,568	$328,885	$355,889	$383,600	$412,039	$441,228	$471,190	$501,948	$533,525	*$533,525*
End Balance:	**$0**	**$65,261**	**$152,690**	**$235,879**	**$314,698**	**$389,018**	**$458,703**	**$523,614**	**$583,608**	**$638,538**	**$688,251**	**$1,353,740**	**$2,035,761**	**$2,734,811**	**$3,451,400**	**$4,186,055**	**$4,939,317**	**$5,711,745**	**$6,503,914**	**$7,316,415**	**$8,149,859**	**$9,004,875**	**$9,882,108**	**$10,782,227**	**$11,705,917**	**$12,653,885**	**$13,626,860**	**$14,625,593**	**$15,650,855**	**$16,703,443**	**$17,784,176**	***$17,784,176***

Charlotte County Scrub-Jay HCP - Economic Analysis

Land Acquisition Costs (Private) - Summary

Parameter	Total (Permit Term)	Annual Average (Permit Term)	Annual Average (Post Permit)
Land Acquisition Costs - Private & CE	$18,735,287	$624,510	$0
Contingency	$1,873,529	$62,451	$0
Total Cost:	**$20,608,816**	**$686,961**	**$0**
Fee/acre (Development):	**$1,233.51**		
Cost/acre (Conservation):	**$11,384.20**		

Charlotte County Scrub-Jay HCP - Economic Analysis

Land Acquisition Costs (Public) - Summary

Parameter	Total (Permit Term)	Annual Average (Permit Term)	Annual Average (Post Permit)
Land Acquisition Costs - Public	$0	$0	$0
Contingency	$0	$0	$0
Total Cost:	**$0**	**$0**	**$0**
Fee/acre (Development):	**$0.00**		
Cost/acre (Conservation):	**$0.00**		

Charlotte County Scrub-Jay HCP - Economic Analysis

Land Acquisition Costs (ALL) - Worksheet (Parcel Basis)

			~~Reserve only~~			*Entire parcel*		*Urbanomics*				
Property Name	**Ownership****	**Property ID**	~~Reserve Acres~~	~~Reserve Acres (Values)~~	~~% of Reserve~~	Parcel Acres	Parcel Acres (Values)	% of Reserve	Value ($/acre)	Cost ($/acre)	Total Land Cost ($)	Transaction Costs ($/trans.)	TOTAL COST
Biscayne Trust CE	Public	1	~~0.18~~	~~0.18~~	~~0.004%~~	4.14	4.14	0.075%	$9,200	$0	$0	$0	$0
Biscayne Trust CE	Public	2	~~45.43~~	~~45.43~~	~~1.010%~~	132.19	132.19	2.409%	$9,200	$0	$0	$0	$0
Biscayne Trust CE	Public-ROW	3	~~9.17~~	~~9.17~~	~~0.204%~~	0.00	0.00	0.000%	$9,200	$0	$0	$0	$0
Biscayne Trust Private	Public	1	~~19.34~~	~~19.34~~	~~0.430%~~	20.12	20.12	0.367%	$9,200	$0	$0	$0	$0
Biscayne Trust Private	Public-ROW	2	~~1.26~~	~~1.26~~	~~0.028%~~	0.00	0.00	0.000%	$9,200	$0	$0	$0	$0
Burchers Tract CE	Public	1	~~0.43~~	~~0.43~~	~~0.010%~~	10.31	10.31	0.188%	$9,200	$0	$0	$0	$0
Burchers Tract CE	Public	2	~~4.92~~	~~4.92~~	~~0.109%~~	9.92	9.92	0.181%	$9,200	$0	$0	$0	$0
Burchers Tract CE	Public	3	~~16.09~~	~~16.09~~	~~0.358%~~	38.04	38.04	0.693%	$9,200	$0	$0	$0	$0
Burchers Tract CE	Public	4	~~80.13~~	~~80.13~~	~~1.782%~~	217.35	217.35	3.961%	$9,200	$0	$0	$0	$0
Burchers Tract CE	Public	5	~~0.18~~	~~0.18~~	~~0.004%~~	0.20	0.20	0.004%	$9,200	$0	$0	$0	$0
Burchers Tract CE	Public	6	~~44.07~~	~~44.07~~	~~0.980%~~	96.09	96.09	1.751%	$9,200	$0	$0	$0	$0
Burchers Tract CE	Public	7	~~2.99~~	~~2.99~~	~~0.066%~~	2.99	2.99	0.055%	$9,200	$0	$0	$0	$0
Burchers Tract CE	Public	8	~~45.71~~	~~45.71~~	~~1.017%~~	80.82	80.82	1.473%	$9,200	$0	$0	$0	$0
Burchers Tract CE	Public	9	~~66.51~~	~~66.51~~	~~1.479%~~	117.81	117.81	2.147%	$9,200	$0	$0	$0	$0
Burchers Tract CE	Public	10	~~35.91~~	~~35.91~~	~~0.799%~~	56.36	56.36	1.027%	$9,200	$0	$0	$0	$0
Burchers Tract CE	Public	11	~~12.83~~	~~12.83~~	~~0.285%~~	16.77	16.77	0.306%	$9,200	$0	$0	$0	$0
Burchers Tract CE	Public	12	~~0.55~~	~~0.55~~	~~0.012%~~	15.23	15.23	0.278%	$9,200	$0	$0	$0	$0
Burchers Tract CE	Public-ROW	13	~~0.35~~	~~0.35~~	~~0.008%~~	0.00	0.00	0.000%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	1	~~1.15~~	~~1.15~~	~~0.026%~~	2.18	2.18	0.040%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	2	~~2.33~~	~~2.33~~	~~0.052%~~	2.33	2.33	0.042%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	3	~~6.64~~	~~6.64~~	~~0.148%~~	6.64	6.64	0.121%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	4	~~6.59~~	~~6.59~~	~~0.147%~~	6.59	6.59	0.120%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	5	~~4.65~~	~~4.65~~	~~0.103%~~	4.65	4.65	0.085%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	6	~~4.06~~	~~4.06~~	~~0.090%~~	4.06	4.06	0.074%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	7	~~0.23~~	~~0.23~~	~~0.005%~~	0.23	0.23	0.004%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	8	~~0.23~~	~~0.23~~	~~0.005%~~	0.23	0.23	0.004%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	9	~~0.23~~	~~0.23~~	~~0.005%~~	0.23	0.23	0.004%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	10	~~0.85~~	~~0.85~~	~~0.019%~~	0.85	0.85	0.015%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	11	~~5.08~~	~~5.08~~	~~0.113%~~	5.08	5.08	0.093%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	12	~~0.38~~	~~0.38~~	~~0.008%~~	0.38	0.38	0.007%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	13	~~2.07~~	~~2.07~~	~~0.046%~~	2.07	2.07	0.038%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	14	~~0.42~~	~~0.42~~	~~0.009%~~	0.42	0.42	0.008%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	15	~~12.43~~	~~12.43~~	~~0.277%~~	12.43	12.43	0.227%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	16	~~0.34~~	~~0.34~~	~~0.008%~~	0.34	0.34	0.006%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	17	~~0.26~~	~~0.26~~	~~0.006%~~	0.26	0.26	0.005%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	18	~~0.46~~	~~0.46~~	~~0.010%~~	0.46	0.46	0.008%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	19	~~0.22~~	~~0.22~~	~~0.005%~~	0.22	0.22	0.004%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	20	~~0.26~~	~~0.26~~	~~0.006%~~	0.26	0.26	0.005%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	21	~~0.46~~	~~0.46~~	~~0.010%~~	0.46	0.46	0.008%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	22	~~4.03~~	~~4.03~~	~~0.090%~~	4.16	4.16	0.076%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	23	~~0.34~~	~~0.34~~	~~0.008%~~	0.34	0.34	0.006%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	24	~~0.46~~	~~0.46~~	~~0.010%~~	0.46	0.46	0.008%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	25	~~4.21~~	~~4.21~~	~~0.094%~~	4.21	4.21	0.077%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	26	~~0.23~~	~~0.23~~	~~0.005%~~	0.23	0.23	0.004%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	27	~~1.47~~	~~1.47~~	~~0.033%~~	1.47	1.47	0.027%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	28	~~0.38~~	~~0.38~~	~~0.009%~~	0.38	0.38	0.007%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	29	~~0.23~~	~~0.23~~	~~0.005%~~	0.23	0.23	0.004%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	30	~~0.24~~	~~0.24~~	~~0.005%~~	0.24	0.24	0.004%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	31	~~0.46~~	~~0.46~~	~~0.010%~~	0.46	0.46	0.008%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	32	~~0.38~~	~~0.38~~	~~0.009%~~	0.38	0.38	0.007%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	33	~~0.40~~	~~0.40~~	~~0.009%~~	0.40	0.40	0.007%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	34	~~0.63~~	~~0.63~~	~~0.014%~~	0.63	0.63	0.012%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	35	~~1.19~~	~~1.19~~	~~0.026%~~	1.19	1.19	0.022%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	36	~~0.34~~	~~0.34~~	~~0.008%~~	0.34	0.34	0.006%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	37	~~0.29~~	~~0.29~~	~~0.006%~~	0.29	0.29	0.005%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	38	~~0.23~~	~~0.23~~	~~0.005%~~	0.23	0.23	0.004%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	39	~~1.15~~	~~1.15~~	~~0.026%~~	1.15	1.15	0.021%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	40	~~0.29~~	~~0.29~~	~~0.006%~~	0.29	0.29	0.005%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	41	~~0.97~~	~~0.97~~	~~0.022%~~	0.97	0.97	0.018%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	42	~~2.25~~	~~2.25~~	~~0.050%~~	2.25	2.25	0.041%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	43	~~0.52~~	~~0.52~~	~~0.011%~~	0.52	0.52	0.009%	$9,200	$0	$0	$0	$0

Property Name	Ownership**	Property ID	~~Reserve Acres~~	~~Reserve Acres (Values)~~	~~% of Reserve~~	Parcel Acres	Parcel Acres (Values)	% of Reserve	Value ($/acre)	Cost ($/acre)	Total Land Cost ($)	Transaction Costs ($/trans.)	TOTAL COST
Deep Creek Public	Public	44	~~0.29~~	~~0.29~~	~~0.006%~~	0.29	0.29	0.005%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	45	~~0.23~~	~~0.23~~	~~0.005%~~	0.23	0.23	0.004%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	46	~~1.38~~	~~1.38~~	~~0.031%~~	1.38	1.38	0.025%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	47	~~0.23~~	~~0.23~~	~~0.005%~~	0.23	0.23	0.004%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	48	~~0.23~~	~~0.23~~	~~0.005%~~	0.23	0.23	0.004%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	49	~~0.23~~	~~0.23~~	~~0.005%~~	0.23	0.23	0.004%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	50	~~0.23~~	~~0.23~~	~~0.005%~~	0.23	0.23	0.004%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	51	~~0.07~~	~~0.07~~	~~0.002%~~	0.29	0.29	0.005%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	52	~~0.17~~	~~0.17~~	~~0.004%~~	0.17	0.17	0.003%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	53	~~0.31~~	~~0.31~~	~~0.007%~~	4.43	4.43	0.081%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	54	~~0.23~~	~~0.23~~	~~0.005%~~	0.23	0.23	0.004%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	55	~~0.25~~	~~0.25~~	~~0.006%~~	0.25	0.25	0.005%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	56	~~0.32~~	~~0.32~~	~~0.007%~~	0.41	0.41	0.007%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	57	~~8.53~~	~~8.53~~	~~0.190%~~	20.11	20.11	0.367%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	58	~~10.90~~	~~10.90~~	~~0.242%~~	20.11	20.11	0.367%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public	59	~~0.25~~	~~0.25~~	~~0.005%~~	11.69	11.69	0.213%	$9,200	$0	$0	$0	$0
Deep Creek Public	Public-ROW	60	~~46.39~~	~~46.39~~	~~1.032%~~	0.00	0.00	0.000%	$9,200	$0	$0	$0	$0
Hathaway Park	Public	1	~~19.33~~	~~19.33~~	~~0.430%~~	28.90	28.90	0.527%	$9,200	$0	$0	$0	$0
Hathaway Park	Public-ROW	2	~~0.21~~	~~0.21~~	~~0.005%~~	0.00	0.00	0.000%	$9,200	$0	$0	$0	$0
Lee Branch Private	Private	1	~~67.29~~	~~67.29~~	~~1.497%~~	67.29	67.29	1.227%	$23,000	$23,000	$1,547,765	$2,000	$1,549,765
Lee Branch Private	Private	2	~~6.76~~	~~6.76~~	~~0.150%~~	6.76	6.76	0.123%	$23,000	$23,000	$155,590	$2,000	$157,590
Lee Branch Private	Private	3	~~14.91~~	~~14.91~~	~~0.332%~~	14.91	14.91	0.272%	$23,000	$23,000	$343,031	$2,000	$345,031
Lee Branch Private	Private	4	~~49.31~~	~~49.31~~	~~1.097%~~	49.31	49.31	0.899%	$23,000	$23,000	$1,134,196	$2,000	$1,136,196
Lee Branch Private	Private-ROW	5	~~0.00~~	~~0.00~~	~~0.000%~~	0.00	0.00	0.000%	$23,000	$0	$0	$0	$0
Prairie Creek Preserve	Public	1	~~663.40~~	~~663.40~~	~~14.754%~~	668.86	668.86	12.191%	$9,200	$0	$0	$0	$0
Prairie Creek Preserve	Public	2	~~220.15~~	~~220.15~~	~~4.896%~~	220.25	220.25	4.014%	$9,200	$0	$0	$0	$0
Prairie Creek Preserve	Public	3	~~611.53~~	~~611.53~~	~~13.601%~~	613.47	613.47	11.181%	$9,200	$0	$0	$0	$0
Prairie Creek Preserve	Public	4	~~55.46~~	~~55.46~~	~~1.233%~~	135.85	135.85	2.476%	$9,200	$0	$0	$0	$0
Prairie Creek Preserve	Public-ROW	5	~~11.30~~	~~11.30~~	~~0.251%~~	0.00	0.00	0.000%	$9,200	$0	$0	$0	$0
Prairie Creek Private-CE	Private	1	~~4.97~~	~~4.97~~	~~0.111%~~	5.68	5.68	0.103%	$8,625	$8,625	$48,953	$2,000	$50,953
Prairie Creek Private-CE	Private	2	~~5.09~~	~~5.09~~	~~0.113%~~	5.16	5.16	0.094%	$8,625	$8,625	$44,468	$2,000	$46,468
Prairie Creek Private-CE	Private	3	~~5.22~~	~~5.22~~	~~0.116%~~	5.24	5.24	0.096%	$8,625	$8,625	$45,210	$2,000	$47,210
Prairie Creek Private-CE	Private-ROW	4	~~0.21~~	~~0.21~~	~~0.005%~~	0.00	0.00	0.000%	$8,625	$0	$0	$0	$0
Prairie Creek Private	Private	5	~~8.54~~	~~8.54~~	~~0.190%~~	8.54	8.54	0.156%	$8,625	$8,625	$73,676	$2,000	$75,676
Prairie Creek Private	Private	6	~~4.95~~	~~4.95~~	~~0.110%~~	5.11	5.11	0.093%	$8,625	$8,625	$44,097	$2,000	$46,097
Prairie Creek Private	Private	7	~~4.92~~	~~4.92~~	~~0.109%~~	5.01	5.01	0.091%	$8,625	$8,625	$43,243	$2,000	$45,243
Prairie Creek Private	Private	8	~~6.40~~	~~6.40~~	~~0.142%~~	6.55	6.55	0.119%	$8,625	$8,625	$56,529	$2,000	$58,529
Prairie Creek Private	Private	9	~~5.13~~	~~5.13~~	~~0.114%~~	5.28	5.28	0.096%	$8,625	$8,625	$45,554	$2,000	$47,554
Prairie Creek Private	Private	10	~~4.91~~	~~4.91~~	~~0.109%~~	4.96	4.96	0.090%	$8,625	$8,625	$42,738	$2,000	$44,738
Prairie Creek Private	Private	11	~~4.83~~	~~4.83~~	~~0.107%~~	5.04	5.04	0.092%	$8,625	$8,625	$43,481	$2,000	$45,481
Prairie Creek Private	Private	12	~~4.92~~	~~4.92~~	~~0.109%~~	5.09	5.09	0.093%	$8,625	$8,625	$43,893	$2,000	$45,893
Prairie Creek Private	Private	13	~~5.11~~	~~5.11~~	~~0.114%~~	5.28	5.28	0.096%	$8,625	$8,625	$45,521	$2,000	$47,521
Prairie Creek Private	Private	14	~~6.74~~	~~6.74~~	~~0.150%~~	6.94	6.94	0.126%	$8,625	$8,625	$59,823	$2,000	$61,823
Prairie Creek Private	Private	15	~~8.04~~	~~8.04~~	~~0.179%~~	8.05	8.05	0.147%	$8,625	$8,625	$69,456	$2,000	$71,456
Prairie Creek Private	Private	16	~~6.69~~	~~6.69~~	~~0.149%~~	7.03	7.03	0.128%	$8,625	$8,625	$60,599	$2,000	$62,599
Prairie Creek Private	Private	17	~~5.96~~	~~5.96~~	~~0.133%~~	5.96	5.96	0.109%	$8,625	$8,625	$51,399	$2,000	$53,399
Prairie Creek Private	Private	18	~~10.00~~	~~10.00~~	~~0.222%~~	10.04	10.04	0.183%	$8,625	$8,625	$86,606	$2,000	$88,606
Prairie Creek Private	Private	19	~~4.95~~	~~4.95~~	~~0.110%~~	5.07	5.07	0.092%	$8,625	$8,625	$43,715	$2,000	$45,715
Prairie Creek Private	Private	20	~~5.25~~	~~5.25~~	~~0.117%~~	5.27	5.27	0.096%	$8,625	$8,625	$45,460	$2,000	$47,460
Prairie Creek Private	Private	21	~~5.75~~	~~5.75~~	~~0.128%~~	5.94	5.94	0.108%	$8,625	$8,625	$51,230	$2,000	$53,230
Prairie Creek Private	Private	22	~~5.99~~	~~5.99~~	~~0.133%~~	6.01	6.01	0.109%	$8,625	$8,625	$51,808	$2,000	$53,808
Prairie Creek Private	Private	23	~~4.83~~	~~4.83~~	~~0.107%~~	4.94	4.94	0.090%	$8,625	$8,625	$42,597	$2,000	$44,597
Prairie Creek Private	Private	24	~~6.39~~	~~6.39~~	~~0.142%~~	6.39	6.39	0.116%	$8,625	$8,625	$55,094	$2,000	$57,094
Prairie Creek Private	Private	25	~~5.94~~	~~5.94~~	~~0.132%~~	6.05	6.05	0.110%	$8,625	$8,625	$52,151	$2,000	$54,151
Prairie Creek Private	Private	26	~~5.37~~	~~5.37~~	~~0.119%~~	5.37	5.37	0.098%	$8,625	$8,625	$46,355	$2,000	$48,355
Prairie Creek Private	Private	27	~~5.98~~	~~5.98~~	~~0.133%~~	6.12	6.12	0.112%	$8,625	$8,625	$52,768	$2,000	$54,768
Prairie Creek Private	Private	28	~~5.63~~	~~5.63~~	~~0.125%~~	5.64	5.64	0.103%	$8,625	$8,625	$48,604	$2,000	$50,604
Prairie Creek Private	Private	29	~~4.88~~	~~4.88~~	~~0.109%~~	4.98	4.98	0.091%	$8,625	$8,625	$42,994	$2,000	$44,994
Prairie Creek Private	Private	30	~~5.07~~	~~5.07~~	~~0.113%~~	5.09	5.09	0.093%	$8,625	$8,625	$43,923	$2,000	$45,923
Prairie Creek Private	Private	31	~~5.78~~	~~5.78~~	~~0.128%~~	5.81	5.81	0.106%	$8,625	$8,625	$50,120	$2,000	$52,120
Prairie Creek Private	Private	32	~~5.50~~	~~5.50~~	~~0.122%~~	5.52	5.52	0.101%	$8,625	$8,625	$47,586	$2,000	$49,586
Prairie Creek Private	Private	33	~~5.65~~	~~5.65~~	~~0.126%~~	5.68	5.68	0.104%	$8,625	$8,625	$48,994	$2,000	$50,994
Prairie Creek Private	Private	34	~~5.17~~	~~5.17~~	~~0.115%~~	5.17	5.17	0.094%	$8,625	$8,625	$44,583	$2,000	$46,583
Prairie Creek Private	Private	35	~~5.05~~	~~5.05~~	~~0.112%~~	5.05	5.05	0.092%	$8,625	$8,625	$43,519	$2,000	$45,519
Prairie Creek Private	Private	36	~~4.97~~	~~4.97~~	~~0.110%~~	5.07	5.07	0.092%	$8,625	$8,625	$43,755	$2,000	$45,755

Property Name	Ownership**	Property ID	~~Reserve Acres~~	~~Reserve Acres (Values)~~	~~% of Reserve~~	Parcel Acres	Parcel Acres (Values)	% of Reserve	Value ($/acre)	Cost ($/acre)	Total Land Cost ($)	Transaction Costs ($/trans.)	TOTAL COST
Prairie Creek Private	Private	37	~~4.98~~	~~4.98~~	~~0.111%~~	5.00	5.00	0.091%	$8,625	$8,625	$43,131	$2,000	$45,131
Prairie Creek Private	Private	38	~~5.10~~	~~5.10~~	~~0.113%~~	5.11	5.11	0.093%	$8,625	$8,625	$44,075	$2,000	$46,075
Prairie Creek Private	Private	39	~~5.11~~	~~5.11~~	~~0.114%~~	5.11	5.11	0.093%	$8,625	$8,625	$44,075	$2,000	$46,075
Prairie Creek Private	Private	40	~~5.11~~	~~5.11~~	~~0.114%~~	5.11	5.11	0.093%	$8,625	$8,625	$44,075	$2,000	$46,075
Prairie Creek Private	Private	41	~~4.86~~	~~4.86~~	~~0.108%~~	5.01	5.01	0.091%	$8,625	$8,625	$43,197	$2,000	$45,197
Prairie Creek Private	Private	42	~~9.96~~	~~9.96~~	~~0.221%~~	10.03	10.03	0.183%	$8,625	$8,625	$86,500	$2,000	$88,500
Prairie Creek Private	Private	43	~~6.84~~	~~6.84~~	~~0.152%~~	6.92	6.92	0.126%	$8,625	$8,625	$59,718	$2,000	$61,718
Prairie Creek Private	Private	44	~~7.22~~	~~7.22~~	~~0.160%~~	7.27	7.27	0.133%	$8,625	$8,625	$62,736	$2,000	$64,736
Prairie Creek Private	Private	45	~~7.19~~	~~7.19~~	~~0.160%~~	7.27	7.27	0.132%	$8,625	$8,625	$62,674	$2,000	$64,674
Prairie Creek Private	Private	46	~~5.15~~	~~5.15~~	~~0.115%~~	5.25	5.25	0.096%	$8,625	$8,625	$45,241	$2,000	$47,241
Prairie Creek Private	Private	47	~~5.26~~	~~5.26~~	~~0.117%~~	5.41	5.41	0.099%	$8,625	$8,625	$46,704	$2,000	$48,704
Prairie Creek Private	Private	48	~~5.66~~	~~5.66~~	~~0.126%~~	5.82	5.82	0.106%	$8,625	$8,625	$50,216	$2,000	$52,216
Prairie Creek Private	Private	49	~~5.24~~	~~5.24~~	~~0.117%~~	5.24	5.24	0.096%	$8,625	$8,625	$45,226	$2,000	$47,226
Prairie Creek Private	Private	50	~~5.02~~	~~5.02~~	~~0.112%~~	5.02	5.02	0.092%	$8,625	$8,625	$43,303	$2,000	$45,303
Prairie Creek Private	Private	51	~~5.02~~	~~5.02~~	~~0.112%~~	5.02	5.02	0.092%	$8,625	$8,625	$43,303	$2,000	$45,303
Prairie Creek Private	Private	52	~~6.15~~	~~6.15~~	~~0.137%~~	6.15	6.15	0.112%	$8,625	$8,625	$53,071	$2,000	$55,071
Prairie Creek Private	Private	53	~~5.75~~	~~5.75~~	~~0.128%~~	5.75	5.75	0.105%	$8,625	$8,625	$49,569	$2,000	$51,569
Prairie Creek Private	Private	54	~~6.40~~	~~6.40~~	~~0.142%~~	6.40	6.40	0.117%	$8,625	$8,625	$55,197	$2,000	$57,197
Prairie Creek Private	Private	55	~~5.26~~	~~5.26~~	~~0.117%~~	5.26	5.26	0.096%	$8,625	$8,625	$45,335	$2,000	$47,335
Prairie Creek Private	Private	56	~~6.66~~	~~6.66~~	~~0.148%~~	6.66	6.66	0.121%	$8,625	$8,625	$57,486	$2,000	$59,486
Prairie Creek Private	Private	57	~~5.20~~	~~5.20~~	~~0.116%~~	5.20	5.20	0.095%	$8,625	$8,625	$44,874	$2,000	$46,874
Prairie Creek Private	Private	58	~~4.89~~	~~4.89~~	~~0.109%~~	4.89	4.89	0.089%	$8,625	$8,625	$42,166	$2,000	$44,166
Prairie Creek Private	Private	59	~~5.05~~	~~5.05~~	~~0.112%~~	5.12	5.12	0.093%	$8,625	$8,625	$44,199	$2,000	$46,199
Prairie Creek Private	Private	60	~~5.75~~	~~5.75~~	~~0.128%~~	5.77	5.77	0.105%	$8,625	$8,625	$49,763	$2,000	$51,763
Prairie Creek Private	Private	61	~~6.29~~	~~6.29~~	~~0.140%~~	6.33	6.33	0.115%	$8,625	$8,625	$54,600	$2,000	$56,600
Prairie Creek Private	Private	62	~~7.79~~	~~7.79~~	~~0.173%~~	7.79	7.79	0.142%	$8,625	$8,625	$67,170	$2,000	$69,170
Prairie Creek Private	Private	63	~~5.86~~	~~5.86~~	~~0.130%~~	5.86	5.86	0.107%	$8,625	$8,625	$50,557	$2,000	$52,557
Prairie Creek Private	Private	64	~~5.25~~	~~5.25~~	~~0.117%~~	5.25	5.25	0.096%	$8,625	$8,625	$45,264	$2,000	$47,264
Prairie Creek Private	Private	65	~~5.45~~	~~5.45~~	~~0.121%~~	5.60	5.60	0.102%	$8,625	$8,625	$48,308	$2,000	$50,308
Prairie Creek Private	Private	66	~~5.00~~	~~5.00~~	~~0.111%~~	5.00	5.00	0.091%	$8,625	$8,625	$43,127	$2,000	$45,127
Prairie Creek Private	Private	67	~~5.02~~	~~5.02~~	~~0.112%~~	5.02	5.02	0.092%	$8,625	$8,625	$43,330	$2,000	$45,330
Prairie Creek Private	Private	68	~~6.04~~	~~6.04~~	~~0.134%~~	6.04	6.04	0.110%	$8,625	$8,625	$52,055	$2,000	$54,055
Prairie Creek Private	Private	69	~~5.18~~	~~5.18~~	~~0.115%~~	5.18	5.18	0.094%	$8,625	$8,625	$44,652	$2,000	$46,652
Prairie Creek Private	Private	70	~~5.22~~	~~5.22~~	~~0.116%~~	5.22	5.22	0.095%	$8,625	$8,625	$44,984	$2,000	$46,984
Prairie Creek Private	Private	71	~~5.05~~	~~5.05~~	~~0.112%~~	5.05	5.05	0.092%	$8,625	$8,625	$43,580	$2,000	$45,580
Prairie Creek Private	Private	72	~~5.18~~	~~5.18~~	~~0.115%~~	5.19	5.19	0.095%	$8,625	$8,625	$44,724	$2,000	$46,724
Prairie Creek Private	Private	73	~~5.01~~	~~5.01~~	~~0.111%~~	5.01	5.01	0.091%	$8,625	$8,625	$43,218	$2,000	$45,218
Prairie Creek Private	Private	74	~~4.96~~	~~4.96~~	~~0.110%~~	5.03	5.03	0.092%	$8,625	$8,625	$43,373	$2,000	$45,373
Prairie Creek Private	Private	75	~~4.90~~	~~4.90~~	~~0.109%~~	5.01	5.01	0.091%	$8,625	$8,625	$43,220	$2,000	$45,220
Prairie Creek Private	Private	76	~~5.10~~	~~5.10~~	~~0.113%~~	5.11	5.11	0.093%	$8,625	$8,625	$44,075	$2,000	$46,075
Prairie Creek Private	Private	77	~~4.86~~	~~4.86~~	~~0.108%~~	5.06	5.06	0.092%	$8,625	$8,625	$43,625	$2,000	$45,625
Prairie Creek Private	Private	78	~~5.13~~	~~5.13~~	~~0.114%~~	5.13	5.13	0.093%	$8,625	$8,625	$44,216	$2,000	$46,216
Prairie Creek Private	Private	79	~~4.74~~	~~4.74~~	~~0.105%~~	5.01	5.01	0.091%	$8,625	$8,625	$43,248	$2,000	$45,248
Prairie Creek Private	Private	80	~~5.32~~	~~5.32~~	~~0.118%~~	5.57	5.57	0.101%	$8,625	$8,625	$48,011	$2,000	$50,011
Prairie Creek Private	Private	81	~~7.51~~	~~7.51~~	~~0.167%~~	7.77	7.77	0.142%	$8,625	$8,625	$67,039	$2,000	$69,039
Prairie Creek Private	Private	82	~~5.08~~	~~5.08~~	~~0.113%~~	5.10	5.10	0.093%	$8,625	$8,625	$43,994	$2,000	$45,994
Prairie Creek Private	Private	83	~~5.04~~	~~5.04~~	~~0.112%~~	5.04	5.04	0.092%	$8,625	$8,625	$43,505	$2,000	$45,505
Prairie Creek Private	Private	84	~~4.91~~	~~4.91~~	~~0.109%~~	5.01	5.01	0.091%	$8,625	$8,625	$43,220	$2,000	$45,220
Prairie Creek Private	Private	85	~~4.93~~	~~4.93~~	~~0.110%~~	5.16	5.16	0.094%	$8,625	$8,625	$44,485	$2,000	$46,485
Prairie Creek Private	Private	86	~~9.62~~	~~9.62~~	~~0.214%~~	10.10	10.10	0.184%	$8,625	$8,625	$87,131	$2,000	$89,131
Prairie Creek Private	Private	87	~~5.02~~	~~5.02~~	~~0.112%~~	5.02	5.02	0.092%	$8,625	$8,625	$43,321	$2,000	$45,321
Prairie Creek Private	Private	88	~~5.08~~	~~5.08~~	~~0.113%~~	5.08	5.08	0.093%	$8,625	$8,625	$43,847	$2,000	$45,847
Prairie Creek Private	Private	89	~~5.02~~	~~5.02~~	~~0.112%~~	5.02	5.02	0.091%	$8,625	$8,625	$43,291	$2,000	$45,291
Prairie Creek Private	Private	90	~~4.88~~	~~4.88~~	~~0.109%~~	5.02	5.02	0.092%	$8,625	$8,625	$43,303	$2,000	$45,303
Prairie Creek Private	Private	91	~~5.01~~	~~5.01~~	~~0.111%~~	5.02	5.02	0.092%	$8,625	$8,625	$43,303	$2,000	$45,303
Prairie Creek Private	Private	92	~~5.20~~	~~5.20~~	~~0.116%~~	5.20	5.20	0.095%	$8,625	$8,625	$44,869	$2,000	$46,869
Prairie Creek Private	Private	93	~~4.87~~	~~4.87~~	~~0.108%~~	5.02	5.02	0.092%	$8,625	$8,625	$43,303	$2,000	$45,303
Prairie Creek Private	Private	94	~~5.19~~	~~5.19~~	~~0.115%~~	5.19	5.19	0.095%	$8,625	$8,625	$44,731	$2,000	$46,731
Prairie Creek Private	Private	95	~~5.34~~	~~5.34~~	~~0.119%~~	5.46	5.46	0.099%	$8,625	$8,625	$47,063	$2,000	$49,063
Prairie Creek Private	Private	96	~~6.91~~	~~6.91~~	~~0.154%~~	6.92	6.92	0.126%	$8,625	$8,625	$59,721	$2,000	$61,721
Prairie Creek Private	Private	97	~~6.05~~	~~6.05~~	~~0.135%~~	6.29	6.29	0.115%	$8,625	$8,625	$54,216	$2,000	$56,216
Prairie Creek Private	Private	98	~~5.09~~	~~5.09~~	~~0.113%~~	5.17	5.17	0.094%	$8,625	$8,625	$44,603	$2,000	$46,603
Prairie Creek Private	Private	99	~~5.05~~	~~5.05~~	~~0.112%~~	5.06	5.06	0.092%	$8,625	$8,625	$43,625	$2,000	$45,625
Prairie Creek Private	Private	100	~~5.00~~	~~5.00~~	~~0.111%~~	5.00	5.00	0.091%	$8,625	$8,625	$43,111	$2,000	$45,111
Prairie Creek Private	Private	101	~~5.15~~	~~5.15~~	~~0.115%~~	10.30	10.30	0.188%	$8,625	$8,625	$88,804	$2,000	$90,804

Property Name	Ownership**	Property ID	~~Reserve Acres~~	~~Reserve Acres (Values)~~	~~% of Reserve~~	Parcel Acres	Parcel Acres (Values)	% of Reserve	Value ($/acre)	Cost ($/acre)	Total Land Cost ($)	Transaction Costs ($/trans.)	TOTAL COST
Prairie Creek Private	Private	102	~~5.17~~	~~5.17~~	~~0.115%~~	5.21	5.21	0.095%	$8,625	$8,625	$44,970	$2,000	$46,970
Prairie Creek Private	Private	103	~~4.99~~	~~4.99~~	~~0.111%~~	5.13	5.13	0.093%	$8,625	$8,625	$44,232	$2,000	$46,232
Prairie Creek Private	Private	104	~~4.96~~	~~4.96~~	~~0.110%~~	5.03	5.03	0.092%	$8,625	$8,625	$43,387	$2,000	$45,387
Prairie Creek Private	Private	105	~~4.78~~	~~4.78~~	~~0.106%~~	5.03	5.03	0.092%	$8,625	$8,625	$43,341	$2,000	$45,341
Prairie Creek Private	Private	106	~~5.04~~	~~5.04~~	~~0.112%~~	5.15	5.15	0.094%	$8,625	$8,625	$44,412	$2,000	$46,412
Prairie Creek Private	Private	107	~~5.07~~	~~5.07~~	~~0.113%~~	5.21	5.21	0.095%	$8,625	$8,625	$44,895	$2,000	$46,895
Prairie Creek Private	Private	108	~~4.97~~	~~4.97~~	~~0.111%~~	5.00	5.00	0.091%	$8,625	$8,625	$43,129	$2,000	$45,129
Prairie Creek Private	Private	109	~~4.98~~	~~4.98~~	~~0.111%~~	5.00	5.00	0.091%	$8,625	$8,625	$43,131	$2,000	$45,131
Prairie Creek Private	Private	110	~~4.92~~	~~4.92~~	~~0.109%~~	5.07	5.07	0.092%	$8,625	$8,625	$43,695	$2,000	$45,695
Prairie Creek Private	Private	111	~~4.98~~	~~4.98~~	~~0.111%~~	5.05	5.05	0.092%	$8,625	$8,625	$43,593	$2,000	$45,593
Prairie Creek Private	Private	112	~~4.92~~	~~4.92~~	~~0.109%~~	5.00	5.00	0.091%	$8,625	$8,625	$43,143	$2,000	$45,143
Prairie Creek Private	Private	113	~~4.91~~	~~4.91~~	~~0.109%~~	5.00	5.00	0.091%	$8,625	$8,625	$43,130	$2,000	$45,130
Prairie Creek Private	Private	114	~~4.79~~	~~4.79~~	~~0.107%~~	5.14	5.14	0.094%	$8,625	$8,625	$44,348	$2,000	$46,348
Prairie Creek Private	Private	115	~~5.32~~	~~5.32~~	~~0.118%~~	5.32	5.32	0.097%	$8,625	$8,625	$45,903	$2,000	$47,903
Prairie Creek Private	Private-ROW	116	~~7.99~~	~~7.99~~	~~0.178%~~	0.00	0.00	0.000%	$8,625	$0	$0	$0	$0
Prairie Creek West Private	Private	1	~~13.28~~	~~13.28~~	~~0.295%~~	48.56	48.56	0.885%	$9,200	$9,200	$446,718	$2,000	$448,718
Prairie Creek West Private	Private	2	~~0.32~~	~~0.32~~	~~0.007%~~	0.50	0.50	0.009%	$9,200	$9,200	$4,569	$2,000	$6,569
Prairie Creek West Private	Private-ROW	3	~~0.11~~	~~0.11~~	~~0.002%~~	0.00	0.00	0.000%	$9,200	$0	$0	$0	$0
Prairie Creek West Private (Large)	Private	1	~~5.63~~	~~5.63~~	~~0.125%~~	104.61	104.61	1.907%	$9,200	$9,200	$962,449	$2,000	$964,449
Prairie Creek West Private (Large)	Private	2	~~0.19~~	~~0.19~~	~~0.004%~~	13.88	13.88	0.253%	$9,200	$9,200	$127,710	$2,000	$129,710
Prairie Creek West Private (Large)	Private	3	~~0.83~~	~~0.83~~	~~0.018%~~	1.98	1.98	0.036%	$9,200	$9,200	$18,257	$2,000	$20,257
Prairie Creek West Private (Large)	Private	4	~~21.73~~	~~21.73~~	~~0.483%~~	27.74	27.74	0.506%	$9,200	$9,200	$255,204	$2,000	$257,204
Prairie Creek West Private (Large)	Private	5	~~2.95~~	~~2.95~~	~~0.066%~~	19.60	19.60	0.357%	$9,200	$9,200	$180,295	$2,000	$182,295
Prairie Creek West Private (Large)	Private	6	~~4.28~~	~~4.28~~	~~0.095%~~	4.30	4.30	0.078%	$9,200	$9,200	$39,544	$2,000	$41,544
Prairie Creek West Private (Large)	Private	7	~~14.54~~	~~14.54~~	~~0.323%~~	15.33	15.33	0.279%	$9,200	$9,200	$141,068	$2,000	$143,068
Prairie Creek West Private (Large)	Private	8	~~7.05~~	~~7.05~~	~~0.157%~~	18.63	18.63	0.340%	$9,200	$9,200	$171,370	$2,000	$173,370
Prairie Creek West Private (Large)	Private	9	~~2.48~~	~~2.48~~	~~0.055%~~	14.87	14.87	0.271%	$9,200	$9,200	$136,848	$2,000	$138,848
Prairie Creek West Private (Large)	Private	10	~~3.58~~	~~3.58~~	~~0.080%~~	4.94	4.94	0.090%	$9,200	$9,200	$45,465	$2,000	$47,465
Prairie Creek West Private (Large)	Private	11	~~8.13~~	~~8.13~~	~~0.181%~~	9.99	9.99	0.182%	$9,200	$9,200	$91,865	$2,000	$93,865
Prairie Creek West Private (Large)	Private	12	~~12.13~~	~~12.13~~	~~0.270%~~	19.69	19.69	0.359%	$9,200	$9,200	$181,133	$2,000	$183,133
Prairie Creek West Private (Large)	Private	13	~~13.68~~	~~13.68~~	~~0.304%~~	13.68	13.68	0.249%	$9,200	$9,200	$125,849	$2,000	$127,849
Prairie Creek West Private (Large)	Private	14	~~2.24~~	~~2.24~~	~~0.050%~~	2.24	2.24	0.041%	$9,200	$9,200	$20,563	$2,000	$22,563
Prairie Creek West Private (Large)	Private	15	~~3.48~~	~~3.48~~	~~0.077%~~	15.12	15.12	0.276%	$9,200	$9,200	$139,129	$2,000	$141,129
Prairie Creek West Private (Large)	Private	16	~~9.18~~	~~9.18~~	~~0.204%~~	20.04	20.04	0.365%	$9,200	$9,200	$184,368	$2,000	$186,368
Prairie Creek West Private (Large)	Private	17	~~9.30~~	~~9.30~~	~~0.207%~~	9.73	9.73	0.177%	$9,200	$9,200	$89,543	$2,000	$91,543
Prairie Creek West Private (Large)	Private	18	~~0.19~~	~~0.19~~	~~0.004%~~	0.19	0.19	0.003%	$9,200	$9,200	$1,727	$2,000	$3,727
Prairie Creek West Private (Large)	Private	19	~~9.35~~	~~9.35~~	~~0.208%~~	10.01	10.01	0.182%	$9,200	$9,200	$92,081	$2,000	$94,081
Prairie Creek West Private (Large)	Private	20	~~2.33~~	~~2.33~~	~~0.052%~~	2.33	2.33	0.043%	$9,200	$9,200	$21,465	$2,000	$23,465
Prairie Creek West Private (Large)	Private	21	~~0.52~~	~~0.52~~	~~0.012%~~	4.68	4.68	0.085%	$9,200	$9,200	$43,091	$2,000	$45,091
Prairie Creek West Private (Large)	Private-ROW	22	~~4.95~~	~~4.95~~	~~0.110%~~	0.00	0.00	0.000%	$9,200	$0	$0	$0	$0
Shell Creek Delta	Private	1	~~46.81~~	~~46.81~~	~~1.041%~~	103.68	103.68	1.890%	$9,200	$9,200	$953,828	$2,000	$955,828
Shell Creek Preserve	Public	1	~~70.22~~	~~70.22~~	~~1.562%~~	70.28	70.28	1.281%	$9,200	$0	$0	$0	$0
Shell Creek Preserve	Public	2	~~31.34~~	~~31.34~~	~~0.697%~~	31.36	31.36	0.572%	$9,200	$0	$0	$0	$0
Shell Creek Preserve	Public	3	~~0.25~~	~~0.25~~	~~0.006%~~	1.26	1.26	0.023%	$9,200	$0	$0	$0	$0
Shell Creek Preserve	Public	4	~~98.70~~	~~98.70~~	~~2.195%~~	99.30	99.30	1.810%	$9,200	$0	$0	$0	$0
Shell Creek Preserve	Public	5	~~21.15~~	~~21.15~~	~~0.470%~~	21.28	21.28	0.388%	$9,200	$0	$0	$0	$0
Shell Creek Preserve	Public	6	~~24.47~~	~~24.47~~	~~0.544%~~	24.77	24.77	0.452%	$9,200	$0	$0	$0	$0
Shell Creek Preserve	Public	7	~~26.46~~	~~26.46~~	~~0.589%~~	26.89	26.89	0.490%	$9,200	$0	$0	$0	$0
Shell Creek Preserve	Public	8	~~26.71~~	~~26.71~~	~~0.594%~~	27.15	27.15	0.495%	$9,200	$0	$0	$0	$0
Shell Creek Preserve	Public	9	~~26.29~~	~~26.29~~	~~0.585%~~	26.63	26.63	0.485%	$9,200	$0	$0	$0	$0
Shell Creek Preserve	Public	10	~~28.89~~	~~28.89~~	~~0.643%~~	29.10	29.10	0.530%	$9,200	$0	$0	$0	$0
Shell Creek Preserve	Public	11	~~9.58~~	~~9.58~~	~~0.213%~~	15.14	15.14	0.276%	$9,200	$0	$0	$0	$0
Shell Creek Preserve	Public-ROW	12	~~2.82~~	~~2.82~~	~~0.063%~~	0.00	0.00	0.000%	$9,200	$0	$0	$0	$0
Shell Creek West Private	Private	1	~~48.59~~	~~48.59~~	~~1.081%~~	55.34	55.34	1.009%	$9,200	$9,200	$509,095	$2,000	$511,095
Shell Creek West Private	Private	2	~~9.58~~	~~9.58~~	~~0.213%~~	36.42	36.42	0.664%	$9,200	$9,200	$335,051	$2,000	$337,051
Shell Creek West Private	Private	3	~~7.95~~	~~7.95~~	~~0.177%~~	10.03	10.03	0.183%	$9,200	$9,200	$92,265	$2,000	$94,265
Shell Creek West Private	Private	4	~~5.81~~	~~5.81~~	~~0.129%~~	10.05	10.05	0.183%	$9,200	$9,200	$92,432	$2,000	$94,432
Shell Creek West Private	Private	5	~~6.33~~	~~6.33~~	~~0.141%~~	10.13	10.13	0.185%	$9,200	$9,200	$93,218	$2,000	$95,218
Shell Creek West Private	Private	6	~~6.25~~	~~6.25~~	~~0.139%~~	10.26	10.26	0.187%	$9,200	$9,200	$94,367	$2,000	$96,367
Shell Creek West Private	Private	7	~~6.51~~	~~6.51~~	~~0.145%~~	10.05	10.05	0.183%	$9,200	$9,200	$92,442	$2,000	$94,442
Shell Creek West Private	Private	8	~~4.56~~	~~4.56~~	~~0.101%~~	10.56	10.56	0.192%	$9,200	$9,200	$97,126	$2,000	$99,126
Shell Creek West Private	Private	9	~~70.15~~	~~70.15~~	~~1.560%~~	187.37	187.37	3.415%	$9,200	$9,200	$1,723,821	$2,000	$1,725,821
Shell Creek West Private	Private	10	~~33.02~~	~~33.02~~	~~0.734%~~	35.58	35.58	0.648%	$9,200	$9,200	$327,293	$2,000	$329,293
Shell Creek West Private	Private	11	~~7.68~~	~~7.68~~	~~0.171%~~	7.88	7.88	0.144%	$9,200	$9,200	$72,507	$2,000	$74,507
Shell Creek West Private	Private-ROW	12	~~0.05~~	~~0.05~~	~~0.001%~~	0.00	0.00	0.000%	$9,200	$0	$0	$0	$0

Property Name	Ownership**	Property ID	~~Reserve Acres~~	~~Reserve Acres (Values)~~	~~% of Reserve~~	Parcel Acres	Parcel Acres (Values)	% of Reserve	Value ($/acre)	Cost ($/acre)	Total Land Cost ($)	Transaction Costs ($/trans.)	TOTAL COST
Washington Loop Private	Private	1	~~4.83~~	~~4.83~~	~~0.108%~~	4.83	4.83	0.088%	$10,063	$10,063	$48,651	$2,000	$50,651
Washington Loop Private	Private	2	~~2.33~~	~~2.33~~	~~0.052%~~	2.33	2.33	0.042%	$10,063	$10,063	$23,453	$2,000	$25,453
Washington Loop Private	Private	3	~~2.50~~	~~2.50~~	~~0.055%~~	2.50	2.50	0.045%	$10,063	$10,063	$25,108	$2,000	$27,108
Washington Loop Private	Private	4	~~2.51~~	~~2.51~~	~~0.056%~~	2.51	2.51	0.046%	$10,063	$10,063	$25,219	$2,000	$27,219
Washington Loop Private	Private	5	~~1.93~~	~~1.93~~	~~0.043%~~	1.93	1.93	0.035%	$10,063	$10,063	$19,444	$2,000	$21,444
Washington Loop Private	Private	6	~~2.35~~	~~2.35~~	~~0.052%~~	2.35	2.35	0.043%	$10,063	$10,063	$23,693	$2,000	$25,693
Washington Loop Private	Private	7	~~0.86~~	~~0.86~~	~~0.019%~~	2.38	2.38	0.043%	$10,063	$10,063	$23,949	$2,000	$25,949
Washington Loop Private	Private	8	~~2.40~~	~~2.40~~	~~0.053%~~	2.40	2.40	0.044%	$10,063	$10,063	$24,177	$2,000	$26,177
Washington Loop Private	Private	9	~~1.98~~	~~1.98~~	~~0.044%~~	1.98	1.98	0.036%	$10,063	$10,063	$19,890	$2,000	$21,890
Washington Loop Private	Private	10	~~2.27~~	~~2.27~~	~~0.051%~~	2.27	2.27	0.041%	$10,063	$10,063	$22,880	$2,000	$24,880
Washington Loop Private	Private	11	~~4.88~~	~~4.88~~	~~0.109%~~	4.88	4.88	0.089%	$10,063	$10,063	$49,148	$2,000	$51,148
Washington Loop Private	Private	12	~~2.35~~	~~2.35~~	~~0.052%~~	2.35	2.35	0.043%	$10,063	$10,063	$23,650	$2,000	$25,650
Washington Loop Private	Private	13	~~2.38~~	~~2.38~~	~~0.053%~~	2.38	2.38	0.043%	$10,063	$10,063	$23,955	$2,000	$25,955
Washington Loop Private	Private	14	~~1.52~~	~~1.52~~	~~0.034%~~	1.52	1.52	0.028%	$10,063	$10,063	$15,250	$2,000	$17,250
Washington Loop Private	Private	15	~~2.67~~	~~2.67~~	~~0.059%~~	2.67	2.67	0.049%	$10,063	$10,063	$26,870	$2,000	$28,870
Washington Loop Private	Private	16	~~1.18~~	~~1.18~~	~~0.026%~~	1.18	1.18	0.022%	$10,063	$10,063	$11,904	$2,000	$13,904
Washington Loop Private	Private	17	~~2.58~~	~~2.58~~	~~0.057%~~	2.58	2.58	0.047%	$10,063	$10,063	$25,956	$2,000	$27,956
Washington Loop Private	Private	18	~~2.44~~	~~2.44~~	~~0.054%~~	2.44	2.44	0.044%	$10,063	$10,063	$24,559	$2,000	$26,559
Washington Loop Private	Private	19	~~2.58~~	~~2.58~~	~~0.057%~~	2.58	2.58	0.047%	$10,063	$10,063	$25,932	$2,000	$27,932
Washington Loop Private	Private	20	~~4.05~~	~~4.05~~	~~0.090%~~	4.05	4.05	0.074%	$10,063	$10,063	$40,785	$2,000	$42,785
Washington Loop Private	Private	21	~~2.67~~	~~2.67~~	~~0.059%~~	2.67	2.67	0.049%	$10,063	$10,063	$26,912	$2,000	$28,912
Washington Loop Private	Private	22	~~3.12~~	~~3.12~~	~~0.069%~~	3.12	3.12	0.057%	$10,063	$10,063	$31,349	$2,000	$33,349
Washington Loop Private	Private	23	~~4.35~~	~~4.35~~	~~0.097%~~	4.35	4.35	0.079%	$10,063	$10,063	$43,743	$2,000	$45,743
Washington Loop Private	Private	24	~~2.67~~	~~2.67~~	~~0.059%~~	2.67	2.67	0.049%	$10,063	$10,063	$26,915	$2,000	$28,915
Washington Loop Private	Private	25	~~3.05~~	~~3.05~~	~~0.068%~~	3.05	3.05	0.056%	$10,063	$10,063	$30,689	$2,000	$32,689
Washington Loop Private	Private	26	~~2.60~~	~~2.60~~	~~0.058%~~	2.60	2.60	0.047%	$10,063	$10,063	$26,175	$2,000	$28,175
Washington Loop Private	Private	27	~~4.78~~	~~4.78~~	~~0.106%~~	4.78	4.78	0.087%	$10,063	$10,063	$48,115	$2,000	$50,115
Washington Loop Private	Private	28	~~2.89~~	~~2.89~~	~~0.064%~~	2.89	2.89	0.053%	$10,063	$10,063	$29,064	$2,000	$31,064
Washington Loop Private	Private	29	~~3.57~~	~~3.57~~	~~0.079%~~	3.57	3.57	0.065%	$10,063	$10,063	$35,941	$2,000	$37,941
Washington Loop Private	Private	30	~~2.79~~	~~2.79~~	~~0.062%~~	2.79	2.79	0.051%	$10,063	$10,063	$28,058	$2,000	$30,058
Washington Loop Private	Private	31	~~2.81~~	~~2.81~~	~~0.062%~~	2.81	2.81	0.051%	$10,063	$10,063	$28,248	$2,000	$30,248
Washington Loop Private	Private	32	~~2.42~~	~~2.42~~	~~0.054%~~	2.42	2.42	0.044%	$10,063	$10,063	$24,303	$2,000	$26,303
Washington Loop Private	Private	33	~~5.54~~	~~5.54~~	~~0.123%~~	5.54	5.54	0.101%	$10,063	$10,063	$55,704	$2,000	$57,704
Washington Loop Private	Private	34	~~2.79~~	~~2.79~~	~~0.062%~~	2.79	2.79	0.051%	$10,063	$10,063	$28,077	$2,000	$30,077
Washington Loop Private	Private	35	~~2.59~~	~~2.59~~	~~0.058%~~	2.59	2.59	0.047%	$10,063	$10,063	$26,046	$2,000	$28,046
Washington Loop Private	Private	36	~~2.44~~	~~2.44~~	~~0.054%~~	2.44	2.44	0.044%	$10,063	$10,063	$24,536	$2,000	$26,536
Washington Loop Private	Private	37	~~2.25~~	~~2.25~~	~~0.050%~~	2.25	2.25	0.041%	$10,063	$10,063	$22,673	$2,000	$24,673
Washington Loop Private	Private	38	~~2.55~~	~~2.55~~	~~0.057%~~	2.55	2.55	0.047%	$10,063	$10,063	$25,698	$2,000	$27,698
Washington Loop Private	Private	39	~~2.30~~	~~2.30~~	~~0.051%~~	2.30	2.30	0.042%	$10,063	$10,063	$23,103	$2,000	$25,103
Washington Loop Private	Private	40	~~3.51~~	~~3.51~~	~~0.078%~~	3.51	3.51	0.064%	$10,063	$10,063	$35,282	$2,000	$37,282
Washington Loop Private	Private	41	~~2.57~~	~~2.57~~	~~0.057%~~	2.57	2.57	0.047%	$10,063	$10,063	$25,868	$2,000	$27,868
Washington Loop Private	Private	42	~~8.25~~	~~8.25~~	~~0.183%~~	8.70	8.70	0.158%	$10,063	$10,063	$87,500	$2,000	$89,500
Washington Loop Private	Private	43	~~8.25~~	~~8.25~~	~~0.183%~~	8.25	8.25	0.150%	$10,063	$10,063	$82,996	$2,000	$84,996
Washington Loop Private	Private	44	~~0.07~~	~~0.07~~	~~0.002%~~	0.81	0.81	0.015%	$10,063	$10,063	$8,113	$2,000	$10,113
Washington Loop Private	Private	45	~~2.57~~	~~2.57~~	~~0.057%~~	2.82	2.82	0.051%	$10,063	$10,063	$28,352	$2,000	$30,352
Washington Loop Private	Private	46	~~2.14~~	~~2.14~~	~~0.048%~~	2.14	2.14	0.039%	$10,063	$10,063	$21,583	$2,000	$23,583
Washington Loop Private	Private	47	~~2.78~~	~~2.78~~	~~0.062%~~	3.08	3.08	0.056%	$10,063	$10,063	$30,958	$2,000	$32,958
Washington Loop Private	Private	48	~~0.67~~	~~0.67~~	~~0.015%~~	0.67	0.67	0.012%	$10,063	$10,063	$6,700	$2,000	$8,700
Washington Loop Private - Easement	Private	1	~~5.34~~	~~5.34~~	~~0.119%~~	5.34	5.34	0.097%	$10,063	$10,063	$53,730	$2,000	$55,730
Washington Loop Private - Easement	Private	2	~~2.44~~	~~2.44~~	~~0.054%~~	2.44	2.44	0.045%	$10,063	$10,063	$24,579	$2,000	$26,579
Washington Loop Private - Easement	Private	3	~~1.52~~	~~1.52~~	~~0.034%~~	2.38	2.38	0.043%	$10,063	$10,063	$23,949	$2,000	$25,949
Washington Loop Private - Easement	Private	4	~~2.39~~	~~2.39~~	~~0.053%~~	2.39	2.39	0.044%	$10,063	$10,063	$24,049	$2,000	$26,049
Washington Loop Private - Easement	Private-ROW	5	~~0.07~~	~~0.07~~	~~0.001%~~	0.00	0.00	0.000%	$10,063	$0	$0	$0	$0
Amberjack Environmental Park	Public	--	~~102.00~~	~~102.00~~	~~2.269%~~	102.00	102.00	1.859%	$9,200	$0	$0	$0	$0
Rotunda Mitigation Area	Public	--	~~34.00~~	~~34.00~~	~~0.756%~~	34.00	34.00	0.620%	$9,200	$0	$0	$0	$0
Tippacanoe Environmental Park	Public	--	~~300.00~~	~~300.00~~	~~6.672%~~	300.00	300.00	5.468%	$9,200	$0	$0	$0	$0
Tippacanoe II Mitigation Area	Public	--	~~182.80~~	~~182.80~~	~~4.066%~~	182.80	182.80	3.332%	$9,200	$0	$0	$0	$0
San Casa Environmental Park	Public	--	~~66.90~~	~~66.90~~	~~1.488%~~	66.90	66.90	1.219%	$9,200	$0	$0	$0	$0
TOTAL	**--**	**--**	**~~4,496.30~~**	**~~4,496.30~~**	**~~100.0%~~**	**5,486.56**	**5,486.56**	**100.0%**	**$9,504**	**$3,340**	**$18,325,287**	**$410,000**	**$18,735,287**
					~~100.0%~~			100.0%			sum	sum	$0
													$18,735,287

Charlotte County Scrub-Jay HCP - Economic Analysis

Habitat Assessment, Planning, and Improvements - Summary

Parameter	Total (Permit Term)	Annual Average (Permit Term)	Annual Average (Post Permit)
Initial Habitat Costs	$3,096,790	$103,226	$0
Contingency	$309,679	$10,323	$0
Total Cost:	**$3,406,469**	**$113,549**	**$0**
Fee/acre (Development):	**$204.49**		
Cost/acre (Conservation):	**$2,549.67**		

Charlotte County Scrub-Jay HCP - Economic Analysis

Habitat Assessment, Planning, and Improvements - Worksheet

Property Name	Ownership**	Property ID	Reserve Acres	Reserve Acres (Values)	% of PropGrp (weight)	% of PropGrp - noblanks (weight)	% of Total Reserve	**Biological Assessment**				**Management Plan (Habitat Level)**			**Fencing (New)**					**Fence Removal**					**Gates (New)**						
								Apply to parcel?	*Acres*	*Unit Costs ($/acre)*	*Sub-Total Cost*	*Apply to property group*	*Unit Costs ($/plan)*	*Sub-Total Cost*	*Apply to property group*	*Perimeter (feet)*	*New fencing (feet)*	*Unit Costs ($/ft)*	*Sub-Total Cost*	*Apply to property group*	*Perimeter (feet)*	*Fencing removal (feet)*	*Unit Costs ($/ft)*	*Sub-Total Cost*	*Apply to property group*	*# gates / property (#)*	*# properties / group*	*New gates (#)*	*Unit Costs ($/gate)*	*Sub-Total Cost*	*Apply to property group*	*# signs / property group*
Biscayne Trust CE	Public	1	0.18	0.18	0.2%	0.3%	0.004%	0	*0.0*	$125.00	$0	1	$2,000		0	13,134	0	$2.00	$0	0	13,134	0	$2.00	$0	0	1	2	0	$150.00	$0	0	1
Biscayne Trust CE	Public	2	45.43	45.43	60.3%	69.9%	1.010%	0	*0.0*	$125.00	$0			$1,399					$0					$0						$0		
Biscayne Trust CE	Public-ROW	3	9.17	9.17	12.2%		0.204%	0	*0.0*	$125.00	$0			$0					$0					$0						$0		
Biscayne Trust Private	Public	1	19.34	19.34	25.7%	29.8%	0.430%	0	*0.0*	$125.00	$0			$595					$0					$0						$0		
Biscayne Trust Private	Public-ROW	2	1.26	1.26	1.7%		0.028%	0	*0.0*	$125.00	$0			$0					$0					$0						$0		
Burchers Tract CE	Public	1	0.43	0.43	0.1%	0.1%	0.010%	0	*0.0*	$125.00	$0	1	$2,000	$3	0	42,737	0	$2.00	$0	0	42,737	0	$2.00	$0	0	1	1	0	$150.00	$0	0	1
Burchers Tract CE	Public	2	4.92	4.92	1.6%	1.6%	0.109%	0	*0.0*	$125.00	$0			$32					$0					$0						$0		
Burchers Tract CE	Public	3	16.09	16.09	5.2%	5.2%	0.358%	0	*0.0*	$125.00	$0			$104					$0					$0						$0		
Burchers Tract CE	Public	4	80.13	80.13	25.8%	25.8%	1.782%	0	*0.0*	$125.00	$0			$515					$0					$0						$0		
Burchers Tract CE	Public	5	0.18	0.18	0.1%	0.1%	0.004%	0	*0.0*	$125.00	$0			$1					$0					$0						$0		
Burchers Tract CE	Public	6	44.07	44.07	14.2%	14.2%	0.980%	0	*0.0*	$125.00	$0			$284					$0					$0						$0		
Burchers Tract CE	Public	7	2.99	2.99	1.0%	1.0%	0.066%	0	*0.0*	$125.00	$0			$19					$0					$0						$0		
Burchers Tract CE	Public	8	45.71	45.71	14.7%	14.7%	1.017%	0	*0.0*	$125.00	$0			$295					$0					$0						$0		
Burchers Tract CE	Public	9	66.51	66.51	21.4%	21.4%	1.479%	0	*0.0*	$125.00	$0			$429					$0					$0						$0		
Burchers Tract CE	Public	10	35.91	35.91	11.6%	11.6%	0.799%	0	*0.0*	$125.00	$0			$231					$0					$0						$0		
Burchers Tract CE	Public	11	12.83	12.83	4.1%	4.1%	0.285%	0	*0.0*	$125.00	$0			$83					$0					$0						$0		
Burchers Tract CE	Public	12	0.55	0.55	0.2%	0.2%	0.012%	0	*0.0*	$125.00	$0			$4					$0					$0						$0		
Burchers Tract CE	Public-ROW	13	0.35	0.35	0.1%		0.008%	0	*0.0*	$125.00	$0			$0					$0					$0						$0		
Deep Creek Public	Public	1	1.15	1.15	0.8%	1.2%	0.026%	0	*0.0*	$125.00	$0	1	$2,000	$25	0	13,222	0	$2.00	$0	0	13,222	0	$2.00	$0	0	1	1	0	$150.00	$0	0	1
Deep Creek Public	Public	2	2.33	2.33	1.7%	2.5%	0.052%	0	*0.0*	$125.00	$0			$59					$0					$0						$0		
Deep Creek Public	Public	3	6.64	6.64	4.7%	7.1%	0.148%	0	*0.0*	$125.00	$0			$141					$0					$0						$0		
Deep Creek Public	Public	4	6.59	6.59	4.7%	7.0%	0.147%	0	*0.0*	$125.00	$0			$140					$0					$0						$0		
Deep Creek Public	Public	5	4.65	4.65	3.3%	5.0%	0.103%	0	*0.0*	$125.00	$0			$99					$0					$0						$0		
Deep Creek Public	Public	6	4.06	4.06	2.9%	4.3%	0.090%	0	*0.0*	$125.00	$0			$87					$0					$0						$0		
Deep Creek Public	Public	7	0.23	0.23	0.2%	0.2%	0.005%	0	*0.0*	$125.00	$0			$5					$0					$0						$0		
Deep Creek Public	Public	8	0.23	0.23	0.2%	0.2%	0.005%	0	*0.0*	$125.00	$0			$5					$0					$0						$0		
Deep Creek Public	Public	9	0.23	0.23	0.2%	0.2%	0.005%	0	*0.0*	$125.00	$0			$5					$0					$0						$0		
Deep Creek Public	Public	10	0.85	0.85	0.6%	0.9%	0.019%	0	*0.0*	$125.00	$0			$19					$0					$0						$0		
Deep Creek Public	Public	11	5.08	5.08	3.6%	5.4%	0.113%	0	*0.0*	$125.00	$0			$108					$0					$0						$0		
Deep Creek Public	Public	12	0.38	0.38	0.3%	0.4%	0.008%	0	*0.0*	$125.00	$0			$8					$0					$0						$0		
Deep Creek Public	Public	13	2.07	2.07	1.5%	2.2%	0.046%	0	*0.0*	$125.00	$0			$44					$0					$0						$0		
Deep Creek Public	Public	14	0.42	0.42	0.3%	0.5%	0.009%	0	*0.0*	$125.00	$0			$9					$0					$0						$0		
Deep Creek Public	Public	15	12.43	12.43	8.9%	13.2%	0.277%	0	*0.0*	$125.00	$0			$263					$0					$0						$0		
Deep Creek Public	Public	16	0.34	0.34	0.2%	0.4%	0.008%	0	*0.0*	$125.00	$0			$7					$0					$0						$0		
Deep Creek Public	Public	17	0.26	0.26	0.2%	0.3%	0.006%	0	*0.0*	$125.00	$0			$6					$0					$0						$0		
Deep Creek Public	Public	18	0.46	0.46	0.3%	0.5%	0.010%	0	*0.0*	$125.00	$0			$10					$0					$0						$0		
Deep Creek Public	Public	19	0.22	0.22	0.2%	0.2%	0.005%	0	*0.0*	$125.00	$0			$5					$0					$0						$0		
Deep Creek Public	Public	20	0.26	0.26	0.2%	0.3%	0.006%	0	*0.0*	$125.00	$0			$5					$0					$0						$0		
Deep Creek Public	Public	21	0.46	0.46	0.3%	0.5%	0.010%	0	*0.0*	$125.00	$0			$10					$0					$0						$0		
Deep Creek Public	Public	22	4.03	4.03	2.9%	4.3%	0.090%	0	*0.0*	$125.00	$0			$86					$0					$0						$0		
Deep Creek Public	Public	23	0.34	0.34	0.2%	0.4%	0.008%	0	*0.0*	$125.00	$0			$7					$0					$0						$0		
Deep Creek Public	Public	24	0.46	0.46	0.3%	0.5%	0.010%	0	*0.0*	$125.00	$0			$10					$0					$0						$0		
Deep Creek Public	Public	25	4.21	4.21	3.0%	4.5%	0.094%	0	*0.0*	$125.00	$0			$90					$0					$0						$0		
Deep Creek Public	Public	26	0.23	0.23	0.2%	0.2%	0.005%	0	*0.0*	$125.00	$0			$5					$0					$0						$0		
Deep Creek Public	Public	27	1.47	1.47	1.0%	1.6%	0.033%	0	*0.0*	$125.00	$0			$31					$0					$0						$0		
Deep Creek Public	Public	28	0.38	0.38	0.3%	0.4%	0.009%	0	*0.0*	$125.00	$0			$8					$0					$0						$0		
Deep Creek Public	Public	29	0.23	0.23	0.2%	0.2%	0.005%	0	*0.0*	$125.00	$0			$5					$0					$0						$0		
Deep Creek Public	Public	30	0.24	0.24	0.2%	0.3%	0.005%	0	*0.0*	$125.00	$0			$5					$0					$0						$0		
Deep Creek Public	Public	31	0.46	0.46	0.3%	0.5%	0.010%	0	*0.0*	$125.00	$0			$10					$0					$0						$0		
Deep Creek Public	Public	32	0.38	0.38	0.3%	0.4%	0.009%	0	*0.0*	$125.00	$0			$8					$0					$0						$0		
Deep Creek Public	Public	33	0.40	0.40	0.3%	0.4%	0.009%	0	*0.0*	$125.00	$0			$9					$0					$0						$0		
Deep Creek Public	Public	34	0.63	0.63	0.5%	0.7%	0.014%	0	*0.0*	$125.00	$0			$13					$0					$0						$0		
Deep Creek Public	Public	35	1.19	1.19	0.8%	1.3%	0.026%	0	*0.0*	$125.00	$0			$25					$0					$0						$0		
Deep Creek Public	Public	36	0.34	0.34	0.2%	0.4%	0.008%	0	*0.0*	$125.00	$0			$7					$0					$0						$0		
Deep Creek Public	Public	37	0.29	0.29	0.2%	0.3%	0.006%	0	*0.0*	$125.00	$0			$6					$0					$0						$0		
Deep Creek Public	Public	38	0.23	0.23	0.2%	0.2%	0.005%	0	*0.0*	$125.00	$0			$5					$0					$0						$0		
Deep Creek Public	Public	39	1.15	1.15	0.8%	1.2%	0.026%	0	*0.0*	$125.00	$0			$24					$0					$0						$0		
Deep Creek Public	Public	40	0.29	0.29	0.2%	0.3%	0.006%	0	*0.0*	$125.00	$0			$6					$0					$0						$0		
Deep Creek Public	Public	41	0.97	0.97	0.7%	1.0%	0.022%	0	*0.0*	$125.00	$0			$21					$0					$0						$0		
Deep Creek Public	Public	42	2.25	2.25	1.6%	2.4%	0.050%	0	*0.0*	$125.00	$0			$48					$0					$0						$0		
Deep Creek Public	Public	43	0.52	0.52	0.4%	0.6%	0.011%	0	*0.0*	$125.00	$0			$11					$0					$0						$0		
Deep Creek Public	Public	44	0.29	0.29	0.2%	0.3%	0.006%	0	*0.0*	$125.00	$0			$6					$0					$0						$0		
Deep Creek Public	Public	45	0.23	0.23	0.2%	0.2%	0.005%	0	*0.0*	$125.00	$0			$5					$0					$0						$0		
Deep Creek Public	Public	46	1.38	1.38	1.0%	1.5%	0.031%	0	*0.0*	$125.00	$0			$29					$0					$0						$0		
Deep Creek Public	Public	47	0.23	0.23	0.2%	0.2%	0.005%	0	*0.0*	$125.00	$0			$5					$0					$0						$0		
Deep Creek Public	Public	48	0.23	0.23	0.2%	0.2%	0.005%	0	*0.0*	$125.00	$0			$5					$0					$0						$0		
Deep Creek Public	Public	49	0.23	0.23	0.2%	0.2%	0.005%	0	*0.0*	$125.00	$0			$5					$0					$0						$0		
Deep Creek Public	Public	50	0.23	0.23	0.2%	0.2%	0.005%	0	*0.0*	$125.00	$0			$5					$0					$0						$0		
Deep Creek Public	Public	51	0.07	0.07	0.1%	0.1%	0.002%	0	*0.0*	$125.00	$0			$2					$0					$0						$0		
Deep Creek Public	Public	52	0.17	0.17	0.1%	0.2%	0.004%	0	*0.0*	$125.00	$0			$4					$0					$0						$0		
Deep Creek Public	Public	53	0.31	0.31	0.2%	0.3%	0.007%	0	*0.0*	$125.00	$0			$7					$0					$0						$0		
Deep Creek Public	Public	54	0.23	0.23	0.2%	0.2%	0.005%	0	*0.0*	$125.00	$0			$5					$0					$0						$0		
Deep Creek Public	Public	55	0.25	0.25	0.2%	0.3%	0.006%	0	*0.0*	$125.00	$0			$6					$0					$0						$0		
Deep Creek Public	Public	56	0.32	0.32	0.2%	0.3%	0.007%	0	*0.0*	$125.00	$0			$7					$0					$0						$0		
Deep Creek Public	Public	57	8.53	8.53	6.1%	9.1%	0.190%	0	*0.0*	$125.00	$0			$182					$0					$0						$0		
Deep Creek Public	Public	58	10.90	10.90	7.8%	11.6%	0.242%	0	*0.0*	$125.00	$0			$232					$0					$0						$0		
Deep Creek Public	Public	59	0.25	0.25	0.2%	0.3%	0.005%	0	*0.0*	$125.00	$0			$5					$0					$0						$0		
Deep Creek Public	Public-ROW	60	46.39	46.39	33.1%		1.032%	0	*0.0*	$125.00	$0			$0					$0					$0						$0		
Hathaway Park	Public	1	19.33	19.33	98.9%	100.0%	0.430%	0	*0.0*	$125.00	$0	1	$2,000	$2,000	0	5,598	0	$2.00	$0	0	5,598	0	$2.00	$0	0	1	1	0	$150.00	$0	0	1
Hathaway Park	Public-ROW	2	0.21	0.21	1.1%		0.005%	0	*0.0*	$125.00	$0			$0					$0					$0						$0		
Lee Branch Private	Private	1	67.29	67.29	48.7%	48.7%	1.497%	1	*67.3*	$125.00	$8,412	1	$2,000	$973	1	10,390	5,195	$2.00	$5,056	1	10,390	866	$2.00	$843	1	1	1	0.5	$150.00	$38	1	1
Lee Branch Private	Private	2	6.76	6.76	4.9%	4.9%	0.150%	1	*6.8*	$125.00	$846			$98					$506					$85						$54		
Lee Branch Private	Private	3	14.91	14.91	10.8%	10.8%	0.332%	1	*14.9*	$125.00	$1,864			$216					$1,121					$187						$8		
Lee Branch Private	Private	4	49.31	49.31	35.7%	35.7%	1.097%	1	*49.3*	$125.00	$6,164			$713					$3,705					$618						$27		
Lee Branch Private	Private-ROW	5	0.00	0.00	0.0%		0.000%	0	*0.0*	$125.00	$0			$0					$0					$0						$0		
Prairie Creek Preserve	Public	1	663.40	663.40	42.5%	42.8%	14.754%	0	*0.0*	$125.00	$0	1	$2,000	$856	0	48,576	0	$2.00	$0	0	48,576	0	$2.00	$0	0	1	1	0	$150.00	$0	0	1
Prairie Creek Preserve	Public	2	220.15	220.15	14.1%	14.2%	4.896%	0	*0.0*	$125.00	$0			$284					$0					$0						$0		
Prairie Creek Preserve	Public	3	611.53	611.53	39.2%	39.4%	13.601%	0	*0.0*	$125.00	$0			$789					$0					$0						$0		
Prairie Creek Preserve	Public	4	55.46	55.46	3.6%	3.6%	1.233%	0	*0.0*	$125.00	$0			$72					$0					$0						$0		
Prairie Creek Preserve	Public-ROW	5	11.30	11.30	0.7%		0.251%	0	*0.0*	$125.00	$0			$0					$0					$0						$0		
Prairie Creek Private-CE	Private	1	4.97	4.97	0.8%	0.8%	0.111%	1	*5.0*	$125.00	$622	1	$2,000	$16	1	186,453	93,226	$2.00	$1,466	1	186,453	15,538	$2.00	$244	1	1	67	33.5	$150.00	$46	1	1
Prairie Creek Private-CE	Private	2	5.09	5.09	0.8%	0.8%	0.113%	1	*5.1*	$125.00	$636			$16					$1,500					$250						$48		
Prairie Creek Private-CE	Private	3	5.22	5.22	0.8%	0.8%	0.116%	1	*5.2*	$125.00	$652			$16					$1,538					$256						$41		
Prairie Creek Private-CE	Private-ROW	4	0.21	0.21	0.0%		0.005%	0	*0.0*	$125.00	$0			$0					$0					$0						$0		
Prairie Creek Private	Private	5	8.54	8.54	1.3%	1.4%	0.190%	1	*8.5*	$125.00	$1,068			$27					$2,518					$420						$68		
Prairie Creek Private	Private	6	4.95	4.95	0.8%	0.8%	0.110%	1	*5.0*	$125.00	$619			$16					$1,460					$243						$39		
Prairie Creek Private	Private	7	4.92	4.92	0.8%	0.8%	0.109%	1	*4.9*	$125.00	$614			$16					$1,449					$242						$38		
Prairie Creek Private	Private	8	6.40	6.40	1.0%	1.0%	0.142%	1	*6.4*	$125.00	$799			$20					$1,885					$314						$51		
Prairie Creek Private	Private	9	5.13	5.13	0.8%	0.8%	0.114%	1	*5.1*	$125.00	$641			$16					$1,511					$252						$41		
Prairie Creek Private	Private	10	4.91	4.91	0.8%	0.8%	0.109%	1	*4.9*	$125.00	$614			$16					$1,448					$241						$38		
Prairie Creek Private	Private	11	4.83	4.83	0.8%	0.8%	0.107%	1	*4.8*	$125.00	$604			$15					$1,424					$237						$38		
Prairie Creek Private	Private	12	4.92	4.92	0.8%	0.8%	0.109%	1	*4.9*	$125.00	$615			$16					$1,450					$242						$39		
Prairie Creek Private	Private	13	5.11	5.11	0.8%	0.8%	0.114%	1	*5.1*	$125.00	$639			$16					$1,507					$251						$41		
Prairie Creek Private	Private	14	6.74	6.74	1.1%	1.1%	0.150%	1	*6.7*	$125.00	$843			$21					$1,988					$331						$54		
Prairie Creek Private	Private	15	8.04	8.04	1.3%	1.3%	0.179%	1	*8.0*	$125.00	$1,006			$25					$2,371					$395						$64		
Prairie Creek Private	Private	16	6.69	6.69	1.0%	1.1%	0.149%	1	*6.7*	$125.00	$836			$21					$1,972					$329						$53		
Prairie Creek Private	Private	17	5.96	5.96	0.9%	0.9%	0.133%	1	*6.0*	$125.00	$746			$19					$1,757					$293						$47		

								Biological Assessment				Management Plan (Habitat Level)			Fencing (New)					Fence Removal					Gates (New)							
Property Name	Ownership**	Property ID	Reserve Acres	Reserve Acres (Values)	% of PropGrp (weight)	% of PropGrp - noblanks (weight)	% of Total Reserve	Apply to parcel?	Acres	Unit Costs ($/acre)	Sub-Total Cost	Apply to property group	Unit Costs ($/plan)	Sub-Total Cost	Apply to property group	Perimeter (feet)	New fencing (feet)	Unit Costs ($/ft)	Sub-Total Cost	Apply to property group	Perimeter (feet)	Fencing removal (feet)	Unit Costs ($/ft)	Sub-Total Cost	Apply to property group	# gates / property (#)	# properties / group	New gates (#)	Unit Costs ($/gate)	Sub-Total Cost	Apply to property group	# signs / property group
Prairie Creek Private	Private	18	10.00	10.00	1.6%	1.6%	0.222%	1	10.0	$125.00	$1,250			$92					$2,948					$491						$79		
Prairie Creek Private	Private	19	4.95	4.95	0.8%	0.8%	0.110%	1	5.0	$125.00	$618			$13					$1,461					$243						$39		
Prairie Creek Private	Private	20	5.25	5.25	0.8%	0.8%	0.117%	1	5.2	$125.00	$656			$17					$1,547					$258						$42		
Prairie Creek Private	Private	21	5.75	5.75	0.9%	0.9%	0.128%	1	5.8	$125.00	$718			$18					$1,695					$283						$46		
Prairie Creek Private	Private	22	5.99	5.99	0.9%	0.9%	0.133%	1	6.0	$125.00	$749			$19					$1,767					$295						$48		
Prairie Creek Private	Private	23	4.83	4.83	0.8%	0.8%	0.107%	1	4.8	$125.00	$604			$15					$1,424					$237						$38		
Prairie Creek Private	Private	24	6.39	6.39	1.0%	1.0%	0.142%	1	6.4	$125.00	$799			$20					$1,883					$314						$51		
Prairie Creek Private	Private	25	5.94	5.94	0.9%	0.9%	0.132%	1	5.9	$125.00	$742			$19					$1,750					$292						$47		
Prairie Creek Private	Private	26	5.37	5.37	0.8%	0.8%	0.119%	1	5.4	$125.00	$672			$17					$1,584					$264						$43		
Prairie Creek Private	Private	27	5.98	5.98	0.9%	0.9%	0.133%	1	6.0	$125.00	$747			$19					$1,762					$294						$47		
Prairie Creek Private	Private	28	5.63	5.63	0.9%	0.9%	0.125%	1	5.6	$125.00	$704			$18					$1,659					$277						$45		
Prairie Creek Private	Private	29	4.88	4.88	0.8%	0.8%	0.109%	1	4.9	$125.00	$610			$15					$1,439					$240						$39		
Prairie Creek Private	Private	30	5.07	5.07	0.8%	0.8%	0.113%	1	5.1	$125.00	$633			$16					$1,494					$249						$40		
Prairie Creek Private	Private	31	5.78	5.78	0.9%	0.9%	0.128%	1	5.8	$125.00	$722			$18					$1,703					$284						$46		
Prairie Creek Private	Private	32	5.50	5.50	0.9%	0.9%	0.122%	1	5.5	$125.00	$688			$17					$1,622					$270						$44		
Prairie Creek Private	Private	33	5.65	5.65	0.9%	0.9%	0.126%	1	5.7	$125.00	$707			$18					$1,666					$278						$45		
Prairie Creek Private	Private	34	5.17	5.17	0.8%	0.8%	0.115%	1	5.2	$125.00	$646			$16					$1,524					$254						$41		
Prairie Creek Private	Private	35	5.05	5.05	0.8%	0.8%	0.112%	1	5.0	$125.00	$631			$16					$1,487					$248						$40		
Prairie Creek Private	Private	36	4.97	4.97	0.8%	0.8%	0.110%	1	5.0	$125.00	$621			$15					$1,464					$244						$39		
Prairie Creek Private	Private	37	4.98	4.98	0.8%	0.8%	0.111%	1	5.0	$125.00	$623			$16					$1,468					$245						$40		
Prairie Creek Private	Private	38	5.10	5.10	0.8%	0.8%	0.113%	1	5.1	$125.00	$637			$16					$1,503					$250						$40		
Prairie Creek Private	Private	39	5.11	5.11	0.8%	0.8%	0.114%	1	5.1	$125.00	$638			$16					$1,505					$251						$41		
Prairie Creek Private	Private	40	5.11	5.11	0.8%	0.8%	0.114%	1	5.1	$125.00	$639			$16					$1,506					$251						$41		
Prairie Creek Private	Private	41	4.86	4.86	0.8%	0.8%	0.108%	1	4.9	$125.00	$607			$15					$1,432					$239						$38		
Prairie Creek Private	Private	42	9.96	9.96	1.6%	1.6%	0.221%	1	10.0	$125.00	$1,244			$31					$2,935					$489						$79		
Prairie Creek Private	Private	43	6.84	6.84	1.1%	1.1%	0.152%	1	6.8	$125.00	$856			$22					$2,016					$336						$54		
Prairie Creek Private	Private	44	7.22	7.22	1.1%	1.1%	0.160%	1	7.2	$125.00	$902			$23					$2,127					$354						$57		
Prairie Creek Private	Private	45	7.19	7.19	1.1%	1.1%	0.160%	1	7.2	$125.00	$898			$23					$2,119					$353						$57		
Prairie Creek Private	Private	46	5.15	5.15	0.8%	0.8%	0.115%	1	5.2	$125.00	$644			$16					$1,519					$253						$41		
Prairie Creek Private	Private	47	5.26	5.26	0.8%	0.8%	0.117%	1	5.3	$125.00	$658			$17					$1,552					$259						$42		
Prairie Creek Private	Private	48	5.66	5.66	0.9%	0.9%	0.126%	1	5.7	$125.00	$708			$18					$1,669					$278						$45		
Prairie Creek Private	Private	49	5.24	5.24	0.8%	0.8%	0.117%	1	5.2	$125.00	$655			$17					$1,546					$258						$42		
Prairie Creek Private	Private	50	5.02	5.02	0.8%	0.8%	0.112%	1	5.0	$125.00	$628			$16					$1,480					$247						$40		
Prairie Creek Private	Private	51	5.02	5.02	0.8%	0.8%	0.112%	1	5.0	$125.00	$628			$16					$1,480					$247						$40		
Prairie Creek Private	Private	52	6.15	6.15	1.0%	1.0%	0.137%	1	6.2	$125.00	$769			$19					$1,813					$302						$48		
Prairie Creek Private	Private	53	5.75	5.75	0.9%	0.9%	0.128%	1	5.7	$125.00	$718			$18					$1,694					$282						$46		
Prairie Creek Private	Private	54	6.40	6.40	1.0%	1.0%	0.142%	1	6.4	$125.00	$800			$20					$1,886					$314						$51		
Prairie Creek Private	Private	55	5.26	5.26	0.8%	0.8%	0.117%	1	5.3	$125.00	$657			$17					$1,549					$258						$42		
Prairie Creek Private	Private	56	6.66	6.66	1.0%	1.1%	0.148%	1	6.7	$125.00	$833			$21					$1,964					$327						$53		
Prairie Creek Private	Private	57	5.20	5.20	0.8%	0.8%	0.116%	1	5.2	$125.00	$650			$16					$1,534					$256						$41		
Prairie Creek Private	Private	58	4.89	4.89	0.8%	0.8%	0.109%	1	4.9	$125.00	$611			$15					$1,441					$240						$39		
Prairie Creek Private	Private	59	5.05	5.05	0.8%	0.8%	0.112%	1	5.1	$125.00	$631			$16					$1,489					$248						$40		
Prairie Creek Private	Private	60	5.75	5.75	0.9%	0.9%	0.128%	1	5.8	$125.00	$719			$18					$1,696					$283						$46		
Prairie Creek Private	Private	61	6.29	6.29	1.0%	1.0%	0.140%	1	6.3	$125.00	$787			$20					$1,855					$309						$50		
Prairie Creek Private	Private	62	7.79	7.79	1.2%	1.2%	0.173%	1	7.8	$125.00	$973			$25					$2,295					$383						$62		
Prairie Creek Private	Private	63	5.86	5.86	0.9%	0.9%	0.130%	1	5.9	$125.00	$733			$19					$1,728					$288						$47		
Prairie Creek Private	Private	64	5.25	5.25	0.8%	0.8%	0.117%	1	5.2	$125.00	$656			$17					$1,547					$258						$42		
Prairie Creek Private	Private	65	5.45	5.45	0.9%	0.9%	0.121%	1	5.4	$125.00	$681			$17					$1,606					$268						$43		
Prairie Creek Private	Private	66	5.00	5.00	0.8%	0.8%	0.111%	1	5.0	$125.00	$625			$16					$1,474					$246						$40		
Prairie Creek Private	Private	67	5.02	5.02	0.8%	0.8%	0.112%	1	5.0	$125.00	$628			$16					$1,481					$247						$40		
Prairie Creek Private	Private	68	6.04	6.04	0.9%	1.0%	0.134%	1	6.0	$125.00	$754			$19					$1,779					$297						$48		
Prairie Creek Private	Private	69	5.18	5.18	0.8%	0.8%	0.115%	1	5.2	$125.00	$647			$16					$1,526					$254						$41		
Prairie Creek Private	Private	70	5.22	5.22	0.8%	0.8%	0.116%	1	5.2	$125.00	$652			$16					$1,537					$256						$41		
Prairie Creek Private	Private	71	5.05	5.05	0.8%	0.8%	0.112%	1	5.1	$125.00	$632			$16					$1,489					$248						$40		
Prairie Creek Private	Private	72	5.18	5.18	0.8%	0.8%	0.115%	1	5.2	$125.00	$648			$16					$1,528					$255						$41		
Prairie Creek Private	Private	73	5.01	5.01	0.8%	0.8%	0.111%	1	5.0	$125.00	$626			$16					$1,477					$246						$40		
Prairie Creek Private	Private	74	4.96	4.96	0.8%	0.8%	0.110%	1	5.0	$125.00	$620			$16					$1,462					$244						$39		
Prairie Creek Private	Private	75	4.90	4.90	0.8%	0.8%	0.109%	1	4.9	$125.00	$613			$16					$1,446					$241						$39		
Prairie Creek Private	Private	76	5.10	5.10	0.8%	0.8%	0.113%	1	5.1	$125.00	$637			$16					$1,502					$250						$40		
Prairie Creek Private	Private	77	4.86	4.86	0.8%	0.8%	0.108%	1	4.9	$125.00	$607			$15					$1,432					$239						$38		
Prairie Creek Private	Private	78	5.13	5.13	0.8%	0.8%	0.114%	1	5.1	$125.00	$641			$16					$1,511					$252						$41		
Prairie Creek Private	Private	79	4.74	4.74	0.7%	0.7%	0.105%	1	4.7	$125.00	$592			$15					$1,397					$233						$38		
Prairie Creek Private	Private	80	5.32	5.32	0.8%	0.8%	0.118%	1	5.3	$125.00	$665			$17					$1,568					$261						$42		
Prairie Creek Private	Private	81	7.51	7.51	1.2%	1.2%	0.167%	1	7.5	$125.00	$939			$24					$2,214					$369						$60		
Prairie Creek Private	Private	82	5.08	5.08	0.8%	0.8%	0.113%	1	5.1	$125.00	$634			$16					$1,496					$249						$40		
Prairie Creek Private	Private	83	5.04	5.04	0.8%	0.8%	0.112%	1	5.0	$125.00	$631			$16					$1,487					$248						$40		
Prairie Creek Private	Private	84	4.91	4.91	0.8%	0.8%	0.109%	1	4.9	$125.00	$614			$16					$1,448					$241						$39		
Prairie Creek Private	Private	85	4.93	4.93	0.8%	0.8%	0.110%	1	4.9	$125.00	$616			$16					$1,454					$242						$39		
Prairie Creek Private	Private	86	9.62	9.62	1.5%	1.5%	0.214%	1	9.6	$125.00	$1,203			$30					$2,837					$473						$76		
Prairie Creek Private	Private	87	5.02	5.02	0.8%	0.8%	0.112%	1	5.0	$125.00	$628			$16					$1,481					$247						$40		
Prairie Creek Private	Private	88	5.08	5.08	0.8%	0.8%	0.113%	1	5.1	$125.00	$635			$16					$1,498					$250						$40		
Prairie Creek Private	Private	89	5.02	5.02	0.8%	0.8%	0.112%	1	5.0	$125.00	$627			$16					$1,480					$247						$40		
Prairie Creek Private	Private	90	4.88	4.88	0.8%	0.8%	0.109%	1	4.9	$125.00	$611			$15					$1,440					$240						$39		
Prairie Creek Private	Private	91	5.01	5.01	0.8%	0.8%	0.111%	1	5.0	$125.00	$627			$16					$1,478					$246						$40		
Prairie Creek Private	Private	92	5.20	5.20	0.8%	0.8%	0.116%	1	5.2	$125.00	$649			$16					$1,532					$255						$41		
Prairie Creek Private	Private	93	4.87	4.87	0.8%	0.8%	0.108%	1	4.9	$125.00	$608			$15					$1,436					$239						$39		
Prairie Creek Private	Private	94	5.19	5.19	0.8%	0.8%	0.115%	1	5.2	$125.00	$648			$16					$1,529					$255						$41		
Prairie Creek Private	Private	95	5.34	5.34	0.8%	0.8%	0.119%	1	5.3	$125.00	$667			$17					$1,574					$262						$42		
Prairie Creek Private	Private	96	6.91	6.91	1.1%	1.1%	0.154%	1	6.9	$125.00	$863			$22					$2,036					$339						$55		
Prairie Creek Private	Private	97	6.05	6.05	0.9%	1.0%	0.135%	1	6.0	$125.00	$756			$19					$1,783					$297						$48		
Prairie Creek Private	Private	98	5.09	5.09	0.8%	0.8%	0.113%	1	5.1	$125.00	$636			$16					$1,500					$250						$40		
Prairie Creek Private	Private	99	5.05	5.05	0.8%	0.8%	0.112%	1	5.1	$125.00	$631			$16					$1,489					$248						$40		
Prairie Creek Private	Private	100	5.00	5.00	0.8%	0.8%	0.111%	1	5.0	$125.00	$625			$16					$1,473					$246						$40		
Prairie Creek Private	Private	101	5.15	5.15	0.8%	0.8%	0.115%	1	5.1	$125.00	$644			$16					$1,518					$253						$41		
Prairie Creek Private	Private	102	5.17	5.17	0.8%	0.8%	0.115%	1	5.2	$125.00	$646			$16					$1,524					$254						$41		
Prairie Creek Private	Private	103	4.99	4.99	0.8%	0.8%	0.111%	1	5.0	$125.00	$624			$16					$1,471					$245						$40		
Prairie Creek Private	Private	104	4.96	4.96	0.8%	0.8%	0.110%	1	5.0	$125.00	$620			$16					$1,462					$244						$39		
Prairie Creek Private	Private	105	4.78	4.78	0.7%	0.8%	0.106%	1	4.8	$125.00	$598			$15					$1,410					$235						$38		
Prairie Creek Private	Private	106	5.04	5.04	0.8%	0.8%	0.112%	1	5.0	$125.00	$630			$16					$1,485					$247						$40		
Prairie Creek Private	Private	107	5.07	5.07	0.8%	0.8%	0.113%	1	5.1	$125.00	$633			$16					$1,494					$249						$40		
Prairie Creek Private	Private	108	4.97	4.97	0.8%	0.8%	0.111%	1	5.0	$125.00	$622			$16					$1,466					$244						$40		
Prairie Creek Private	Private	109	4.98	4.98	0.8%	0.8%	0.111%	1	5.0	$125.00	$623			$16					$1,468					$245						$40		
Prairie Creek Private	Private	110	4.92	4.92	0.8%	0.8%	0.109%	1	4.9	$125.00	$615			$16					$1,450					$242						$39		
Prairie Creek Private	Private	111	4.98	4.98	0.8%	0.8%	0.111%	1	5.0	$125.00	$623			$16					$1,469					$245						$40		
Prairie Creek Private	Private	112	4.92	4.92	0.8%	0.8%	0.109%	1	4.9	$125.00	$615			$16					$1,451					$242						$39		
Prairie Creek Private	Private	113	4.91	4.91	0.8%	0.8%	0.109%	1	4.9	$125.00	$614			$16					$1,449					$241						$39		
Prairie Creek Private	Private	114	4.79	4.79	0.7%	0.8%	0.107%	1	4.8	$125.00	$599			$15					$1,413					$235						$38		
Prairie Creek Private	Private	115	5.32	5.32	0.8%	0.8%	0.118%	1	5.3	$125.00	$665			$17					$1,569					$261						$42		
Prairie Creek Private	Private-ROW	116	7.99	7.99	1.2%		0.178%	0	0.0	$125.00	$0			$0					$0					$0						$0		
Prairie Creek West Private	Private	1	13.28	13.28	8.7%	9.0%	0.295%	1	13.3	$125.00	$1,660	1	$2,000	$180	1	20,317	10,159	$2.00	$1,830	1	20,317	1,693	$2.00	$305	1	1	2	1	$150.00	$14	1	1
Prairie Creek West Private	Private	2	0.32	0.32	0.2%	0.2%	0.007%	1	0.3	$125.00	$40			$4					$97					$16						$0		
Prairie Creek West Private	Private-ROW	3	0.11	0.11	0.1%		0.002%	0	0.0	$125.00	$0			$0					$0					$0						$0		
Prairie Creek West Private (Large)	Private	1	5.63	5.63	3.7%	3.8%	0.125%	1	5.6	$125.00	$704			$76					$776					$129						$6		
Prairie Creek West Private (Large)	Private	2	0.19	0.19	0.1%	0.1%	0.004%	1	0.2	$125.00	$24			$3					$27					$4						$0		
Prairie Creek West Private (Large)	Private	3	0.83	0.83	0.5%	0.6%	0.018%	1	0.8	$125.00	$103			$11					$114					$19						$1		
Prairie Creek West Private (Large)	Private	4	21.73	21.73	14.3%	14.7%	0.483%	1	21.7	$125.00	$2,716			$295					$2,996					$499						$22		
Prairie Creek West Private (Large)	Private	5	2.95	2.95	1.9%	2.0%	0.066%	1	3.0	$125.00	$368			$40					$407					$68						$3		
Prairie Creek West Private (Large)	Private	6	4.28	4.28	2.8%	2.9%	0.095%	1	4.3	$125.00	$535			$58					$590					$98						$4		
Prairie Creek West Private (Large)	Private	7	14.54	14.54	9.5%	9.9%	0.323%	1	14.5	$125.00	$1,817			$197					$2,004					$334						$15		
Prairie Creek West Private (Large)	Private	8	7.05	7.05	4.6%	4.8%	0.157%	1	7.1	$125.00	$882			$95					$972					$162						$7		

								Biological Assessment				Management Plan (Habitat Level)			Fencing (New)					Fence Removal					Gates (New)							
Property Name	Ownership**	Property ID	Reserve Acres	Reserve Acres (Values)	% of PropGrp (weight)	% of PropGrp - noblanks (weight)	% of Total Reserve	Apply to parcel?	Acres	Unit Costs ($/acre)	Sub-Total Cost	Apply to property group	Unit Costs ($/plan)	Sub-Total Cost	Apply to property group	Perimeter (feet)	New fencing (feet)	Unit Costs ($/ft)	Sub-Total Cost	Apply to property group	Perimeter (feet)	Fencing removal (feet)	Unit Costs ($/ft)	Sub-Total Cost	Apply to property group	# gates / property (#)	# properties / group	New gates (#)	Unit Costs ($/gate)	Sub-Total Cost	Apply to property group	# signs / property group
Prairie Creek West Private (Large)	Private	9	2.48	2.48	1.6%	1.7%	0.055%	1	2.5	$125.00	$310			$34					$342					$57						$93		
Prairie Creek West Private (Large)	Private	10	3.58	3.58	2.3%	2.4%	0.080%	1	3.6	$125.00	$447			$49					$493					$82						$84		
Prairie Creek West Private (Large)	Private	11	8.13	8.13	5.3%	5.5%	0.181%	1	8.1	$125.00	$1,016			$110					$1,121					$187						$98		
Prairie Creek West Private (Large)	Private	12	12.13	12.13	8.0%	8.2%	0.270%	1	12.1	$125.00	$1,516			$165					$1,672					$279						$12		
Prairie Creek West Private (Large)	Private	13	13.68	13.68	9.0%	9.3%	0.304%	1	13.7	$125.00	$1,710			$186					$1,886					$314						$14		
Prairie Creek West Private (Large)	Private	14	2.24	2.24	1.5%	1.5%	0.050%	1	2.2	$125.00	$279			$30					$308					$51						$92		
Prairie Creek West Private (Large)	Private	15	3.48	3.48	2.3%	2.4%	0.077%	1	3.5	$125.00	$439			$47					$480					$80						$94		
Prairie Creek West Private (Large)	Private	16	9.18	9.18	6.0%	6.2%	0.204%	1	9.2	$125.00	$1,148			$125					$1,266					$211						$98		
Prairie Creek West Private (Large)	Private	17	9.30	9.30	6.1%	6.3%	0.207%	1	9.3	$125.00	$1,162			$126					$1,282					$214						$99		
Prairie Creek West Private (Large)	Private	18	0.19	0.19	0.1%	0.1%	0.004%	1	0.2	$125.00	$23			$3					$26					$4						$90		
Prairie Creek West Private (Large)	Private	19	9.35	9.35	6.1%	6.3%	0.208%	1	9.3	$125.00	$1,168			$127					$1,288					$215						$10		
Prairie Creek West Private (Large)	Private	20	2.33	2.33	1.5%	1.6%	0.052%	1	2.3	$125.00	$291			$32					$321					$53						$92		
Prairie Creek West Private (Large)	Private	21	0.52	0.52	0.3%	0.4%	0.012%	1	0.5	$125.00	$65			$7					$72					$12						$91		
Prairie Creek West Private (Large)	Private-ROW	22	4.95	4.95	3.2%		0.110%	0	0.0	$125.00	$0			$0					$0					$0						$0		
Shell Creek Delta	Private	1	46.81	46.81	100.0%	100.0%	1.041%	1	46.8	$125.00	$5,851	1	$2,000	$2,000	1	4,739	2,370	$2.00	$4,739	1	4,739	395	$2.00	$790	1	1	1	0.5	$150.00	$75	1	1
Shell Creek Preserve	Public	1	70.22	70.22	19.1%	19.3%	1.562%	0	0.0	$125.00	$0	1	$2,000	$386	0	23,728	0	$2.00	$0	0	23,728	0	$2.00	$0	0	1	1	0	$150.00	$0	0	1
Shell Creek Preserve	Public	2	31.34	31.34	8.5%	8.6%	0.697%	0	0.0	$125.00	$0			$173					$0					$0						$0		
Shell Creek Preserve	Public	3	0.25	0.25	0.1%	0.1%	0.006%	0	0.0	$125.00	$0			$1					$0					$0						$0		
Shell Creek Preserve	Public	4	98.70	98.70	26.9%	27.1%	2.195%	0	0.0	$125.00	$0			$542					$0					$0						$0		
Shell Creek Preserve	Public	5	21.15	21.15	5.8%	5.8%	0.470%	0	0.0	$125.00	$0			$116					$0					$0						$0		
Shell Creek Preserve	Public	6	24.47	24.47	6.7%	6.7%	0.544%	0	0.0	$125.00	$0			$134					$0					$0						$0		
Shell Creek Preserve	Public	7	26.46	26.46	7.2%	7.3%	0.589%	0	0.0	$125.00	$0			$145					$0					$0						$0		
Shell Creek Preserve	Public	8	26.71	26.71	7.3%	7.3%	0.594%	0	0.0	$125.00	$0			$147					$0					$0						$0		
Shell Creek Preserve	Public	9	26.29	26.29	7.2%	7.2%	0.585%	0	0.0	$125.00	$0			$144					$0					$0						$0		
Shell Creek Preserve	Public	10	28.89	28.89	7.9%	7.9%	0.643%	0	0.0	$125.00	$0			$159					$0					$0						$0		
Shell Creek Preserve	Public	11	9.58	9.58	2.6%	2.6%	0.213%	0	0.0	$125.00	$0			$53					$0					$0						$0		
Shell Creek Preserve	Public-ROW	12	2.82	2.82	0.8%		0.063%	0	0.0	$125.00	$0			$0					$0					$0						$0		
Shell Creek West Private	Private	1	48.59	48.59	23.5%	23.5%	1.081%	1	48.6	$125.00	$6,074	1	$2,000	$471	1	26,754	13,377	$2.00	$6,298	1	26,754	2,230	$2.00	$1,050	1	1	3	1.5	$150.00	$53	1	1
Shell Creek West Private	Private	2	9.58	9.58	4.6%	4.6%	0.213%	1	9.6	$125.00	$1,198			$93					$1,242					$207						$10		
Shell Creek West Private	Private	3	7.95	7.95	3.9%	3.9%	0.177%	1	8.0	$125.00	$994			$77					$1,031					$172						$9		
Shell Creek West Private	Private	4	5.81	5.81	2.8%	2.8%	0.129%	1	5.8	$125.00	$726			$56					$753					$125						$6		
Shell Creek West Private	Private	5	6.33	6.33	3.1%	3.1%	0.141%	1	6.3	$125.00	$791			$61					$820					$137						$7		
Shell Creek West Private	Private	6	6.25	6.25	3.0%	3.0%	0.139%	1	6.2	$125.00	$781			$61					$810					$135						$7		
Shell Creek West Private	Private	7	6.51	6.51	3.2%	3.2%	0.145%	1	6.5	$125.00	$813			$63					$844					$141						$7		
Shell Creek West Private	Private	8	4.56	4.56	2.2%	2.2%	0.101%	1	4.6	$125.00	$570			$44					$591					$98						$5		
Shell Creek West Private	Private	9	70.15	70.15	34.0%	34.0%	1.560%	1	70.1	$125.00	$8,768			$680					$9,092					$1,515						$76		
Shell Creek West Private	Private	10	33.02	33.02	16.0%	16.0%	0.734%	1	33.0	$125.00	$4,127			$320					$4,280					$713						$36		
Shell Creek West Private	Private	11	7.68	7.68	3.7%	3.7%	0.171%	1	7.7	$125.00	$960			$74					$995					$166						$8		
Shell Creek West Private	Private-ROW	12	0.05	0.05	0.0%		0.001%	0	0.0	$125.00	$0			$0					$0					$0						$0		
Washington Loop Private	Private	1	4.83	4.83	3.2%	3.2%	0.108%	1	4.8	$125.00	$604	1	$2,000	$64	1	40,080	20,040	$2.00	$1,281	1	36,712	3,059	$2.00	$196	1	1	15	7.5	$150.00	$36	1	1
Washington Loop Private	Private	2	2.33	2.33	1.5%	1.5%	0.052%	1	2.3	$125.00	$291			$33					$618					$94						$17		
Washington Loop Private	Private	3	2.50	2.50	1.6%	1.6%	0.055%	1	2.5	$125.00	$312			$33					$661					$101						$19		
Washington Loop Private	Private	4	2.51	2.51	1.7%	1.7%	0.056%	1	2.5	$125.00	$313			$33					$664					$101						$19		
Washington Loop Private	Private	5	1.93	1.93	1.3%	1.3%	0.043%	1	1.9	$125.00	$242			$26					$512					$78						$14		
Washington Loop Private	Private	6	2.35	2.35	1.6%	1.6%	0.052%	1	2.4	$125.00	$294			$31					$624					$95						$18		
Washington Loop Private	Private	7	0.86	0.86	0.6%	0.6%	0.019%	1	0.9	$125.00	$107			$11					$227					$35						$6		
Washington Loop Private	Private	8	2.40	2.40	1.6%	1.6%	0.053%	1	2.4	$125.00	$300			$32					$637					$97						$18		
Washington Loop Private	Private	9	1.98	1.98	1.3%	1.3%	0.044%	1	2.0	$125.00	$247			$26					$524					$80						$15		
Washington Loop Private	Private	10	2.27	2.27	1.5%	1.5%	0.051%	1	2.3	$125.00	$294			$30					$602					$92						$17		
Washington Loop Private	Private	11	4.88	4.88	3.2%	3.2%	0.109%	1	4.9	$125.00	$611			$65					$1,294					$198						$36		
Washington Loop Private	Private	12	2.35	2.35	1.6%	1.6%	0.052%	1	2.4	$125.00	$294			$33					$623					$95						$17		
Washington Loop Private	Private	13	2.38	2.38	1.6%	1.6%	0.053%	1	2.4	$125.00	$298			$33					$631					$96						$18		
Washington Loop Private	Private	14	1.52	1.52	1.0%	1.0%	0.034%	1	1.5	$125.00	$189			$28					$402					$61						$13		
Washington Loop Private	Private	15	2.67	2.67	1.8%	1.8%	0.059%	1	2.7	$125.00	$334			$25					$708					$108						$20		
Washington Loop Private	Private	16	1.18	1.18	0.8%	0.8%	0.026%	1	1.2	$125.00	$148			$16					$313					$48						$9		
Washington Loop Private	Private	17	2.58	2.58	1.7%	1.7%	0.057%	1	2.6	$125.00	$322			$34					$683					$104						$19		
Washington Loop Private	Private	18	2.44	2.44	1.6%	1.6%	0.054%	1	2.4	$125.00	$305			$32					$647					$99						$18		
Washington Loop Private	Private	19	2.58	2.58	1.7%	1.7%	0.057%	1	2.6	$125.00	$322			$34					$683					$104						$19		
Washington Loop Private	Private	20	4.05	4.05	2.7%	2.7%	0.090%	1	4.1	$125.00	$507			$54					$1,074					$164						$30		
Washington Loop Private	Private	21	2.67	2.67	1.8%	1.8%	0.059%	1	2.7	$125.00	$334			$35					$709					$108						$20		
Washington Loop Private	Private	22	3.12	3.12	2.1%	2.1%	0.069%	1	3.1	$125.00	$389			$41					$825					$126						$23		
Washington Loop Private	Private	23	4.35	4.35	2.9%	2.9%	0.097%	1	4.3	$125.00	$543			$57					$1,152					$176						$32		
Washington Loop Private	Private	24	2.67	2.67	1.8%	1.8%	0.059%	1	2.7	$125.00	$334			$35					$709					$108						$20		
Washington Loop Private	Private	25	3.05	3.05	2.0%	2.0%	0.068%	1	3.0	$125.00	$381			$40					$808					$123						$23		
Washington Loop Private	Private	26	2.60	2.60	1.7%	1.7%	0.058%	1	2.6	$125.00	$325			$34					$689					$105						$19		
Washington Loop Private	Private	27	4.78	4.78	3.2%	3.2%	0.106%	1	4.8	$125.00	$598			$63					$1,267					$193						$36		
Washington Loop Private	Private	28	2.89	2.89	1.9%	1.9%	0.064%	1	2.9	$125.00	$361			$38					$765					$117						$21		
Washington Loop Private	Private	29	3.57	3.57	2.4%	2.4%	0.079%	1	3.6	$125.00	$446			$47					$946					$144						$27		
Washington Loop Private	Private	30	2.79	2.79	1.8%	1.8%	0.062%	1	2.8	$125.00	$349			$37					$739					$113						$21		
Washington Loop Private	Private	31	2.81	2.81	1.9%	1.9%	0.062%	1	2.8	$125.00	$351			$37					$744					$114						$23		
Washington Loop Private	Private	32	2.42	2.42	1.6%	1.6%	0.054%	1	2.4	$125.00	$302			$32					$640					$98						$18		
Washington Loop Private	Private	33	5.54	5.54	3.7%	3.7%	0.123%	1	5.5	$125.00	$692			$73					$1,467					$224						$41		
Washington Loop Private	Private	34	2.79	2.79	1.8%	1.8%	0.062%	1	2.8	$125.00	$349			$37					$739					$113						$21		
Washington Loop Private	Private	35	2.59	2.59	1.7%	1.7%	0.058%	1	2.6	$125.00	$324			$34					$686					$105						$19		
Washington Loop Private	Private	36	2.44	2.44	1.6%	1.6%	0.054%	1	2.4	$125.00	$305			$32					$646					$99						$18		
Washington Loop Private	Private	37	2.25	2.25	1.5%	1.5%	0.050%	1	2.3	$125.00	$282			$30					$597					$91						$17		
Washington Loop Private	Private	38	2.55	2.55	1.7%	1.7%	0.067%	1	2.6	$125.00	$319			$34					$677					$103						$19		
Washington Loop Private	Private	39	2.30	2.30	1.5%	1.5%	0.051%	1	2.3	$125.00	$287			$30					$608					$93						$17		
Washington Loop Private	Private	40	3.51	3.51	2.3%	2.3%	0.078%	1	3.5	$125.00	$438			$46					$929					$142						$26		
Washington Loop Private	Private	41	2.57	2.57	1.7%	1.7%	0.057%	1	2.6	$125.00	$321			$34					$681					$104						$18		
Washington Loop Private	Private	42	8.25	8.25	5.5%	5.5%	0.183%	1	8.2	$125.00	$1,031			$109					$2,185					$334						$61		
Washington Loop Private	Private	43	8.25	8.25	5.5%	5.5%	0.183%	1	8.2	$125.00	$1,031			$109					$2,185					$334						$61		
Washington Loop Private	Private	44	0.07	0.07	0.0%	0.0%	0.002%	1	0.1	$125.00	$9			$1					$19					$3						$1		
Washington Loop Private	Private	45	2.57	2.57	1.7%	1.7%	0.057%	1	2.6	$125.00	$321			$34					$681					$104						$18		
Washington Loop Private	Private	46	2.14	2.14	1.4%	1.4%	0.048%	1	2.1	$125.00	$268			$28					$568					$87						$16		
Washington Loop Private	Private	47	2.78	2.78	1.8%	1.8%	0.062%	1	2.8	$125.00	$348			$37					$737					$113						$21		
Washington Loop Private	Private	48	0.67	0.67	0.4%	0.4%	0.015%	1	0.7	$125.00	$83			$9					$176					$27						$5		
Washington Loop Private - Easement	Private	1	5.34	5.34	3.5%	3.5%	0.119%	1	5.3	$125.00	$667			$71					$1,415					$216						$40		
Washington Loop Private - Easement	Private	2	2.44	2.44	1.6%	1.6%	0.054%	1	2.4	$125.00	$305			$32					$647					$98						$18		
Washington Loop Private - Easement	Private	3	1.52	1.52	1.0%	1.0%	0.034%	1	1.5	$125.00	$190			$20					$404					$62						$11		
Washington Loop Private - Easement	Private	4	2.39	2.39	1.6%	1.6%	0.053%	1	2.4	$125.00	$299			$32					$633					$97						$18		
Washington Loop Private - Easement	Private-ROW	5	0.07	0.07	0.0%		0.001%	0	0.0	$125.00	$0			$0					$0					$0						$0		
Amberjack Environmental Park	Public	--	102.00	102.00	100.0%	100.0%	2.269%	0	0.0	$125.00	$0	1	$2,000	$2,000	0	11,663	0	$2.00	$0	0	11,663	0	$2.00	$0	0	1	1	0	$150.00	$0	0	1
Rotunda Mitigation Area	Public	--	34.00	34.00	100.0%	100.0%	0.756%	0	0.0	$125.00	$0	1	$2,000	$2,000	0	3,888	0	$2.00	$0	0	3,888	0	$2.00	$0	0	1	1	0	$150.00	$0	0	1
Tippacanoe Environmental Park	Public	--	300.00	300.00	100.0%	100.0%	6.672%	0	0.0	$125.00	$0	1	$2,000	$2,000	0	34,304	0	$2.00	$0	0	34,304	0	$2.00	$0	0	1	1	0	$150.00	$0	0	1
Tippacanoe II Mitigation Area	Public	--	182.80	182.80	100.0%	100.0%	4.066%	0	0.0	$125.00	$0	1	$2,000	$2,000	0	20,902	0	$2.00	$0	0	20,902	0	$2.00	$0	0	1	1	0	$150.00	$0	0	1
San Casa Environmental Park	Public	--	66.90	66.90	100.0%	100.0%	1.488%	0	0.0	$125.00	$0	1	$2,000	$2,000	0	7,650	0	$2.00	$0	0	7,650	0	$2.00	$0	0	1	1	0	$150.00	$0	0	1
TOTAL	--	--	4,496.30	4,496.30	--	--	100.0%	205	1,322.7	$125.00	$165,333	17	$2,000.00	$34,000	6	514,135	144,367	$2.00	$288,734	6	510,767	23,780	$2.00	$47,661	6	--	101	44.5	$150.00	$6,675	6	17

Charlotte County Scrub-Jay HCP - Economic Analysis

Habitat Assessment, Planning, and Improvements - Worksheet

			Signage			Parking Area					Trail Clearing					Habitat Enhancements - Initial					Exotic Removal (Mechanical) - Initial					Exotic Removal (Herbicide) - Initial					Scrub-Jay Translocation		
Property Name	**Ownership****	**Property ID**	*New signs*	*Unit Costs ($/site)*	**Sub-Total Cost**	*Apply to property group*	*# parking areas / prop grp*	*Road Base (tons / park area)*	*Road Base (tons)*	*Unit Costs ($/ton)*	**Sub-Total Cost**	*Apply to property group*	*Length trail clearing / prop grp (Ave)*	*Length trail clearing (feet)*	*Unit Costs ($/ft)*	**Sub-Total Cost**	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	**Sub-Total Annual Cost**	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	**Sub-Total Annual Cost**	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	**Sub-Total Annual Cost**	*# Translocation Events*	*Unit Costs ($/site)*	**Sub-Total Cost**
Biscayne Trust CE	Public	1	0	$1,080.00	$0	0	1	46.29	0.00	$7.73	$0	0	13,200	0	$4.80	$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0	1.2	$75,000	$245
Biscayne Trust CE	Public	2			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$61,720
Biscayne Trust CE	Public-ROW	3			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$0
Biscayne Trust Private	Public	1			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$26,270
Biscayne Trust Private	Public-ROW	2			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$0
Burchers Tract CE	Public	1	0	$1,080.00	$0	0	1	46.29	0.00	$7.73	$0	0	13,200	0	$4.80	$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0	1.2	$75,000	$122
Burchers Tract CE	Public	2			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$1,398
Burchers Tract CE	Public	3			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$4,576
Burchers Tract CE	Public	4			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$22,786
Burchers Tract CE	Public	5			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$53
Burchers Tract CE	Public	6			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$12,533
Burchers Tract CE	Public	7			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$848
Burchers Tract CE	Public	8			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$12,997
Burchers Tract CE	Public	9			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$18,911
Burchers Tract CE	Public	10			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$10,210
Burchers Tract CE	Public	11			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$3,647
Burchers Tract CE	Public	12			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$156
Burchers Tract CE	Public-ROW	13			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$0
Deep Creek Public	Public	1	0	$1,080.00	$0	0	1	46.29	0.00	$7.73	$0	0	13,200	0	$4.80	$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0	1.2	$75,000	$1,062
Deep Creek Public	Public	2			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$2,180
Deep Creek Public	Public	3			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$6,236
Deep Creek Public	Public	4			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$6,192
Deep Creek Public	Public	5			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$4,358
Deep Creek Public	Public	6			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$3,830
Deep Creek Public	Public	7			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$216
Deep Creek Public	Public	8			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$216
Deep Creek Public	Public	9			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$216
Deep Creek Public	Public	10			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$788
Deep Creek Public	Public	11			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$4,771
Deep Creek Public	Public	12			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$358
Deep Creek Public	Public	13			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$1,948
Deep Creek Public	Public	14			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$398
Deep Creek Public	Public	15			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$11,684
Deep Creek Public	Public	16			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$324
Deep Creek Public	Public	17			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$248
Deep Creek Public	Public	18			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$433
Deep Creek Public	Public	19			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$210
Deep Creek Public	Public	20			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$240
Deep Creek Public	Public	21			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$433
Deep Creek Public	Public	22			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$3,788
Deep Creek Public	Public	23			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$322
Deep Creek Public	Public	24			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$431
Deep Creek Public	Public	25			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$3,999
Deep Creek Public	Public	26			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$216
Deep Creek Public	Public	27			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$1,381
Deep Creek Public	Public	28			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$361
Deep Creek Public	Public	29			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$216
Deep Creek Public	Public	30			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$227
Deep Creek Public	Public	31			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$431
Deep Creek Public	Public	32			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$358
Deep Creek Public	Public	33			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$378
Deep Creek Public	Public	34			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$593
Deep Creek Public	Public	35			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$1,116
Deep Creek Public	Public	36			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$324
Deep Creek Public	Public	37			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$270
Deep Creek Public	Public	38			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$216
Deep Creek Public	Public	39			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$1,079
Deep Creek Public	Public	40			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$270
Deep Creek Public	Public	41			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$912
Deep Creek Public	Public	42			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$2,114
Deep Creek Public	Public	43			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$485
Deep Creek Public	Public	44			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$270
Deep Creek Public	Public	45			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$216
Deep Creek Public	Public	46			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$1,294
Deep Creek Public	Public	47			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$216
Deep Creek Public	Public	48			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$216
Deep Creek Public	Public	49			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$216
Deep Creek Public	Public	50			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$216
Deep Creek Public	Public	51			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$67
Deep Creek Public	Public	52			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$162
Deep Creek Public	Public	53			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$287
Deep Creek Public	Public	54			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$216
Deep Creek Public	Public	55			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$239
Deep Creek Public	Public	56			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$391
Deep Creek Public	Public	57			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$8,015
Deep Creek Public	Public	58			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$10,246
Deep Creek Public	Public	59			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$232
Deep Creek Public	Public-ROW	60			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$0
Hathaway Park	Public	1	0	$1,080.00	$0	0	1	46.29	0.00	$7.73	$0	0	13,200	0	$4.80	$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0	1.2	$75,000	$88,235
Hathaway Park	Public-ROW	2			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$0
Lee Branch Private	Private	1	1	$1,080.00	$526	1	1	46.29	46.29	$7.73	$174	1	13,200	13,200	$4.80	$30,833	1	13.5	$130.00	$1,750	1	13.5	$2,250.00	$30,282	1	13.5	$725.00	$9,758	1.2	$75,000	$42,938
Lee Branch Private	Private	2			$53						$18					$3,100	1	1.4	$130.00	$176	1	1.4	$2,250.00	$3,044	1	1.4	$725.00	$981			$4,316
Lee Branch Private	Private	3			$116						$39					$6,833	1	3.0	$130.00	$388	1	3.0	$2,250.00	$6,711	1	3.0	$725.00	$2,162			$9,516
Lee Branch Private	Private	4			$385						$128					$22,594	1	9.9	$130.00	$1,282	1	9.9	$2,250.00	$22,191	1	9.9	$725.00	$7,150			$31,466
Lee Branch Private	Private-ROW	5			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$0
Prairie Creek Preserve	Public	1	0	$1,080.00	$0	0	1	46.29	0.00	$7.73	$0	0	13,200	0	$4.80	$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0	1.2	$75,000	$37,751
Prairie Creek Preserve	Public	2			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$12,629
Prairie Creek Preserve	Public	3			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$34,896
Prairie Creek Preserve	Public	4			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$3,156
Prairie Creek Preserve	Public-ROW	5			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$0
Prairie Creek Private-CE	Private	1	1	$1,080.00	$8	0	1	46.29	0.00	$7.73	$0	0	13,200	0	$4.80	$0	1	1.0	$130.00	$129	1	1.0	$2,250.00	$2,238	1	1.0	$725.00	$721	1.2	$75,000	$634
Prairie Creek Private-CE	Private	2			$8						$0					$0	1	1.0	$130.00	$132	1	1.0	$2,250.00	$2,290	1	1.0	$725.00	$738			$716
Prairie Creek Private-CE	Private	3			$9						$0					$0	1	1.0	$130.00	$136	1	1.0	$2,250.00	$2,348	1	1.0	$725.00	$757			$728
Prairie Creek Private-CE	Private-ROW	4			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$0
Prairie Creek Private	Private	5			$15						$0					$0	1	1.7	$130.00	$222	1	1.7	$2,250.00	$3,843	1	1.7	$725.00	$1,238			$1,191
Prairie Creek Private	Private	6			$8						$0					$0	1	1.0	$130.00	$129	1	1.0	$2,250.00	$2,229	1	1.0	$725.00	$718			$691
Prairie Creek Private	Private	7			$8						$0					$0	1	1.0	$130.00	$128	1	1.0	$2,250.00	$2,212	1	1.0	$725.00	$713			$686
Prairie Creek Private	Private	8			$11						$0					$0	1	1.3	$130.00	$166	1	1.3	$2,250.00	$2,878	1	1.3	$725.00	$927			$892
Prairie Creek Private	Private	9			$8						$0					$0	1	1.0	$130.00	$133	1	1.0	$2,250.00	$2,307	1	1.0	$725.00	$743			$715
Prairie Creek Private	Private	10			$8						$0					$0	1	1.0	$130.00	$128	1	1.0	$2,250.00	$2,218	1	1.0	$725.00	$712			$685
Prairie Creek Private	Private	11			$8						$0					$0	1	1.0	$130.00	$126	1	1.0	$2,250.00	$2,174	1	1.0	$725.00	$701			$674
Prairie Creek Private	Private	12			$8						$0					$0	1	1.0	$130.00	$128	1	1.0	$2,250.00	$2,213	1	1.0	$725.00	$713			$686
Prairie Creek Private	Private	13			$8						$0					$0	1	1.0	$130.00	$133	1	1.0	$2,250.00	$2,301	1	1.0	$725.00	$741			$713
Prairie Creek Private	Private	14			$12						$0					$0	1	1.3	$130.00	$175	1	1.3	$2,250.00	$3,035	1	1.3	$725.00	$978			$941
Prairie Creek Private	Private	15			$14						$0					$0	1	1.6	$130.00	$209	1	1.6	$2,250.00	$3,620	1	1.6	$725.00	$1,166			$1,122
Prairie Creek Private	Private	16			$11						$0					$0	1	1.3	$130.00	$174	1	1.3	$2,250.00	$3,011	1	1.3	$725.00	$970			$933
Prairie Creek Private	Private	17			$10						$0					$0	1	1.2	$130.00	$155	1	1.2	$2,250.00	$2,682	1	1.2	$725.00	$864			$831

			Signage			Parking Area						Trail Clearing						Habitat Enhancements - Initial				Exotic Removal (Mechanical) - Initial				Exotic Removal (Herbicide) - Initial				Scrub-Jay Translocation		
Property Name	Ownership**	Property ID	New signs	Unit Costs ($/Unit)	Sub-Total Cost	Apply to property group	# parking areas / prop grp	Road Base (tons / park area)	Road Base (tons)	Unit Costs ($/ton)	Sub-Total Cost	Apply to property group	Length trail clearing / prop grp (Ave)	Length trail clearing (feet)	Unit Costs ($/ft)	Sub-Total Cost	Apply to property group	# acres treated	Unit Costs ($/acre)	Sub-Total Annual Cost	Apply to property group	# acres treated	Unit Costs ($/acre)	Sub-Total Annual Cost	Apply to property group	# acres treated	Unit Costs ($/acre)	Sub-Total Annual Cost	# Translocation Events	Unit Costs ($/site)	Sub-Total Cost
Prairie Creek Private	Private	18			$17						$0					$0	1	2.0	$130.00	$260	1	2.0	$2,250.00	$4,500	1	2.0	$725.00	$1,450			$1,395
Prairie Creek Private	Private	19			$9						$0					$0	1	1.0	$130.00	$128	1	1.0	$2,250.00	$2,250	1	1.0	$725.00	$718			$691
Prairie Creek Private	Private	20			$9						$0					$0	1	1.0	$130.00	$136	1	1.0	$2,250.00	$2,382	1	1.0	$725.00	$761			$732
Prairie Creek Private	Private	21			$10						$0					$0	1	1.2	$130.00	$150	1	1.2	$2,250.00	$2,588	1	1.2	$725.00	$834			$802
Prairie Creek Private	Private	22			$10						$0					$0	1	1.2	$130.00	$156	1	1.2	$2,250.00	$2,698	1	1.2	$725.00	$869			$836
Prairie Creek Private	Private	23			$9						$0					$0	1	1.0	$130.00	$126	1	1.0	$2,250.00	$2,173	1	1.0	$725.00	$700			$674
Prairie Creek Private	Private	24			$11						$0					$0	1	1.3	$130.00	$166	1	1.3	$2,250.00	$2,874	1	1.3	$725.00	$926			$891
Prairie Creek Private	Private	25			$10						$0					$0	1	1.2	$130.00	$154	1	1.2	$2,250.00	$2,671	1	1.2	$725.00	$861			$828
Prairie Creek Private	Private	26			$9						$0					$0	1	1.1	$130.00	$140	1	1.1	$2,250.00	$2,418	1	1.1	$725.00	$779			$750
Prairie Creek Private	Private	27			$10						$0					$0	1	1.2	$130.00	$155	1	1.2	$2,250.00	$2,691	1	1.2	$725.00	$867			$834
Prairie Creek Private	Private	28			$10						$0					$0	1	1.1	$130.00	$146	1	1.1	$2,250.00	$2,533	1	1.1	$725.00	$816			$785
Prairie Creek Private	Private	29			$9						$0					$0	1	1.0	$130.00	$127	1	1.0	$2,250.00	$2,196	1	1.0	$725.00	$708			$681
Prairie Creek Private	Private	30			$9						$0					$0	1	1.0	$130.00	$132	1	1.0	$2,250.00	$2,280	1	1.0	$725.00	$735			$707
Prairie Creek Private	Private	31			$10						$0					$0	1	1.2	$130.00	$150	1	1.2	$2,250.00	$2,600	1	1.2	$725.00	$838			$806
Prairie Creek Private	Private	32			$9						$0					$0	1	1.1	$130.00	$143	1	1.1	$2,250.00	$2,477	1	1.1	$725.00	$798			$768
Prairie Creek Private	Private	33			$10						$0					$0	1	1.1	$130.00	$147	1	1.1	$2,250.00	$2,544	1	1.1	$725.00	$820			$789
Prairie Creek Private	Private	34			$9						$0					$0	1	1.0	$130.00	$134	1	1.0	$2,250.00	$2,326	1	1.0	$725.00	$750			$721
Prairie Creek Private	Private	35			$9						$0					$0	1	1.0	$130.00	$131	1	1.0	$2,250.00	$2,271	1	1.0	$725.00	$732			$704
Prairie Creek Private	Private	36			$8						$0					$0	1	1.0	$130.00	$129	1	1.0	$2,250.00	$2,235	1	1.0	$725.00	$720			$693
Prairie Creek Private	Private	37			$9						$0					$0	1	1.0	$130.00	$130	1	1.0	$2,250.00	$2,241	1	1.0	$725.00	$722			$695
Prairie Creek Private	Private	38			$9						$0					$0	1	1.0	$130.00	$133	1	1.0	$2,250.00	$2,294	1	1.0	$725.00	$739			$711
Prairie Creek Private	Private	39			$9						$0					$0	1	1.0	$130.00	$133	1	1.0	$2,250.00	$2,298	1	1.0	$725.00	$740			$712
Prairie Creek Private	Private	40			$9						$0					$0	1	1.0	$130.00	$133	1	1.0	$2,250.00	$2,300	1	1.0	$725.00	$741			$713
Prairie Creek Private	Private	41			$8						$0					$0	1	1.0	$130.00	$126	1	1.0	$2,250.00	$2,187	1	1.0	$725.00	$705			$678
Prairie Creek Private	Private	42			$17						$0					$0	1	2.0	$130.00	$259	1	2.0	$2,250.00	$4,480	1	2.0	$725.00	$1,444			$1,389
Prairie Creek Private	Private	43			$12						$0					$0	1	1.4	$130.00	$178	1	1.4	$2,250.00	$3,077	1	1.4	$725.00	$991			$954
Prairie Creek Private	Private	44			$12						$0					$0	1	1.4	$130.00	$188	1	1.4	$2,250.00	$3,247	1	1.4	$725.00	$1,046			$1,007
Prairie Creek Private	Private	45			$12						$0					$0	1	1.4	$130.00	$187	1	1.4	$2,250.00	$3,234	1	1.4	$725.00	$1,042			$1,003
Prairie Creek Private	Private	46			$9						$0					$0	1	1.0	$130.00	$134	1	1.0	$2,250.00	$2,319	1	1.0	$725.00	$747			$719
Prairie Creek Private	Private	47			$8						$0					$0	1	1.1	$130.00	$137	1	1.1	$2,250.00	$2,368	1	1.1	$725.00	$763			$734
Prairie Creek Private	Private	48			$10						$0					$0	1	1.1	$130.00	$147	1	1.1	$2,250.00	$2,548	1	1.1	$725.00	$821			$790
Prairie Creek Private	Private	49			$9						$0					$0	1	1.0	$130.00	$136	1	1.0	$2,250.00	$2,360	1	1.0	$725.00	$760			$731
Prairie Creek Private	Private	50			$9						$0					$0	1	1.0	$130.00	$131	1	1.0	$2,250.00	$2,256	1	1.0	$725.00	$728			$700
Prairie Creek Private	Private	51			$8						$0					$0	1	1.0	$130.00	$131	1	1.0	$2,250.00	$2,259	1	1.0	$725.00	$728			$700
Prairie Creek Private	Private	52			$11						$0					$0	1	1.2	$130.00	$160	1	1.2	$2,250.00	$2,768	1	1.2	$725.00	$892			$858
Prairie Creek Private	Private	53			$10						$0					$0	1	1.1	$130.00	$149	1	1.1	$2,250.00	$2,586	1	1.1	$725.00	$833			$802
Prairie Creek Private	Private	54			$11						$0					$0	1	1.3	$130.00	$166	1	1.3	$2,250.00	$2,879	1	1.3	$725.00	$928			$893
Prairie Creek Private	Private	55			$9						$0					$0	1	1.1	$130.00	$137	1	1.1	$2,250.00	$2,365	1	1.1	$725.00	$762			$733
Prairie Creek Private	Private	56			$11						$0					$0	1	1.3	$130.00	$171	1	1.3	$2,250.00	$2,959	1	1.3	$725.00	$953			$916
Prairie Creek Private	Private	57			$9						$0					$0	1	1.0	$130.00	$135	1	1.0	$2,250.00	$2,341	1	1.0	$725.00	$754			$726
Prairie Creek Private	Private	58			$8						$0					$0	1	1.0	$130.00	$127	1	1.0	$2,250.00	$2,200	1	1.0	$725.00	$709			$682
Prairie Creek Private	Private	59			$9						$0					$0	1	1.0	$130.00	$131	1	1.0	$2,250.00	$2,273	1	1.0	$725.00	$732			$705
Prairie Creek Private	Private	60			$10						$0					$0	1	1.2	$130.00	$156	1	1.2	$2,250.00	$2,689	1	1.2	$725.00	$834			$803
Prairie Creek Private	Private	61			$11						$0					$0	1	1.3	$130.00	$164	1	1.3	$2,250.00	$2,832	1	1.3	$725.00	$913			$878
Prairie Creek Private	Private	62			$13						$0					$0	1	1.6	$130.00	$202	1	1.6	$2,250.00	$3,504	1	1.6	$725.00	$1,129			$1,086
Prairie Creek Private	Private	63			$10						$0					$0	1	1.2	$130.00	$152	1	1.2	$2,250.00	$2,638	1	1.2	$725.00	$850			$818
Prairie Creek Private	Private	64			$9						$0					$0	1	1.0	$130.00	$136	1	1.0	$2,250.00	$2,361	1	1.0	$725.00	$761			$732
Prairie Creek Private	Private	65			$9						$0					$0	1	1.1	$130.00	$142	1	1.1	$2,250.00	$2,462	1	1.1	$725.00	$790			$760
Prairie Creek Private	Private	66			$9						$0					$0	1	1.0	$130.00	$130	1	1.0	$2,250.00	$2,250	1	1.0	$725.00	$725			$698
Prairie Creek Private	Private	67			$9						$0					$0	1	1.0	$130.00	$131	1	1.0	$2,250.00	$2,261	1	1.0	$725.00	$728			$701
Prairie Creek Private	Private	68			$10						$0					$0	1	1.2	$130.00	$157	1	1.2	$2,250.00	$2,716	1	1.2	$725.00	$875			$842
Prairie Creek Private	Private	69			$9						$0					$0	1	1.0	$130.00	$135	1	1.0	$2,250.00	$2,330	1	1.0	$725.00	$751			$722
Prairie Creek Private	Private	70			$9						$0					$0	1	1.0	$130.00	$136	1	1.0	$2,250.00	$2,347	1	1.0	$725.00	$756			$728
Prairie Creek Private	Private	71			$8						$0					$0	1	1.0	$130.00	$131	1	1.0	$2,250.00	$2,274	1	1.0	$725.00	$733			$705
Prairie Creek Private	Private	72			$8						$0					$0	1	1.0	$130.00	$135	1	1.0	$2,250.00	$2,333	1	1.0	$725.00	$752			$723
Prairie Creek Private	Private	73			$9						$0					$0	1	1.0	$130.00	$130	1	1.0	$2,250.00	$2,253	1	1.0	$725.00	$727			$699
Prairie Creek Private	Private	74			$8						$0					$0	1	1.0	$130.00	$129	1	1.0	$2,250.00	$2,232	1	1.0	$725.00	$718			$692
Prairie Creek Private	Private	75			$8						$0					$0	1	1.0	$130.00	$128	1	1.0	$2,250.00	$2,207	1	1.0	$725.00	$711			$684
Prairie Creek Private	Private	76			$9						$0					$0	1	1.0	$130.00	$132	1	1.0	$2,250.00	$2,293	1	1.0	$725.00	$738			$711
Prairie Creek Private	Private	77			$8						$0					$0	1	1.0	$130.00	$126	1	1.0	$2,250.00	$2,186	1	1.0	$725.00	$704			$678
Prairie Creek Private	Private	78			$8						$0					$0	1	1.0	$130.00	$133	1	1.0	$2,250.00	$2,307	1	1.0	$725.00	$743			$715
Prairie Creek Private	Private	79			$8						$0					$0	1	0.9	$130.00	$123	1	0.9	$2,250.00	$2,133	1	0.9	$725.00	$687			$661
Prairie Creek Private	Private	80			$8						$0					$0	1	1.1	$130.00	$138	1	1.1	$2,250.00	$2,393	1	1.1	$725.00	$771			$742
Prairie Creek Private	Private	81			$13						$0					$0	1	1.5	$130.00	$195	1	1.5	$2,250.00	$3,380	1	1.5	$725.00	$1,088			$1,048
Prairie Creek Private	Private	82			$9						$0					$0	1	1.0	$130.00	$132	1	1.0	$2,250.00	$2,284	1	1.0	$725.00	$736			$708
Prairie Creek Private	Private	83			$9						$0					$0	1	1.0	$130.00	$131	1	1.0	$2,250.00	$2,270	1	1.0	$725.00	$731			$704
Prairie Creek Private	Private	84			$8						$0					$0	1	1.0	$130.00	$128	1	1.0	$2,250.00	$2,210	1	1.0	$725.00	$712			$686
Prairie Creek Private	Private	85			$8						$0					$0	1	1.0	$130.00	$128	1	1.0	$2,250.00	$2,219	1	1.0	$725.00	$715			$688
Prairie Creek Private	Private	86			$16						$0					$0	1	1.9	$130.00	$250	1	1.9	$2,250.00	$4,331	1	1.9	$725.00	$1,396			$1,343
Prairie Creek Private	Private	87			$9						$0					$0	1	1.0	$130.00	$131	1	1.0	$2,250.00	$2,260	1	1.0	$725.00	$728			$701
Prairie Creek Private	Private	88			$9						$0					$0	1	1.0	$130.00	$132	1	1.0	$2,250.00	$2,287	1	1.0	$725.00	$737			$709
Prairie Creek Private	Private	89			$8						$0					$0	1	1.0	$130.00	$131	1	1.0	$2,250.00	$2,259	1	1.0	$725.00	$728			$700
Prairie Creek Private	Private	90			$8						$0					$0	1	1.0	$130.00	$127	1	1.0	$2,250.00	$2,198	1	1.0	$725.00	$708			$681
Prairie Creek Private	Private	91			$9						$0					$0	1	1.0	$130.00	$130	1	1.0	$2,250.00	$2,256	1	1.0	$725.00	$727			$699
Prairie Creek Private	Private	92			$9						$0					$0	1	1.0	$130.00	$135	1	1.0	$2,250.00	$2,338	1	1.0	$725.00	$753			$725
Prairie Creek Private	Private	93			$8						$0					$0	1	1.0	$130.00	$127	1	1.0	$2,250.00	$2,193	1	1.0	$725.00	$706			$680
Prairie Creek Private	Private	94			$9						$0					$0	1	1.0	$130.00	$135	1	1.0	$2,250.00	$2,334	1	1.0	$725.00	$752			$723
Prairie Creek Private	Private	95			$9						$0					$0	1	1.1	$130.00	$139	1	1.1	$2,250.00	$2,402	1	1.1	$725.00	$774			$745
Prairie Creek Private	Private	96			$12						$0					$0	1	1.4	$130.00	$180	1	1.4	$2,250.00	$3,108	1	1.4	$725.00	$1,001			$963
Prairie Creek Private	Private	97			$10						$0					$0	1	1.2	$130.00	$157	1	1.2	$2,250.00	$2,721	1	1.2	$725.00	$877			$844
Prairie Creek Private	Private	98			$9						$0					$0	1	1.0	$130.00	$132	1	1.0	$2,250.00	$2,291	1	1.0	$725.00	$738			$710
Prairie Creek Private	Private	99			$9						$0					$0	1	1.0	$130.00	$131	1	1.0	$2,250.00	$2,273	1	1.0	$725.00	$732			$705
Prairie Creek Private	Private	100			$9						$0					$0	1	1.0	$130.00	$130	1	1.0	$2,250.00	$2,249	1	1.0	$725.00	$725			$697
Prairie Creek Private	Private	101			$9						$0					$0	1	1.0	$130.00	$134	1	1.0	$2,250.00	$2,317	1	1.0	$725.00	$747			$718
Prairie Creek Private	Private	102			$9						$0					$0	1	1.0	$130.00	$134	1	1.0	$2,250.00	$2,326	1	1.0	$725.00	$749			$721
Prairie Creek Private	Private	103			$9						$0					$0	1	1.0	$130.00	$130	1	1.0	$2,250.00	$2,245	1	1.0	$725.00	$723			$696
Prairie Creek Private	Private	104			$8						$0					$0	1	1.0	$130.00	$129	1	1.0	$2,250.00	$2,232	1	1.0	$725.00	$718			$692
Prairie Creek Private	Private	105			$8						$0					$0	1	1.0	$130.00	$124	1	1.0	$2,250.00	$2,152	1	1.0	$725.00	$694			$667
Prairie Creek Private	Private	106			$9						$0					$0	1	1.0	$130.00	$131	1	1.0	$2,250.00	$2,267	1	1.0	$725.00	$730			$703
Prairie Creek Private	Private	107			$9						$0					$0	1	1.0	$130.00	$132	1	1.0	$2,250.00	$2,280	1	1.0	$725.00	$735			$707
Prairie Creek Private	Private	108			$8						$0					$0	1	1.0	$130.00	$129	1	1.0	$2,250.00	$2,238	1	1.0	$725.00	$721			$694
Prairie Creek Private	Private	109			$9						$0					$0	1	1.0	$130.00	$130	1	1.0	$2,250.00	$2,241	1	1.0	$725.00	$722			$695
Prairie Creek Private	Private	110			$8						$0					$0	1	1.0	$130.00	$128	1	1.0	$2,250.00	$2,213	1	1.0	$725.00	$713			$686
Prairie Creek Private	Private	111			$9						$0					$0	1	1.0	$130.00	$130	1	1.0	$2,250.00	$2,243	1	1.0	$725.00	$723			$695
Prairie Creek Private	Private	112			$8						$0					$0	1	1.0	$130.00	$128	1	1.0	$2,250.00	$2,216	1	1.0	$725.00	$714			$687
Prairie Creek Private	Private	113			$8						$0					$0	1	1.0	$130.00	$128	1	1.0	$2,250.00	$2,212	1	1.0	$725.00	$713			$686
Prairie Creek Private	Private	114			$8						$0					$0	1	1.0	$130.00	$125	1	1.0	$2,250.00	$2,157	1	1.0	$725.00	$695			$669
Prairie Creek Private	Private	115			$9						$0					$0	1	1.1	$130.00	$138	1	1.1	$2,250.00	$2,396	1	1.1	$725.00	$772			$742
Prairie Creek Private	Private-ROW	116			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$0
Prairie Creek West Private	Private	1	1	$1,080.00	$97	0	1	46.29	0.00	$7.73	$0	0	13,200	0	$4.80	$0	1	2.7	$130.00	$345	1	2.7	$2,250.00	$5,975	1	2.7	$725.00	$1,925	1.2	$75,000	$7,949
Prairie Creek West Private	Private	2			$2						$0					$0	1	0.1	$130.00	$8	1	0.1	$2,250.00	$145	1	0.1	$725.00	$47			$193
Prairie Creek West Private	Private-ROW	3			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$0
Prairie Creek West Private (Large)	Private	1			$41						$0					$0	1	1.1	$130.00	$146	1	1.1	$2,250.00	$2,533	1	1.1	$725.00	$816			$3,371
Prairie Creek West Private (Large)	Private	2			$1						$0					$0	1	0.0	$130.00	$5	1	0.0	$2,250.00	$88	1	0.0	$725.00	$28			$117
Prairie Creek West Private (Large)	Private	3			$6						$0					$0	1	0.2	$130.00	$21	1	0.2	$2,250.00	$372	1	0.2	$725.00	$120			$495
Prairie Creek West Private (Large)	Private	4			$159						$0					$0	1	4.3	$130.00	$565	1	4.3	$2,250.00	$9,779	1	4.3	$725.00	$3,151			$13,010
Prairie Creek West Private (Large)	Private	5			$22						$0					$0	1	0.6	$130.00	$77	1	0.6	$2,250.00	$1,328	1	0.6	$725.00	$428			$1,768
Prairie Creek West Private (Large)	Private	6			$31						$0					$0	1	0.9	$130.00	$111	1	0.9	$2,250.00	$1,927	1	0.9	$725.00	$621			$2,564
Prairie Creek West Private (Large)	Private	7			$107						$0					$0	1	2.9	$130.00	$378	1	2.9	$2,250.00	$6,543	1	2.9	$725.00	$2,108			$8,705
Prairie Creek West Private (Large)	Private	8			$52						$0					$0	1	1.4	$130.00	$183	1	1.4	$2,250.00	$3,174	1	1.4	$725.00	$1,023			$4,223

			Signage			Parking Area						Trail Clearing					Habitat Enhancements - Initial				Exotic Removal (Mechanical) - Initial				Exotic Removal (Herbicide) - Initial				Scrub-Jay Translocation		
Property Name	**Ownership****	**Property ID**	*New signs*	*Unit Costs ($/sign)*	***Sub-Total Cost***	*Apply to property group*	*# parking areas / prop grp*	*Road Base (tons / park area)*	*Road Base (tons)*	*Unit Costs ($/ton)*	***Sub-Total Cost***	*Apply to property group*	*Length trail clearing / prop grp (Ave)*	*Length trail clearing (feet)*	*Unit Costs ($/ft)*	***Sub-Total Cost***	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	***Sub-Total Annual Cost***	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	***Sub-Total Annual Cost***	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	***Sub-Total Annual Cost***	*# Translocation Events*	*Unit Costs ($/site)*	***Sub-Total Cost***
Prairie Creek West Private (Large)	Private	9			$18						$0					$0	1	0.5	$130.00	$64	1	0.5	$2,250.00	$1,115	1	0.5	$725.00	$359			$1,494
Prairie Creek West Private (Large)	Private	10			$26						$0					$0	1	0.7	$130.00	$93	1	0.7	$2,250.00	$1,619	1	0.7	$725.00	$519			$2,142
Prairie Creek West Private (Large)	Private	11			$60						$0					$0	1	1.6	$130.00	$211	1	1.6	$2,250.00	$3,658	1	1.6	$725.00	$1,179			$4,867
Prairie Creek West Private (Large)	Private	12			$89						$0					$0	1	2.4	$130.00	$315	1	2.4	$2,250.00	$5,457	1	2.4	$725.00	$1,758			$7,260
Prairie Creek West Private (Large)	Private	13			$100						$0					$0	1	2.7	$130.00	$356	1	2.7	$2,250.00	$6,156	1	2.7	$725.00	$1,983			$8,190
Prairie Creek West Private (Large)	Private	14			$16						$0					$0	1	0.4	$130.00	$58	1	0.4	$2,250.00	$1,006	1	0.4	$725.00	$324			$1,338
Prairie Creek West Private (Large)	Private	15			$26						$0					$0	1	0.7	$130.00	$91	1	0.7	$2,250.00	$1,567	1	0.7	$725.00	$505			$2,084
Prairie Creek West Private (Large)	Private	16			$67						$0					$0	1	1.8	$130.00	$239	1	1.8	$2,250.00	$4,131	1	1.8	$725.00	$1,331			$5,496
Prairie Creek West Private (Large)	Private	17			$68						$0					$0	1	1.9	$130.00	$242	1	1.9	$2,250.00	$4,183	1	1.9	$725.00	$1,348			$5,566
Prairie Creek West Private (Large)	Private	18			$1						$0					$0	1	0.0	$130.00	$5	1	0.0	$2,250.00	$84	1	0.0	$725.00	$27			$112
Prairie Creek West Private (Large)	Private	19			$69						$0					$0	1	1.9	$130.00	$243	1	1.9	$2,250.00	$4,205	1	1.9	$725.00	$1,356			$5,595
Prairie Creek West Private (Large)	Private	20			$17						$0					$0	1	0.5	$130.00	$60	1	0.5	$2,250.00	$1,047	1	0.5	$725.00	$337			$1,393
Prairie Creek West Private (Large)	Private	21			$4						$0					$0	1	0.1	$130.00	$14	1	0.1	$2,250.00	$234	1	0.1	$725.00	$76			$312
Prairie Creek West Private (Large)	Private-ROW	22			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$0
Shell Creek Delta	Private	1	1	$1,080.00	$1,080	0	1	46.29	0.00	$7.73	$0	0	13,200	0	$4.80	$0	1	9.4	$130.00	$1,217	1	9.4	$2,250.00	$21,064	1	9.4	$725.00	$6,787	1.2	$75,000	$88,235
Shell Creek Preserve	Public	1	0	$1,080.00	$0	0	1	46.29	0.00	$7.73	$0	0	13,200	0	$4.80	$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0	1.2	$75,000	$17,018
Shell Creek Preserve	Public	2			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$7,595
Shell Creek Preserve	Public	3			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$62
Shell Creek Preserve	Public	4			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$23,921
Shell Creek Preserve	Public	5			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$5,127
Shell Creek Preserve	Public	6			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$5,931
Shell Creek Preserve	Public	7			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$6,414
Shell Creek Preserve	Public	8			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$6,474
Shell Creek Preserve	Public	9			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$6,372
Shell Creek Preserve	Public	10			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$7,692
Shell Creek Preserve	Public	11			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$2,321
Shell Creek Preserve	Public-ROW	12			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$0
Shell Creek West Private	Private	1	1	$1,080.00	$254	1	1	46.29	46.29	$7.73	$84	1	13,200	13,200	$4.80	$14,915	1	9.7	$130.00	$1,263	1	9.7	$2,250.00	$21,866	1	9.7	$725.00	$7,046	1.2	$75,000	$20,771
Shell Creek West Private	Private	2			$50						$17					$2,941	1	1.9	$130.00	$249	1	1.9	$2,250.00	$4,311	1	1.9	$725.00	$1,389			$4,096
Shell Creek West Private	Private	3			$42						$14					$2,443	1	1.6	$130.00	$207	1	1.6	$2,250.00	$3,579	1	1.6	$725.00	$1,153			$3,400
Shell Creek West Private	Private	4			$30						$10					$1,782	1	1.2	$130.00	$151	1	1.2	$2,250.00	$2,613	1	1.2	$725.00	$842			$2,482
Shell Creek West Private	Private	5			$33						$11					$1,942	1	1.3	$130.00	$165	1	1.3	$2,250.00	$2,847	1	1.3	$725.00	$918			$2,705
Shell Creek West Private	Private	6			$33						$11					$1,917	1	1.2	$130.00	$162	1	1.2	$2,250.00	$2,811	1	1.2	$725.00	$906			$2,670
Shell Creek West Private	Private	7			$34						$11					$1,998	1	1.3	$130.00	$169	1	1.3	$2,250.00	$2,928	1	1.3	$725.00	$944			$2,782
Shell Creek West Private	Private	8			$24						$8					$1,399	1	0.9	$130.00	$118	1	0.9	$2,250.00	$2,050	1	0.9	$725.00	$661			$1,948
Shell Creek West Private	Private	9			$367						$122					$21,532	1	14.0	$130.00	$1,824	1	14.0	$2,250.00	$31,565	1	14.0	$725.00	$10,171			$29,985
Shell Creek West Private	Private	10			$173						$57					$10,135	1	6.6	$130.00	$858	1	6.6	$2,250.00	$14,858	1	6.6	$725.00	$4,787			$14,114
Shell Creek West Private	Private	11			$40						$13					$2,357	1	1.6	$130.00	$200	1	1.5	$2,250.00	$3,456	1	1.5	$725.00	$1,114			$3,283
Shell Creek West Private	Private-ROW	12			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$0
Washington Loop Private	Private	1	1	$1,080.00	$35	0	1	46.29	0.00	$7.73	$0	0	13,200	0	$4.80	$0	1	1.0	$130.00	$126	1	1.0	$2,250.00	$2,176	1	1.0	$725.00	$701	1.2	$75,000	$2,828
Washington Loop Private	Private	2			$17						$0					$0	1	0.5	$130.00	$61	1	0.5	$2,250.00	$1,049	1	0.5	$725.00	$338			$1,368
Washington Loop Private	Private	3			$18						$0					$0	1	0.5	$130.00	$65	1	0.5	$2,250.00	$1,123	1	0.5	$725.00	$362			$1,455
Washington Loop Private	Private	4			$18						$0					$0	1	0.5	$130.00	$65	1	0.5	$2,250.00	$1,128	1	0.5	$725.00	$363			$1,462
Washington Loop Private	Private	5			$14						$0					$0	1	0.4	$130.00	$50	1	0.4	$2,250.00	$870	1	0.4	$725.00	$280			$1,127
Washington Loop Private	Private	6			$17						$0					$0	1	0.5	$130.00	$61	1	0.5	$2,250.00	$1,060	1	0.5	$725.00	$341			$1,373
Washington Loop Private	Private	7			$6						$0					$0	1	0.2	$130.00	$22	1	0.2	$2,250.00	$385	1	0.2	$725.00	$124			$500
Washington Loop Private	Private	8			$17						$0					$0	1	0.5	$130.00	$62	1	0.5	$2,250.00	$1,081	1	0.5	$725.00	$348			$1,401
Washington Loop Private	Private	9			$14						$0					$0	1	0.4	$130.00	$51	1	0.4	$2,250.00	$889	1	0.4	$725.00	$287			$1,153
Washington Loop Private	Private	10			$16						$0					$0	1	0.5	$130.00	$59	1	0.5	$2,250.00	$1,023	1	0.5	$725.00	$330			$1,326
Washington Loop Private	Private	11			$35						$0					$0	1	1.0	$130.00	$127	1	1.0	$2,250.00	$2,198	1	1.0	$725.00	$708			$2,849
Washington Loop Private	Private	12			$17						$0					$0	1	0.5	$130.00	$61	1	0.5	$2,250.00	$1,056	1	0.5	$725.00	$341			$1,371
Washington Loop Private	Private	13			$17						$0					$0	1	0.5	$130.00	$62	1	0.5	$2,250.00	$1,071	1	0.5	$725.00	$345			$1,389
Washington Loop Private	Private	14			$11						$0					$0	1	0.3	$130.00	$39	1	0.3	$2,250.00	$682	1	0.3	$725.00	$220			$884
Washington Loop Private	Private	15			$19						$0					$0	1	0.5	$130.00	$69	1	0.5	$2,250.00	$1,202	1	0.5	$725.00	$387			$1,558
Washington Loop Private	Private	16			$8						$0					$0	1	0.2	$130.00	$31	1	0.2	$2,250.00	$532	1	0.2	$725.00	$172			$690
Washington Loop Private	Private	17			$18						$0					$0	1	0.6	$130.00	$67	1	0.5	$2,250.00	$1,161	1	0.5	$725.00	$374			$1,505
Washington Loop Private	Private	18			$17						$0					$0	1	0.5	$130.00	$63	1	0.5	$2,250.00	$1,098	1	0.5	$725.00	$354			$1,424
Washington Loop Private	Private	19			$18						$0					$0	1	0.5	$130.00	$67	1	0.5	$2,250.00	$1,160	1	0.5	$725.00	$374			$1,503
Washington Loop Private	Private	20			$29						$0					$0	1	0.8	$130.00	$105	1	0.8	$2,250.00	$1,824	1	0.8	$725.00	$588			$2,364
Washington Loop Private	Private	21			$19						$0					$0	1	0.5	$130.00	$70	1	0.5	$2,250.00	$1,204	1	0.5	$725.00	$388			$1,560
Washington Loop Private	Private	22			$22						$0					$0	1	0.6	$130.00	$81	1	0.6	$2,250.00	$1,402	1	0.6	$725.00	$452			$1,817
Washington Loop Private	Private	23			$31						$0					$0	1	0.9	$130.00	$113	1	0.9	$2,250.00	$1,956	1	0.9	$725.00	$630			$2,536
Washington Loop Private	Private	24			$19						$0					$0	1	0.5	$130.00	$70	1	0.5	$2,250.00	$1,204	1	0.5	$725.00	$388			$1,560
Washington Loop Private	Private	25			$22						$0					$0	1	0.6	$130.00	$79	1	0.6	$2,250.00	$1,372	1	0.6	$725.00	$442			$1,778
Washington Loop Private	Private	26			$19						$0					$0	1	0.5	$130.00	$68	1	0.5	$2,250.00	$1,171	1	0.5	$725.00	$377			$1,517
Washington Loop Private	Private	27			$34						$0					$0	1	1.0	$130.00	$124	1	1.0	$2,250.00	$2,152	1	1.0	$725.00	$693			$2,789
Washington Loop Private	Private	28			$21						$0					$0	1	0.6	$130.00	$75	1	0.6	$2,250.00	$1,300	1	0.6	$725.00	$419			$1,695
Washington Loop Private	Private	29			$26						$0					$0	1	0.7	$130.00	$93	1	0.7	$2,250.00	$1,607	1	0.7	$725.00	$518			$2,083
Washington Loop Private	Private	30			$20						$0					$0	1	0.6	$130.00	$72	1	0.6	$2,250.00	$1,255	1	0.6	$725.00	$404			$1,626
Washington Loop Private	Private	31			$20						$0					$0	1	0.6	$130.00	$73	1	0.6	$2,250.00	$1,263	1	0.6	$725.00	$407			$1,637
Washington Loop Private	Private	32			$17						$0					$0	1	0.5	$130.00	$63	1	0.5	$2,250.00	$1,087	1	0.5	$725.00	$350			$1,409
Washington Loop Private	Private	33			$40						$0					$0	1	1.1	$130.00	$144	1	1.1	$2,250.00	$2,491	1	1.1	$725.00	$803			$3,229
Washington Loop Private	Private	34			$20						$0					$0	1	0.6	$130.00	$73	1	0.6	$2,250.00	$1,256	1	0.6	$725.00	$405			$1,628
Washington Loop Private	Private	35			$18						$0					$0	1	0.5	$130.00	$67	1	0.5	$2,250.00	$1,163	1	0.5	$725.00	$375			$1,510
Washington Loop Private	Private	36			$17						$0					$0	1	0.5	$130.00	$63	1	0.5	$2,250.00	$1,097	1	0.5	$725.00	$354			$1,422
Washington Loop Private	Private	37			$16						$0					$0	1	0.5	$130.00	$59	1	0.5	$2,250.00	$1,014	1	0.5	$725.00	$327			$1,314
Washington Loop Private	Private	38			$18						$0					$0	1	0.5	$130.00	$66	1	0.5	$2,250.00	$1,149	1	0.5	$725.00	$370			$1,490
Washington Loop Private	Private	39			$16						$0					$0	1	0.5	$130.00	$60	1	0.5	$2,250.00	$1,033	1	0.5	$725.00	$333			$1,339
Washington Loop Private	Private	40			$26						$0					$0	1	0.7	$130.00	$91	1	0.7	$2,250.00	$1,579	1	0.7	$725.00	$508			$2,045
Washington Loop Private	Private	41			$18						$0					$0	1	0.5	$130.00	$67	1	0.5	$2,250.00	$1,157	1	0.5	$725.00	$373			$1,499
Washington Loop Private	Private	42			$59						$0					$0	1	1.6	$130.00	$214	1	1.6	$2,250.00	$3,712	1	1.6	$725.00	$1,196			$4,811
Washington Loop Private	Private	43			$59						$0					$0	1	1.6	$130.00	$214	1	1.6	$2,250.00	$3,712	1	1.6	$725.00	$1,196			$4,811
Washington Loop Private	Private	44			$1						$0					$0	1	0.0	$130.00	$2	1	0.0	$2,250.00	$32	1	0.0	$725.00	$10			$43
Washington Loop Private	Private	45			$18						$0					$0	1	0.5	$130.00	$67	1	0.5	$2,250.00	$1,156	1	0.5	$725.00	$372			$1,498
Washington Loop Private	Private	46			$15						$0					$0	1	0.4	$130.00	$56	1	0.4	$2,250.00	$968	1	0.4	$725.00	$311			$1,253
Washington Loop Private	Private	47			$20						$0					$0	1	0.6	$130.00	$72	1	0.6	$2,250.00	$1,252	1	0.6	$725.00	$404			$1,623
Washington Loop Private	Private	48			$1						$0					$0	1	0.1	$130.00	$17	1	0.1	$2,250.00	$300	1	0.1	$725.00	$97			$398
Washington Loop Private - Easement	Private	1			$38						$0					$0	1	1.1	$130.00	$139	1	1.1	$2,250.00	$2,403	1	1.1	$725.00	$774			$3,115
Washington Loop Private - Easement	Private	2			$17						$0					$0	1	0.5	$130.00	$64	1	0.5	$2,250.00	$1,096	1	0.5	$725.00	$354			$1,425
Washington Loop Private - Easement	Private	3			$11						$0					$0	1	0.3	$130.00	$40	1	0.3	$2,250.00	$686	1	0.3	$725.00	$221			$889
Washington Loop Private - Easement	Private	4			$17						$0					$0	1	0.5	$130.00	$62	1	0.5	$2,250.00	$1,075	1	0.5	$725.00	$347			$1,394
Washington Loop Private - Easement	Private-ROW	5			$0						$0					$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0			$0
Amberjack Environmental Park	Public	--	0	$1,080.00	$0	0	1	46.29	0.00	$7.73	$0	0	13,200	0	$4.80	$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0	1.2	$75,000	$88,235
Rotunda Mitigation Area	Public	--	0	$1,080.00	$0	0	1	46.29	0.00	$7.73	$0	0	13,200	0	$4.80	$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0	1.2	$75,000	$88,235
Tippacanoe Environmental Park	Public	--	0	$1,080.00	$0	0	1	46.29	0.00	$7.73	$0	0	13,200	0	$4.80	$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0	1.2	$75,000	$88,235
Tippacanoe II Mitigation Area	Public	--	0	$1,080.00	$0	0	1	46.29	0.00	$7.73	$0	0	13,200	0	$4.80	$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0	1.2	$75,000	$88,235
San Casa Environmental Park	Public	--	0	$1,080.00	$0	0	1	46.29	0.00	$7.73	$0	0	13,200	0	$4.80	$0	0	0.0	$130.00	$0	0	0.0	$2,250.00	$0	0	0.0	$725.00	$0	1.2	$75,000	$88,235
TOTAL	--	--	6	***$1,080.00***	$6,480	2	--	--	92.58	***$7.73***	$716	2	--	26,400	***$4.80***	$126,720	205	264.5	***$130.00***	$34,389	205	264.5	***$2,250.00***	$595,138	205	264.5	***$725.00***	$191,786	20.0	***$75,000***	$1,500,000

Charlotte County Scrub-Jay HCP - Economic Analysis

Habitat Assessment, Planning, and Improvements - Worksheet

			Boundary Surveys					
Property Name	Ownership**	Property ID	*Apply to property group*	*Acres*	*Unit Costs ($/acre)*	*Sub-Total Cost*	Total Cost (Parcel)	Total Cost (Reserve Group)
Biscayne Trust CE	Public	1	0	0.0	$75	$0	$251	$90,235
Biscayne Trust CE	Public	2	0	0.0	$75	$0	$63,119	
Biscayne Trust CE	Public-ROW	3	0	0.0	$75	$0	$0	
Biscayne Trust Private	Public	1	0	0.0	$75	$0	$26,865	
Biscayne Trust Private	Public-ROW	2	0	0.0	$75	$0	$0	
Burchers Tract CE	Public	1	0	0.0	$75	$0	$124	$90,235
Burchers Tract CE	Public	2	0	0.0	$75	$0	$1,430	
Burchers Tract CE	Public	3	0	0.0	$75	$0	$4,679	
Burchers Tract CE	Public	4	0	0.0	$75	$0	$23,302	
Burchers Tract CE	Public	5	0	0.0	$75	$0	$52	
Burchers Tract CE	Public	6	0	0.0	$75	$0	$12,817	
Burchers Tract CE	Public	7	0	0.0	$75	$0	$868	
Burchers Tract CE	Public	8	0	0.0	$75	$0	$13,292	
Burchers Tract CE	Public	9	0	0.0	$75	$0	$19,340	
Burchers Tract CE	Public	10	0	0.0	$75	$0	$10,442	
Burchers Tract CE	Public	11	0	0.0	$75	$0	$3,730	
Burchers Tract CE	Public	12	0	0.0	$75	$0	$160	
Burchers Tract CE	Public-ROW	13	0	0.0	$75	$0	$0	
Deep Creek Public	Public	1	0	0.0	$75	$0	$1,108	$90,235
Deep Creek Public	Public	2	0	0.0	$75	$0	$2,239	
Deep Creek Public	Public	3	0	0.0	$75	$0	$6,377	
Deep Creek Public	Public	4	0	0.0	$75	$0	$6,333	
Deep Creek Public	Public	5	0	0.0	$75	$0	$4,467	
Deep Creek Public	Public	6	0	0.0	$75	$0	$3,906	
Deep Creek Public	Public	7	0	0.0	$75	$0	$221	
Deep Creek Public	Public	8	0	0.0	$75	$0	$221	
Deep Creek Public	Public	9	0	0.0	$75	$0	$221	
Deep Creek Public	Public	10	0	0.0	$75	$0	$816	
Deep Creek Public	Public	11	0	0.0	$75	$0	$4,879	
Deep Creek Public	Public	12	0	0.0	$75	$0	$366	
Deep Creek Public	Public	13	0	0.0	$75	$0	$1,993	
Deep Creek Public	Public	14	0	0.0	$75	$0	$407	
Deep Creek Public	Public	15	0	0.0	$75	$0	$11,949	
Deep Creek Public	Public	16	0	0.0	$75	$0	$331	
Deep Creek Public	Public	17	0	0.0	$75	$0	$253	
Deep Creek Public	Public	18	0	0.0	$75	$0	$443	
Deep Creek Public	Public	19	0	0.0	$75	$0	$214	
Deep Creek Public	Public	20	0	0.0	$75	$0	$245	
Deep Creek Public	Public	21	0	0.0	$75	$0	$443	
Deep Creek Public	Public	22	0	0.0	$75	$0	$3,874	
Deep Creek Public	Public	23	0	0.0	$75	$0	$329	
Deep Creek Public	Public	24	0	0.0	$75	$0	$441	
Deep Creek Public	Public	25	0	0.0	$75	$0	$4,049	
Deep Creek Public	Public	26	0	0.0	$75	$0	$221	
Deep Creek Public	Public	27	0	0.0	$75	$0	$1,412	
Deep Creek Public	Public	28	0	0.0	$75	$0	$369	
Deep Creek Public	Public	29	0	0.0	$75	$0	$221	
Deep Creek Public	Public	30	0	0.0	$75	$0	$232	
Deep Creek Public	Public	31	0	0.0	$75	$0	$441	
Deep Creek Public	Public	32	0	0.0	$75	$0	$367	
Deep Creek Public	Public	33	0	0.0	$75	$0	$386	
Deep Creek Public	Public	34	0	0.0	$75	$0	$607	
Deep Creek Public	Public	35	0	0.0	$75	$0	$1,142	
Deep Creek Public	Public	36	0	0.0	$75	$0	$331	
Deep Creek Public	Public	37	0	0.0	$75	$0	$276	
Deep Creek Public	Public	38	0	0.0	$75	$0	$221	
Deep Creek Public	Public	39	0	0.0	$75	$0	$1,103	
Deep Creek Public	Public	40	0	0.0	$75	$0	$276	
Deep Creek Public	Public	41	0	0.0	$75	$0	$933	
Deep Creek Public	Public	42	0	0.0	$75	$0	$2,162	
Deep Creek Public	Public	43	0	0.0	$75	$0	$498	
Deep Creek Public	Public	44	0	0.0	$75	$0	$276	
Deep Creek Public	Public	45	0	0.0	$75	$0	$221	
Deep Creek Public	Public	46	0	0.0	$75	$0	$1,324	
Deep Creek Public	Public	47	0	0.0	$75	$0	$221	
Deep Creek Public	Public	48	0	0.0	$75	$0	$221	
Deep Creek Public	Public	49	0	0.0	$75	$0	$221	
Deep Creek Public	Public	50	0	0.0	$75	$0	$221	
Deep Creek Public	Public	51	0	0.0	$75	$0	$69	
Deep Creek Public	Public	52	0	0.0	$75	$0	$165	
Deep Creek Public	Public	53	0	0.0	$75	$0	$294	
Deep Creek Public	Public	54	0	0.0	$75	$0	$221	
Deep Creek Public	Public	55	0	0.0	$75	$0	$240	
Deep Creek Public	Public	56	0	0.0	$75	$0	$308	
Deep Creek Public	Public	57	0	0.0	$75	$0	$8,197	
Deep Creek Public	Public	58	0	0.0	$75	$0	$10,478	
Deep Creek Public	Public	59	0	0.0	$75	$0	$237	
Deep Creek Public	Public-ROW	60	0	0.0	$75	$0	$0	
Hathaway Park	Public	1	0	0.0	$75	$0	$90,235	$90,235
Hathaway Park	Public-ROW	2	0	0.0	$75	$0	$0	
Lee Branch Private	Private	1	1	67.3	$75	$5,047	$136,628	$280,762
Lee Branch Private	Private	2	1	6.8	$75	$507	$13,730	
Lee Branch Private	Private	3	1	14.9	$75	$1,118	$30,278	
Lee Branch Private	Private	4	1	49.3	$75	$3,696	$100,121	
Lee Branch Private	Private-ROW	5	0	0.0	$75	$0	$0	
Prairie Creek Preserve	Public	1	0	0.0	$75	$0	$38,607	$90,235
Prairie Creek Preserve	Public	2	0	0.0	$75	$0	$12,810	
Prairie Creek Preserve	Public	3	0	0.0	$75	$0	$35,588	
Prairie Creek Preserve	Public	4	0	0.0	$75	$0	$3,227	
Prairie Creek Preserve	Public-ROW	5	0	0.0	$75	$0	$0	
Prairie Creek Private-CE	Private	1	1	5.0	$75	$373	$6,653	$833,158
Prairie Creek Private-CE	Private	2	1	5.1	$75	$382	$6,705	
Prairie Creek Private-CE	Private	3	1	5.2	$75	$391	$6,873	
Prairie Creek Private-CE	Private-ROW	4	0	0.0	$75	$0	$0	
Prairie Creek Private	Private	5	1	8.5	$75	$641	$11,250	
Prairie Creek Private	Private	6	1	5.0	$75	$371	$6,524	
Prairie Creek Private	Private	7	1	4.9	$75	$368	$6,475	
Prairie Creek Private	Private	8	1	6.4	$75	$486	$8,424	
Prairie Creek Private	Private	9	1	5.1	$75	$384	$6,752	
Prairie Creek Private	Private	10	1	4.9	$75	$368	$6,469	
Prairie Creek Private	Private	11	1	4.8	$75	$362	$6,365	
Prairie Creek Private	Private	12	1	4.9	$75	$369	$6,478	
Prairie Creek Private	Private	13	1	5.1	$75	$383	$6,736	
Prairie Creek Private	Private	14	1	6.7	$75	$506	$8,884	
Prairie Creek Private	Private	15	1	8.0	$75	$603	$10,597	
Prairie Creek Private	Private	16	1	6.7	$75	$502	$8,814	
Prairie Creek Private	Private	17	1	6.0	$75	$447	$7,856	

			Boundary Surveys					
Property Name	Ownership**	Property ID	Apply to property group	Acres	Unit Costs ($/acre)	Sub-Total Cost	Total Cost (Parcel)	Total Cost (Reserve Group)
Prairie Creek Private	Private	18	1	10.0	$75	$758	$13,172	
Prairie Creek Private	Private	19	1	5.0	$75	$372	$6,526	
Prairie Creek Private	Private	20	1	5.2	$75	$394	$6,915	
Prairie Creek Private	Private	21	1	5.8	$75	$431	$7,575	
Prairie Creek Private	Private	22	1	6.0	$75	$456	$7,896	
Prairie Creek Private	Private	23	1	4.8	$75	$362	$6,362	
Prairie Creek Private	Private	24	1	6.4	$75	$479	$8,414	
Prairie Creek Private	Private	25	1	5.9	$75	$445	$7,819	
Prairie Creek Private	Private	26	1	5.4	$75	$403	$7,077	
Prairie Creek Private	Private	27	1	6.0	$75	$448	$7,876	
Prairie Creek Private	Private	28	1	5.6	$75	$422	$7,415	
Prairie Creek Private	Private	29	1	4.9	$75	$366	$6,429	
Prairie Creek Private	Private	30	1	5.1	$75	$386	$6,674	
Prairie Creek Private	Private	31	1	5.8	$75	$433	$7,610	
Prairie Creek Private	Private	32	1	5.5	$75	$413	$7,260	
Prairie Creek Private	Private	33	1	5.7	$75	$424	$7,447	
Prairie Creek Private	Private	34	1	5.2	$75	$388	$6,809	
Prairie Creek Private	Private	35	1	5.0	$75	$378	$6,646	
Prairie Creek Private	Private	36	1	5.0	$75	$372	$6,541	
Prairie Creek Private	Private	37	1	5.0	$75	$374	$6,561	
Prairie Creek Private	Private	38	1	5.1	$75	$382	$6,714	
Prairie Creek Private	Private	39	1	5.1	$75	$383	$6,726	
Prairie Creek Private	Private	40	1	5.1	$75	$383	$6,731	
Prairie Creek Private	Private	41	1	4.9	$75	$364	$6,401	
Prairie Creek Private	Private	42	1	10.0	$75	$747	$13,114	
Prairie Creek Private	Private	43	1	6.8	$75	$513	$9,007	
Prairie Creek Private	Private	44	1	7.2	$75	$541	$9,504	
Prairie Creek Private	Private	45	1	7.2	$75	$539	$9,467	
Prairie Creek Private	Private	46	1	5.2	$75	$386	$6,787	
Prairie Creek Private	Private	47	1	5.3	$75	$395	$6,933	
Prairie Creek Private	Private	48	1	5.7	$75	$425	$7,460	
Prairie Creek Private	Private	49	1	5.2	$75	$393	$6,907	
Prairie Creek Private	Private	50	1	5.0	$75	$377	$6,613	
Prairie Creek Private	Private	51	1	5.0	$75	$377	$6,613	
Prairie Creek Private	Private	52	1	6.2	$75	$461	$8,103	
Prairie Creek Private	Private	53	1	5.7	$75	$431	$7,570	
Prairie Creek Private	Private	54	1	6.4	$75	$480	$8,429	
Prairie Creek Private	Private	55	1	5.3	$75	$394	$6,924	
Prairie Creek Private	Private	56	1	6.7	$75	$500	$8,779	
Prairie Creek Private	Private	57	1	5.2	$75	$390	$6,853	
Prairie Creek Private	Private	58	1	4.9	$75	$367	$6,439	
Prairie Creek Private	Private	59	1	5.1	$75	$379	$6,653	
Prairie Creek Private	Private	60	1	5.8	$75	$432	$7,579	
Prairie Creek Private	Private	61	1	6.3	$75	$472	$8,290	
Prairie Creek Private	Private	62	1	7.8	$75	$584	$10,256	
Prairie Creek Private	Private	63	1	5.9	$75	$440	$7,721	
Prairie Creek Private	Private	64	1	5.2	$75	$394	$6,912	
Prairie Creek Private	Private	65	1	5.4	$75	$408	$7,177	
Prairie Creek Private	Private	66	1	5.0	$75	$375	$6,586	
Prairie Creek Private	Private	67	1	5.0	$75	$377	$6,617	
Prairie Creek Private	Private	68	1	6.0	$75	$453	$7,950	
Prairie Creek Private	Private	69	1	5.2	$75	$388	$6,819	
Prairie Creek Private	Private	70	1	5.2	$75	$391	$6,870	
Prairie Creek Private	Private	71	1	5.1	$75	$378	$6,655	
Prairie Creek Private	Private	72	1	5.2	$75	$389	$6,830	
Prairie Creek Private	Private	73	1	5.0	$75	$376	$6,600	
Prairie Creek Private	Private	74	1	5.0	$75	$372	$6,535	
Prairie Creek Private	Private	75	1	4.9	$75	$368	$6,460	
Prairie Creek Private	Private	76	1	5.1	$75	$382	$6,712	
Prairie Creek Private	Private	77	1	4.9	$75	$364	$6,399	
Prairie Creek Private	Private	78	1	5.1	$75	$384	$6,753	
Prairie Creek Private	Private	79	1	4.7	$75	$355	$6,244	
Prairie Creek Private	Private	80	1	5.3	$75	$399	$7,005	
Prairie Creek Private	Private	81	1	7.5	$75	$563	$9,894	
Prairie Creek Private	Private	82	1	5.1	$75	$381	$6,686	
Prairie Creek Private	Private	83	1	5.0	$75	$378	$6,644	
Prairie Creek Private	Private	84	1	4.9	$75	$368	$6,470	
Prairie Creek Private	Private	85	1	4.9	$75	$370	$6,496	
Prairie Creek Private	Private	86	1	9.6	$75	$722	$12,677	
Prairie Creek Private	Private	87	1	5.0	$75	$377	$6,616	
Prairie Creek Private	Private	88	1	5.1	$75	$381	$6,695	
Prairie Creek Private	Private	89	1	5.0	$75	$376	$6,611	
Prairie Creek Private	Private	90	1	4.9	$75	$366	$6,434	
Prairie Creek Private	Private	91	1	5.0	$75	$376	$6,603	
Prairie Creek Private	Private	92	1	5.2	$75	$390	$6,844	
Prairie Creek Private	Private	93	1	4.9	$75	$365	$6,418	
Prairie Creek Private	Private	94	1	5.2	$75	$389	$6,831	
Prairie Creek Private	Private	95	1	5.3	$75	$400	$7,032	
Prairie Creek Private	Private	96	1	6.9	$75	$518	$9,097	
Prairie Creek Private	Private	97	1	6.0	$75	$454	$7,968	
Prairie Creek Private	Private	98	1	5.1	$75	$382	$6,705	
Prairie Creek Private	Private	99	1	5.1	$75	$379	$6,653	
Prairie Creek Private	Private	100	1	5.0	$75	$375	$6,584	
Prairie Creek Private	Private	101	1	5.1	$75	$386	$6,782	
Prairie Creek Private	Private	102	1	5.2	$75	$388	$6,808	
Prairie Creek Private	Private	103	1	5.0	$75	$374	$6,572	
Prairie Creek Private	Private	104	1	5.0	$75	$372	$6,533	
Prairie Creek Private	Private	105	1	4.8	$75	$359	$6,300	
Prairie Creek Private	Private	106	1	5.0	$75	$378	$6,635	
Prairie Creek Private	Private	107	1	5.1	$75	$386	$6,675	
Prairie Creek Private	Private	108	1	5.0	$75	$373	$6,552	
Prairie Creek Private	Private	109	1	5.0	$75	$374	$6,561	
Prairie Creek Private	Private	110	1	4.9	$75	$368	$6,479	
Prairie Creek Private	Private	111	1	5.0	$75	$374	$6,564	
Prairie Creek Private	Private	112	1	4.9	$75	$368	$6,485	
Prairie Creek Private	Private	113	1	4.9	$75	$369	$6,473	
Prairie Creek Private	Private	114	1	4.8	$75	$359	$6,310	
Prairie Creek Private	Private	115	1	5.3	$75	$399	$7,010	
Prairie Creek Private	Private-ROW	116	0	0.0	$75	$0	$0	
Prairie Creek West Private	Private	1	1	13.3	$75	$996	$21,277	$236,164
Prairie Creek West Private	Private	2	1	0.3	$75	$24	$517	
Prairie Creek West Private	Private-ROW	3	0	0.0	$75	$0	$0	
Prairie Creek West Private (Large)	Private	1	1	5.6	$75	$422	$9,022	
Prairie Creek West Private (Large)	Private	2	1	0.2	$75	$15	$312	
Prairie Creek West Private (Large)	Private	3	1	0.8	$75	$62	$1,324	
Prairie Creek West Private (Large)	Private	4	1	21.7	$75	$1,630	$34,821	
Prairie Creek West Private (Large)	Private	5	1	3.0	$75	$222	$4,734	
Prairie Creek West Private (Large)	Private	6	1	4.3	$75	$321	$6,862	
Prairie Creek West Private (Large)	Private	7	1	14.5	$75	$1,090	$23,299	
Prairie Creek West Private (Large)	Private	8	1	7.1	$75	$529	$11,300	

			Boundary Surveys					
Property Name	Ownership**	Property ID	Apply to property group	Acres	Unit Costs ($/acre)	Sub-Total Cost	Total Cost (Parcel)	Total Cost (Reserve Group)
Prairie Creek West Private (Large)	Private	9	1	2.5	$75	$186	$3,972	
Prairie Creek West Private (Large)	Private	10	1	3.6	$75	$268	$5,734	
Prairie Creek West Private (Large)	Private	11	1	8.1	$75	$610	$13,027	
Prairie Creek West Private (Large)	Private	12	1	12.1	$75	$908	$19,431	
Prairie Creek West Private (Large)	Private	13	1	13.7	$75	$1,026	$21,921	
Prairie Creek West Private (Large)	Private	14	1	2.2	$75	$168	$3,582	
Prairie Creek West Private (Large)	Private	15	1	3.5	$75	$263	$5,579	
Prairie Creek West Private (Large)	Private	16	1	9.2	$75	$689	$14,711	
Prairie Creek West Private (Large)	Private	17	1	9.3	$75	$697	$14,897	
Prairie Creek West Private (Large)	Private	18	1	0.2	$75	$14	$301	
Prairie Creek West Private (Large)	Private	19	1	9.3	$75	$701	$14,978	
Prairie Creek West Private (Large)	Private	20	1	2.3	$75	$174	$3,727	
Prairie Creek West Private (Large)	Private	21	1	0.5	$75	$39	$835	
Prairie Creek West Private (Large)	Private-ROW	22	0	0.0	$75	$0	$0	
Shell Creek Delta	Private	1	1	46.8	$75	$3,511	$135,350	$135,350
Shell Creek Preserve	Public	1	0	0.0	$75	$0	$17,404	$90,235
Shell Creek Preserve	Public	2	0	0.0	$75	$0	$7,767	
Shell Creek Preserve	Public	3	0	0.0	$75	$0	$63	
Shell Creek Preserve	Public	4	0	0.0	$75	$0	$24,463	
Shell Creek Preserve	Public	5	0	0.0	$75	$0	$5,243	
Shell Creek Preserve	Public	6	0	0.0	$75	$0	$6,065	
Shell Creek Preserve	Public	7	0	0.0	$75	$0	$6,558	
Shell Creek Preserve	Public	8	0	0.0	$75	$0	$6,621	
Shell Creek Preserve	Public	9	0	0.0	$75	$0	$6,516	
Shell Creek Preserve	Public	10	0	0.0	$75	$0	$7,161	
Shell Creek Preserve	Public	11	0	0.0	$75	$0	$2,373	
Shell Creek Preserve	Public-ROW	12	0	0.0	$75	$0	$0	
Shell Creek West Private	Private	1	1	48.6	$75	$3,644	$83,789	$355,936
Shell Creek West Private	Private	2	1	9.6	$75	$719	$16,521	
Shell Creek West Private	Private	3	1	8.0	$75	$597	$13,716	
Shell Creek West Private	Private	4	1	5.8	$75	$436	$10,013	
Shell Creek West Private	Private	5	1	6.3	$75	$475	$10,911	
Shell Creek West Private	Private	6	1	6.2	$75	$468	$10,771	
Shell Creek West Private	Private	7	1	6.5	$75	$488	$11,222	
Shell Creek West Private	Private	8	1	4.6	$75	$342	$7,857	
Shell Creek West Private	Private	9	1	70.1	$75	$5,261	$120,958	
Shell Creek West Private	Private	10	1	33.0	$75	$2,478	$56,935	
Shell Creek West Private	Private	11	1	7.7	$75	$575	$13,243	
Shell Creek West Private	Private-ROW	12	0	0.0	$75	$0	$0	
Washington Loop Private	Private	1	1	4.8	$75	$363	$8,401	$262,832
Washington Loop Private	Private	2	1	2.3	$75	$175	$4,050	
Washington Loop Private	Private	3	1	2.5	$75	$187	$4,335	
Washington Loop Private	Private	4	1	2.5	$75	$188	$4,350	
Washington Loop Private	Private	5	1	1.9	$75	$145	$3,357	
Washington Loop Private	Private	6	1	2.4	$75	$177	$4,091	
Washington Loop Private	Private	7	1	0.9	$75	$64	$1,488	
Washington Loop Private	Private	8	1	2.4	$75	$180	$4,175	
Washington Loop Private	Private	9	1	2.0	$75	$148	$3,434	
Washington Loop Private	Private	10	1	2.3	$75	$171	$3,951	
Washington Loop Private	Private	11	1	4.9	$75	$366	$8,486	
Washington Loop Private	Private	12	1	2.4	$75	$176	$4,084	
Washington Loop Private	Private	13	1	2.4	$75	$179	$4,136	
Washington Loop Private	Private	14	1	1.5	$75	$114	$2,633	
Washington Loop Private	Private	15	1	2.7	$75	$200	$4,640	
Washington Loop Private	Private	16	1	1.2	$75	$89	$2,056	
Washington Loop Private	Private	17	1	2.6	$75	$193	$4,482	
Washington Loop Private	Private	18	1	2.4	$75	$183	$4,241	
Washington Loop Private	Private	19	1	2.6	$75	$193	$4,478	
Washington Loop Private	Private	20	1	4.1	$75	$304	$7,042	
Washington Loop Private	Private	21	1	2.7	$75	$201	$4,647	
Washington Loop Private	Private	22	1	3.1	$75	$234	$5,413	
Washington Loop Private	Private	23	1	4.3	$75	$326	$7,553	
Washington Loop Private	Private	24	1	2.7	$75	$201	$4,647	
Washington Loop Private	Private	25	1	3.0	$75	$229	$5,299	
Washington Loop Private	Private	26	1	2.6	$75	$195	$4,520	
Washington Loop Private	Private	27	1	4.8	$75	$359	$8,308	
Washington Loop Private	Private	28	1	2.9	$75	$217	$5,018	
Washington Loop Private	Private	29	1	3.6	$75	$268	$6,206	
Washington Loop Private	Private	30	1	2.8	$75	$209	$4,845	
Washington Loop Private	Private	31	1	2.8	$75	$211	$4,879	
Washington Loop Private	Private	32	1	2.4	$75	$181	$4,196	
Washington Loop Private	Private	33	1	5.5	$75	$415	$9,618	
Washington Loop Private	Private	34	1	2.8	$75	$209	$4,848	
Washington Loop Private	Private	35	1	2.6	$75	$194	$4,497	
Washington Loop Private	Private	36	1	2.4	$75	$183	$4,237	
Washington Loop Private	Private	37	1	2.3	$75	$169	$3,915	
Washington Loop Private	Private	38	1	2.6	$75	$192	$4,437	
Washington Loop Private	Private	39	1	2.3	$75	$172	$3,989	
Washington Loop Private	Private	40	1	3.5	$75	$263	$6,092	
Washington Loop Private	Private	41	1	2.6	$75	$193	$4,467	
Washington Loop Private	Private	42	1	8.2	$75	$619	$14,331	
Washington Loop Private	Private	43	1	8.2	$75	$619	$14,331	
Washington Loop Private	Private	44	1	0.1	$75	$5	$122	
Washington Loop Private	Private	45	1	2.6	$75	$193	$4,463	
Washington Loop Private	Private	46	1	2.1	$75	$161	$3,727	
Washington Loop Private	Private	47	1	2.8	$75	$209	$4,836	
Washington Loop Private	Private	48	1	0.7	$75	$50	$1,157	
Washington Loop Private - Easement	Private	1	1	5.3	$75	$400	$9,278	
Washington Loop Private - Easement	Private	2	1	2.4	$75	$183	$4,244	
Washington Loop Private - Easement	Private	3	1	1.5	$75	$114	$2,647	
Washington Loop Private - Easement	Private	4	1	2.4	$75	$179	$4,153	
Washington Loop Private - Easement	Private-ROW	5	0	0.0	$75	$0	$0	
Amberjack Environmental Park	Public	--	0	0.0	$75	$0	$90,235	$90,235
Rotunda Mitigation Area	Public	--	0	0.0	$75	$0	$90,235	$90,235
Tippacanoe Environmental Park	Public	--	0	0.0	$75	$0	$90,235	$90,235
Tippacanoe II Mitigation Area	Public	--	0	0.0	$75	$0	$90,235	$90,235
San Casa Environmental Park	Public	--	0	0.0	$75	$0	$90,235	$90,235
TOTAL	--	--	205	1,322.7	$75.00	$99,200	$3,095,750	$3,095,750

Charlotte County Scrub-Jay HCP - Economic Analysis

Habitat Management & Maintenance (fixed cost & endowment) - Summary

Parameter	Total (Permit Term)	Annual Average (Permit Term)	Annual Average (Post Permit)
Management & Maintenance Costs	$9,664,774	$322,159	$365,615
Contingency	$966,477	$32,216	$36,562
Total Cost:	**$10,631,252**	**$354,375**	**$402,177**
Fee/acre (Development):	**$1,017**		
Annual cost/acre (Conservation):	**$89.45**		

Charlotte County Scrub-Jay HCP - Economic Analysis

Habitat Management & Maintenance (fixed cost & endowment) - Worksheet

								Management Plan Update						Fence & Gate Repair						Trail Maintenance					
Property Name	**Ownership****	**Property ID**	**Reserve Acres**	**Reserve Acres (Values)**	**% of PropGrp (weight)**	**% of PropGrp - noblanks (weight)**	**% of Total Reserve**	*Apply to property group*	*Unit Costs ($/Update)*	*Frequency (years)*	***Sub-Total Annual Cost***	*Apply to property group*	*Perimeter (feet)*	*Fence repaired (feet)*	*Unit Costs ($/ft)*	*Frequency (years)*	***Sub-Total Annual Cost***	*Apply to property group*	*Length trail / prop grp (Ave)*	*Length trail maint. (feet)*	*Unit Costs ($/ft)*	*Frequency (years)*	***Sub-Total Annual Cost***
Biscayne Trust CE	Public	1	0.18	0.18	0.2%	0.3%	0.004%	1	$1,000	10	$0.28	1	13,134	5,254	$0.90	20	$0.66	0	13,200	0	$4.80	1	$0
Biscayne Trust CE	Public	2	45.43	45.43	60.3%	69.9%	1.010%				$69.95	1					$165.37						$0
Biscayne Trust CE	Public-ROW	3	9.17	9.17	12.2%		0.204%				$0.00	0					$0.00						$0
Biscayne Trust Private	Public	1	19.34	19.34	25.7%	29.8%	0.430%				$29.77	1					$70.39						$0
Biscayne Trust Private	Public-ROW	2	1.26	1.26	1.7%		0.028%				$0.00	0					$0.00						$0
Burchers Tract CE	Public	1	0.43	0.43	0.1%	0.1%	0.010%	1	$1,000	10	$0.14	1	42,737	17,095	$0.90	20	$1.06	0	13,200	0	$4.80	1	$0
Burchers Tract CE	Public	2	4.92	4.92	1.6%	1.6%	0.109%				$1.58	1					$12.19						$0
Burchers Tract CE	Public	3	16.09	16.09	5.2%	5.2%	0.358%				$5.19	1					$39.89						$0
Burchers Tract CE	Public	4	80.13	80.13	25.8%	25.8%	1.782%				$25.82	1					$198.65						$0
Burchers Tract CE	Public	5	0.18	0.18	0.1%	0.1%	0.004%				$0.06	1					$0.44						$0
Burchers Tract CE	Public	6	44.07	44.07	14.2%	14.2%	0.980%				$14.20	1					$109.26						$0
Burchers Tract CE	Public	7	2.99	2.99	1.0%	1.0%	0.066%				$0.96	1					$7.40						$0
Burchers Tract CE	Public	8	45.71	45.71	14.7%	14.7%	1.017%				$14.73	1					$113.31						$0
Burchers Tract CE	Public	9	66.51	66.51	21.4%	21.4%	1.479%				$21.43	1					$164.88						$0
Burchers Tract CE	Public	10	35.91	35.91	11.6%	11.6%	0.799%				$11.57	1					$89.02						$0
Burchers Tract CE	Public	11	12.83	12.83	4.1%	4.1%	0.285%				$4.13	1					$31.80						$0
Burchers Tract CE	Public	12	0.55	0.55	0.2%	0.2%	0.012%				$0.18	1					$1.36						$0
Burchers Tract CE	Public-ROW	13	0.35	0.35	0.1%		0.008%				$0.00	0					$0.00						$0
Deep Creek Public	Public	1	1.15	1.15	0.8%	1.2%	0.026%	1	$1,000	10	$1.23	1	13,222	5,289	$0.90	20	$2.92	0	13,200	0	$4.80	1	$0
Deep Creek Public	Public	2	2.33	2.33	1.7%	2.5%	0.052%				$2.48	1					$5.91						$0
Deep Creek Public	Public	3	6.64	6.64	4.7%	7.1%	0.148%				$7.07	1					$16.82						$0
Deep Creek Public	Public	4	6.59	6.59	4.7%	7.0%	0.147%				$7.02	1					$16.70						$0
Deep Creek Public	Public	5	4.65	4.65	3.3%	5.0%	0.103%				$4.95	1					$11.78						$0
Deep Creek Public	Public	6	4.06	4.06	2.9%	4.3%	0.090%				$4.33	1					$10.30						$0
Deep Creek Public	Public	7	0.23	0.23	0.2%	0.2%	0.005%				$0.24	1					$0.58						$0
Deep Creek Public	Public	8	0.23	0.23	0.2%	0.2%	0.005%				$0.24	1					$0.58						$0
Deep Creek Public	Public	9	0.23	0.23	0.2%	0.2%	0.005%				$0.24	1					$0.58						$0
Deep Creek Public	Public	10	0.85	0.85	0.6%	0.9%	0.019%				$0.90	1					$2.15						$0
Deep Creek Public	Public	11	5.08	5.08	3.6%	5.4%	0.113%				$5.41	1					$12.87						$0
Deep Creek Public	Public	12	0.38	0.38	0.3%	0.4%	0.008%				$0.41	1					$0.96						$0
Deep Creek Public	Public	13	2.07	2.07	1.5%	2.2%	0.046%				$2.21	1					$5.26						$0
Deep Creek Public	Public	14	0.42	0.42	0.3%	0.5%	0.009%				$0.45	1					$1.07						$0
Deep Creek Public	Public	15	12.43	12.43	8.9%	13.2%	0.277%				$13.24	1					$31.52						$0
Deep Creek Public	Public	16	0.34	0.34	0.2%	0.4%	0.008%				$0.37	1					$0.87						$0
Deep Creek Public	Public	17	0.26	0.26	0.2%	0.3%	0.006%				$0.28	1					$0.67						$0
Deep Creek Public	Public	18	0.46	0.46	0.3%	0.5%	0.010%				$0.49	1					$1.17						$0
Deep Creek Public	Public	19	0.22	0.22	0.2%	0.2%	0.005%				$0.24	1					$0.57						$0
Deep Creek Public	Public	20	0.26	0.26	0.2%	0.3%	0.006%				$0.27	1					$0.65						$0
Deep Creek Public	Public	21	0.46	0.46	0.3%	0.5%	0.010%				$0.49	1					$1.17						$0
Deep Creek Public	Public	22	4.03	4.03	2.9%	4.3%	0.090%				$4.29	1					$10.22						$0
Deep Creek Public	Public	23	0.34	0.34	0.2%	0.4%	0.008%				$0.36	1					$0.87						$0
Deep Creek Public	Public	24	0.46	0.46	0.3%	0.5%	0.010%				$0.49	1					$1.16						$0
Deep Creek Public	Public	25	4.21	4.21	3.0%	4.5%	0.094%				$4.49	1					$10.68						$0
Deep Creek Public	Public	26	0.23	0.23	0.2%	0.2%	0.005%				$0.24	1					$0.58						$0
Deep Creek Public	Public	27	1.47	1.47	1.0%	1.6%	0.033%				$1.56	1					$3.72						$0
Deep Creek Public	Public	28	0.38	0.38	0.3%	0.4%	0.009%				$0.41	1					$0.97						$0
Deep Creek Public	Public	29	0.23	0.23	0.2%	0.2%	0.005%				$0.24	1					$0.58						$0
Deep Creek Public	Public	30	0.24	0.24	0.2%	0.3%	0.005%				$0.26	1					$0.61						$0
Deep Creek Public	Public	31	0.46	0.46	0.3%	0.5%	0.010%				$0.49	1					$1.16						$0
Deep Creek Public	Public	32	0.38	0.38	0.3%	0.4%	0.009%				$0.41	1					$0.97						$0
Deep Creek Public	Public	33	0.40	0.40	0.3%	0.4%	0.009%				$0.43	1					$1.02						$0
Deep Creek Public	Public	34	0.63	0.63	0.5%	0.7%	0.014%				$0.67	1					$1.60						$0
Deep Creek Public	Public	35	1.19	1.19	0.8%	1.3%	0.026%				$1.27	1					$3.01						$0
Deep Creek Public	Public	36	0.34	0.34	0.2%	0.4%	0.008%				$0.37	1					$0.87						$0
Deep Creek Public	Public	37	0.29	0.29	0.2%	0.3%	0.006%				$0.31	1					$0.73						$0
Deep Creek Public	Public	38	0.23	0.23	0.2%	0.2%	0.005%				$0.24	1					$0.58						$0
Deep Creek Public	Public	39	1.15	1.15	0.8%	1.2%	0.026%				$1.22	1					$2.91						$0
Deep Creek Public	Public	40	0.29	0.29	0.2%	0.3%	0.006%				$0.31	1					$0.73						$0
Deep Creek Public	Public	41	0.97	0.97	0.7%	1.0%	0.022%				$1.03	1					$2.46						$0
Deep Creek Public	Public	42	2.25	2.25	1.6%	2.4%	0.050%				$2.40	1					$5.70						$0
Deep Creek Public	Public	43	0.52	0.52	0.4%	0.6%	0.011%				$0.55	1					$1.31						$0
Deep Creek Public	Public	44	0.29	0.29	0.2%	0.3%	0.006%				$0.31	1					$0.73						$0
Deep Creek Public	Public	45	0.23	0.23	0.2%	0.2%	0.005%				$0.24	1					$0.58						$0
Deep Creek Public	Public	46	1.38	1.38	1.0%	1.5%	0.031%				$1.47	1					$3.49						$0
Deep Creek Public	Public	47	0.23	0.23	0.2%	0.2%	0.005%				$0.24	1					$0.58						$0
Deep Creek Public	Public	48	0.23	0.23	0.2%	0.2%	0.005%				$0.24	1					$0.58						$0
Deep Creek Public	Public	49	0.23	0.23	0.2%	0.2%	0.005%				$0.24	1					$0.58						$0
Deep Creek Public	Public	50	0.23	0.23	0.2%	0.2%	0.005%				$0.24	1					$0.58						$0
Deep Creek Public	Public	51	0.07	0.07	0.1%	0.1%	0.002%				$0.08	1					$0.18						$0
Deep Creek Public	Public	52	0.17	0.17	0.1%	0.2%	0.004%				$0.18	1					$0.44						$0
Deep Creek Public	Public	53	0.31	0.31	0.2%	0.3%	0.007%				$0.33	1					$0.77						$0
Deep Creek Public	Public	54	0.23	0.23	0.2%	0.2%	0.005%				$0.24	1					$0.58						$0
Deep Creek Public	Public	55	0.25	0.25	0.2%	0.3%	0.006%				$0.27	1					$0.65						$0
Deep Creek Public	Public	56	0.32	0.32	0.2%	0.3%	0.007%				$0.34	1					$0.81						$0
Deep Creek Public	Public	57	8.53	8.53	6.1%	9.1%	0.190%				$9.08	1					$21.62						$0
Deep Creek Public	Public	58	10.90	10.90	7.8%	11.6%	0.242%				$11.61	1					$27.64						$0
Deep Creek Public	Public	59	0.25	0.25	0.2%	0.3%	0.005%				$0.26	1					$0.63						$0
Deep Creek Public	Public-ROW	60	46.39	46.39	33.1%		1.032%				$0.00	0					$0.00						$0
Hathaway Park	Public	1	19.33	19.33	98.9%	100.0%	0.430%	1	$1,000	10	$100.00	1	5,598	2,239	$0.90	20	$100.76	0	13,200	0	$4.80	1	$0

								Management Plan Update				Fence & Gate Repair						Trail Maintenance					
Property Name	Ownership**	Property ID	Reserve Acres	Reserve Acres (Values)	% of PropGrp (weight)	% of PropGrp - noblanks (weight)	% of Total Reserve	Apply to property group	Unit Costs ($/Update)	Frequency (years)	Sub-Total Annual Cost	Apply to property group	Perimeter (feet)	Fence repaired (feet)	Unit Costs ($/ft)	Frequency (years)	Sub-Total Annual Cost	Apply to property group	Length trail / prop grp (Ave)	Length trail maint. (feet)	Unit Costs ($/ft)	Frequency (years)	Sub-Total Annual Cost
Hathaway Park	Public-ROW	2	0.21	0.21	1.1%		0.005%				$0.00	0					$0.00						$0
Lee Branch Private	Private	1	67.29	67.29	48.7%	48.7%	1.497%	1	$1,000	10	$48.66	1	10,390	4,156	$0.90	20	$91.01	1	13,200	6,600	$4.80	1	$15,417
Lee Branch Private	Private	2	6.76	6.76	4.9%	4.9%	0.150%				$4.89	1					$9.15						$1,550
Lee Branch Private	Private	3	14.91	14.91	10.8%	10.8%	0.332%				$10.78	1					$20.17						$3,416
Lee Branch Private	Private	4	49.31	49.31	35.7%	35.7%	1.097%				$35.66	1					$66.69						$11,297
Lee Branch Private	Private-ROW	5	0.00	0.00	0.0%		0.000%				$0.00	0					$0.00						$0
Prairie Creek Preserve	Public	1	663.40	663.40	42.5%	42.8%	14.754%	1	$1,000	10	$42.78	1	48,576	19,431	$0.90	20	$374.10	0	13,200	0	$4.80	1	$0
Prairie Creek Preserve	Public	2	220.15	220.15	14.1%	14.2%	4.896%				$14.20	1					$124.15						$0
Prairie Creek Preserve	Public	3	611.53	611.53	39.2%	39.4%	13.601%				$39.44	1					$344.85						$0
Prairie Creek Preserve	Public	4	55.46	55.46	3.6%	3.6%	1.233%				$3.58	1					$31.27						$0
Prairie Creek Preserve	Public-ROW	5	11.30	11.30	0.7%		0.251%				$0.00	0					$0.00						$0
Prairie Creek Private-CE	Private	1	4.97	4.97	0.8%	0.8%	0.111%	1	$1,000	10	$0.79	1	186,453	74,581	$0.90	20	$26.39	0	13,200	0	$4.80	1	$0
Prairie Creek Private-CE	Private	2	5.09	5.09	0.8%	0.8%	0.113%				$0.80	1					$27.01						$0
Prairie Creek Private-CE	Private	3	5.22	5.22	0.8%	0.8%	0.116%				$0.82	1					$27.68						$0
Prairie Creek Private-CE	Private-ROW	4	0.21	0.21	0.0%		0.005%				$0.00	0					$0.00						$0
Prairie Creek Private	Private	5	8.54	8.54	1.3%	1.4%	0.190%				$1.35	1					$45.32						$0
Prairie Creek Private	Private	6	4.95	4.95	0.8%	0.8%	0.110%				$0.78	1					$26.28						$0
Prairie Creek Private	Private	7	4.92	4.92	0.8%	0.8%	0.109%				$0.78	1					$26.08						$0
Prairie Creek Private	Private	8	6.40	6.40	1.0%	1.0%	0.142%				$1.01	1					$33.94						$0
Prairie Creek Private	Private	9	5.13	5.13	0.8%	0.8%	0.114%				$0.81	1					$27.20						$0
Prairie Creek Private	Private	10	4.91	4.91	0.8%	0.8%	0.109%				$0.78	1					$26.06						$0
Prairie Creek Private	Private	11	4.83	4.83	0.8%	0.8%	0.107%				$0.76	1					$25.64						$0
Prairie Creek Private	Private	12	4.92	4.92	0.8%	0.8%	0.109%				$0.78	1					$26.10						$0
Prairie Creek Private	Private	13	5.11	5.11	0.8%	0.8%	0.114%				$0.81	1					$27.13						$0
Prairie Creek Private	Private	14	6.74	6.74	1.1%	1.1%	0.150%				$1.07	1					$35.79						$0
Prairie Creek Private	Private	15	8.04	8.04	1.3%	1.3%	0.179%				$1.27	1					$42.69						$0
Prairie Creek Private	Private	16	6.69	6.69	1.0%	1.1%	0.149%				$1.06	1					$35.50						$0
Prairie Creek Private	Private	17	5.96	5.96	0.9%	0.9%	0.133%				$0.94	1					$31.62						$0
Prairie Creek Private	Private	18	10.00	10.00	1.6%	1.6%	0.222%				$1.58	1					$53.06						$0
Prairie Creek Private	Private	19	4.95	4.95	0.8%	0.8%	0.110%				$0.78	1					$26.29						$0
Prairie Creek Private	Private	20	5.25	5.25	0.8%	0.8%	0.117%				$0.83	1					$27.85						$0
Prairie Creek Private	Private	21	5.75	5.75	0.9%	0.9%	0.128%				$0.91	1					$30.51						$0
Prairie Creek Private	Private	22	5.99	5.99	0.9%	0.9%	0.133%				$0.95	1					$31.81						$0
Prairie Creek Private	Private	23	4.83	4.83	0.8%	0.8%	0.107%				$0.76	1					$25.63						$0
Prairie Creek Private	Private	24	6.39	6.39	1.0%	1.0%	0.142%				$1.01	1					$33.89						$0
Prairie Creek Private	Private	25	5.94	5.94	0.9%	0.9%	0.132%				$0.94	1					$31.50						$0
Prairie Creek Private	Private	26	5.37	5.37	0.8%	0.8%	0.119%				$0.85	1					$28.51						$0
Prairie Creek Private	Private	27	5.98	5.98	0.9%	0.9%	0.133%				$0.95	1					$31.72						$0
Prairie Creek Private	Private	28	5.63	5.63	0.9%	0.9%	0.125%				$0.89	1					$29.87						$0
Prairie Creek Private	Private	29	4.88	4.88	0.8%	0.8%	0.109%				$0.77	1					$25.90						$0
Prairie Creek Private	Private	30	5.07	5.07	0.8%	0.8%	0.113%				$0.80	1					$26.88						$0
Prairie Creek Private	Private	31	5.78	5.78	0.9%	0.9%	0.128%				$0.91	1					$30.65						$0
Prairie Creek Private	Private	32	5.50	5.50	0.9%	0.9%	0.122%				$0.87	1					$29.20						$0
Prairie Creek Private	Private	33	5.65	5.65	0.9%	0.9%	0.126%				$0.89	1					$30.00						$0
Prairie Creek Private	Private	34	5.17	5.17	0.8%	0.8%	0.115%				$0.82	1					$27.43						$0
Prairie Creek Private	Private	35	5.05	5.05	0.8%	0.8%	0.112%				$0.80	1					$26.77						$0
Prairie Creek Private	Private	36	4.97	4.97	0.8%	0.8%	0.110%				$0.79	1					$26.35						$0
Prairie Creek Private	Private	37	4.98	4.98	0.8%	0.8%	0.111%				$0.79	1					$26.43						$0
Prairie Creek Private	Private	38	5.10	5.10	0.8%	0.8%	0.113%				$0.81	1					$27.05						$0
Prairie Creek Private	Private	39	5.11	5.11	0.8%	0.8%	0.114%				$0.81	1					$27.09						$0
Prairie Creek Private	Private	40	5.11	5.11	0.8%	0.8%	0.114%				$0.81	1					$27.11						$0
Prairie Creek Private	Private	41	4.86	4.86	0.8%	0.8%	0.108%				$0.77	1					$25.78						$0
Prairie Creek Private	Private	42	9.96	9.96	1.6%	1.6%	0.221%				$1.57	1					$52.82						$0
Prairie Creek Private	Private	43	6.84	6.84	1.1%	1.1%	0.152%				$1.08	1					$36.28						$0
Prairie Creek Private	Private	44	7.22	7.22	1.1%	1.1%	0.160%				$1.14	1					$38.28						$0
Prairie Creek Private	Private	45	7.19	7.19	1.1%	1.1%	0.160%				$1.14	1					$38.14						$0
Prairie Creek Private	Private	46	5.15	5.15	0.8%	0.8%	0.115%				$0.81	1					$27.34						$0
Prairie Creek Private	Private	47	5.26	5.26	0.8%	0.8%	0.117%				$0.83	1					$27.93						$0
Prairie Creek Private	Private	48	5.66	5.66	0.9%	0.9%	0.126%				$0.90	1					$30.05						$0
Prairie Creek Private	Private	49	5.24	5.24	0.8%	0.8%	0.117%				$0.83	1					$27.82						$0
Prairie Creek Private	Private	50	5.02	5.02	0.8%	0.8%	0.112%				$0.79	1					$26.64						$0
Prairie Creek Private	Private	51	5.02	5.02	0.8%	0.8%	0.112%				$0.79	1					$26.64						$0
Prairie Creek Private	Private	52	6.15	6.15	1.0%	1.0%	0.137%				$0.97	1					$32.64						$0
Prairie Creek Private	Private	53	5.75	5.75	0.9%	0.9%	0.128%				$0.91	1					$30.49						$0
Prairie Creek Private	Private	54	6.40	6.40	1.0%	1.0%	0.142%				$1.01	1					$33.95						$0
Prairie Creek Private	Private	55	5.26	5.26	0.8%	0.8%	0.117%				$0.83	1					$27.89						$0
Prairie Creek Private	Private	56	6.66	6.66	1.0%	1.1%	0.148%				$1.05	1					$35.36						$0
Prairie Creek Private	Private	57	5.20	5.20	0.8%	0.8%	0.116%				$0.82	1					$27.60						$0
Prairie Creek Private	Private	58	4.89	4.89	0.8%	0.8%	0.109%				$0.77	1					$25.94						$0
Prairie Creek Private	Private	59	5.05	5.05	0.8%	0.8%	0.112%				$0.80	1					$26.80						$0
Prairie Creek Private	Private	60	5.75	5.75	0.9%	0.9%	0.128%				$0.91	1					$30.53						$0
Prairie Creek Private	Private	61	6.29	6.29	1.0%	1.0%	0.140%				$1.00	1					$33.39						$0
Prairie Creek Private	Private	62	7.79	7.79	1.2%	1.2%	0.173%				$1.23	1					$41.31						$0
Prairie Creek Private	Private	63	5.86	5.86	0.9%	0.9%	0.130%				$0.93	1					$31.10						$0
Prairie Creek Private	Private	64	5.25	5.25	0.8%	0.8%	0.117%				$0.83	1					$27.84						$0
Prairie Creek Private	Private	65	5.45	5.45	0.9%	0.9%	0.121%				$0.86	1					$28.91						$0
Prairie Creek Private	Private	66	5.00	5.00	0.8%	0.8%	0.111%				$0.79	1					$26.53						$0
Prairie Creek Private	Private	67	5.02	5.02	0.8%	0.8%	0.112%				$0.79	1					$26.66						$0
Prairie Creek Private	Private	68	6.04	6.04	0.9%	1.0%	0.134%				$0.95	1					$32.02						$0
Prairie Creek Private	Private	69	5.18	5.18	0.8%	0.8%	0.115%				$0.82	1					$27.47						$0
Prairie Creek Private	Private	70	5.22	5.22	0.8%	0.8%	0.116%				$0.82	1					$27.67						$0
Prairie Creek Private	Private	71	5.05	5.05	0.8%	0.8%	0.112%				$0.80	1					$26.81						$0

								Management Plan Update				Fence & Gate Repair						Trail Maintenance					
Property Name	Ownership**	Property ID	Reserve Acres	Reserve Acres (Values)	% of PropGrp (weight)	% of PropGrp - noblanks (weight)	% of Total Reserve	Apply to property group	Unit Costs ($/Update)	Frequency (years)	Sub-Total Annual Cost	Apply to property group	Perimeter (feet)	Fence repaired (feet)	Unit Costs ($/ft)	Frequency (years)	Sub-Total Annual Cost	Apply to property group	Length trail / prop grp (Ave)	Length trail maint. (feet)	Unit Costs ($/ft)	Frequency (years)	Sub-Total Annual Cost
Prairie Creek Private	Private	72	5.18	5.18	0.8%	0.8%	0.115%				$0.82	1					$27.51						$0
Prairie Creek Private	Private	73	5.01	5.01	0.8%	0.8%	0.111%				$0.79	1					$26.59						$0
Prairie Creek Private	Private	74	4.96	4.96	0.8%	0.8%	0.110%				$0.78	1					$26.32						$0
Prairie Creek Private	Private	75	4.90	4.90	0.8%	0.8%	0.109%				$0.78	1					$26.02						$0
Prairie Creek Private	Private	76	5.10	5.10	0.8%	0.8%	0.113%				$0.81	1					$27.04						$0
Prairie Creek Private	Private	77	4.86	4.86	0.8%	0.8%	0.108%				$0.77	1					$25.78						$0
Prairie Creek Private	Private	78	5.13	5.13	0.8%	0.8%	0.114%				$0.81	1					$27.20						$0
Prairie Creek Private	Private	79	4.74	4.74	0.7%	0.7%	0.105%				$0.75	1					$25.15						$0
Prairie Creek Private	Private	80	5.32	5.32	0.8%	0.8%	0.118%				$0.84	1					$28.22						$0
Prairie Creek Private	Private	81	7.51	7.51	1.2%	1.2%	0.167%				$1.19	1					$39.86						$0
Prairie Creek Private	Private	82	5.08	5.08	0.8%	0.8%	0.113%				$0.80	1					$26.93						$0
Prairie Creek Private	Private	83	5.04	5.04	0.8%	0.8%	0.112%				$0.80	1					$26.76						$0
Prairie Creek Private	Private	84	4.91	4.91	0.8%	0.8%	0.109%				$0.78	1					$26.06						$0
Prairie Creek Private	Private	85	4.93	4.93	0.8%	0.8%	0.110%				$0.78	1					$26.17						$0
Prairie Creek Private	Private	86	9.62	9.62	1.5%	1.5%	0.214%				$1.52	1					$51.07						$0
Prairie Creek Private	Private	87	5.02	5.02	0.8%	0.8%	0.112%				$0.79	1					$26.65						$0
Prairie Creek Private	Private	88	5.08	5.08	0.8%	0.8%	0.113%				$0.80	1					$26.97						$0
Prairie Creek Private	Private	89	5.02	5.02	0.8%	0.8%	0.112%				$0.79	1					$26.63						$0
Prairie Creek Private	Private	90	4.88	4.88	0.8%	0.8%	0.109%				$0.77	1					$25.92						$0
Prairie Creek Private	Private	91	5.01	5.01	0.8%	0.8%	0.111%				$0.79	1					$26.60						$0
Prairie Creek Private	Private	92	5.20	5.20	0.8%	0.8%	0.116%				$0.82	1					$27.57						$0
Prairie Creek Private	Private	93	4.87	4.87	0.8%	0.8%	0.108%				$0.77	1					$25.85						$0
Prairie Creek Private	Private	94	5.19	5.19	0.8%	0.8%	0.115%				$0.82	1					$27.52						$0
Prairie Creek Private	Private	95	5.34	5.34	0.8%	0.8%	0.119%				$0.84	1					$28.33						$0
Prairie Creek Private	Private	96	6.91	6.91	1.1%	1.1%	0.154%				$1.09	1					$36.65						$0
Prairie Creek Private	Private	97	6.05	6.05	0.9%	1.0%	0.135%				$0.96	1					$32.09						$0
Prairie Creek Private	Private	98	5.09	5.09	0.8%	0.8%	0.113%				$0.80	1					$27.01						$0
Prairie Creek Private	Private	99	5.05	5.05	0.8%	0.8%	0.112%				$0.80	1					$26.80						$0
Prairie Creek Private	Private	100	5.00	5.00	0.8%	0.8%	0.111%				$0.79	1					$26.52						$0
Prairie Creek Private	Private	101	5.15	5.15	0.8%	0.8%	0.115%				$0.81	1					$27.32						$0
Prairie Creek Private	Private	102	5.17	5.17	0.8%	0.8%	0.115%				$0.82	1					$27.43						$0
Prairie Creek Private	Private	103	4.99	4.99	0.8%	0.8%	0.111%				$0.79	1					$26.47						$0
Prairie Creek Private	Private	104	4.96	4.96	0.8%	0.8%	0.110%				$0.78	1					$26.32						$0
Prairie Creek Private	Private	105	4.78	4.78	0.7%	0.8%	0.106%				$0.76	1					$25.38						$0
Prairie Creek Private	Private	106	5.04	5.04	0.8%	0.8%	0.112%				$0.80	1					$26.73						$0
Prairie Creek Private	Private	107	5.07	5.07	0.8%	0.8%	0.113%				$0.80	1					$26.89						$0
Prairie Creek Private	Private	108	4.97	4.97	0.8%	0.8%	0.111%				$0.79	1					$26.39						$0
Prairie Creek Private	Private	109	4.98	4.98	0.8%	0.8%	0.111%				$0.79	1					$26.43						$0
Prairie Creek Private	Private	110	4.92	4.92	0.8%	0.8%	0.109%				$0.78	1					$26.10						$0
Prairie Creek Private	Private	111	4.98	4.98	0.8%	0.8%	0.111%				$0.79	1					$26.44						$0
Prairie Creek Private	Private	112	4.92	4.92	0.8%	0.8%	0.109%				$0.78	1					$26.12						$0
Prairie Creek Private	Private	113	4.91	4.91	0.8%	0.8%	0.109%				$0.78	1					$26.08						$0
Prairie Creek Private	Private	114	4.79	4.79	0.7%	0.8%	0.107%				$0.76	1					$25.43						$0
Prairie Creek Private	Private	115	5.32	5.32	0.8%	0.8%	0.118%				$0.84	1					$28.24						$0
Prairie Creek Private	Private-ROW	116	7.99	7.99	1.2%		0.178%				$0.00	0					$0.00						$0
Prairie Creek West Private	Private	1	13.28	13.28	8.7%	9.0%	0.295%	1	$1,000	10	$9.01	1	20,317	8,127	$0.90	20	$32.95	0	13,200	0	$4.80	1	$0
Prairie Creek West Private	Private	2	0.32	0.32	0.2%	0.2%	0.007%				$0.22	1					$0.80						$0
Prairie Creek West Private	Private-ROW	3	0.11	0.11	0.1%		0.002%				$0.00	0					$0.00						$0
Prairie Creek West Private (Large)	Private	1	5.63	5.63	3.7%	3.8%	0.125%				$3.82	1					$13.97						$0
Prairie Creek West Private (Large)	Private	2	0.19	0.19	0.1%	0.1%	0.004%				$0.13	1					$0.48						$0
Prairie Creek West Private (Large)	Private	3	0.83	0.83	0.5%	0.6%	0.018%				$0.56	1					$2.05						$0
Prairie Creek West Private (Large)	Private	4	21.73	21.73	14.3%	14.7%	0.483%				$14.74	1					$53.92						$0
Prairie Creek West Private (Large)	Private	5	2.95	2.95	1.9%	2.0%	0.066%				$2.00	1					$7.33						$0
Prairie Creek West Private (Large)	Private	6	4.28	4.28	2.8%	2.9%	0.095%				$2.91	1					$10.63						$0
Prairie Creek West Private (Large)	Private	7	14.54	14.54	9.5%	9.9%	0.323%				$9.87	1					$36.08						$0
Prairie Creek West Private (Large)	Private	8	7.05	7.05	4.6%	4.8%	0.157%				$4.79	1					$17.50						$0
Prairie Creek West Private (Large)	Private	9	2.48	2.48	1.6%	1.7%	0.055%				$1.68	1					$6.15						$0
Prairie Creek West Private (Large)	Private	10	3.58	3.58	2.3%	2.4%	0.080%				$2.43	1					$8.88						$0
Prairie Creek West Private (Large)	Private	11	8.13	8.13	5.3%	5.5%	0.181%				$5.52	1					$20.17						$0
Prairie Creek West Private (Large)	Private	12	12.13	12.13	8.0%	8.2%	0.270%				$8.23	1					$30.09						$0
Prairie Creek West Private (Large)	Private	13	13.68	13.68	9.0%	9.3%	0.304%				$9.28	1					$33.94						$0
Prairie Creek West Private (Large)	Private	14	2.24	2.24	1.5%	1.5%	0.050%				$1.52	1					$5.55						$0
Prairie Creek West Private (Large)	Private	15	3.48	3.48	2.3%	2.4%	0.077%				$2.36	1					$8.64						$0
Prairie Creek West Private (Large)	Private	16	9.18	9.18	6.0%	6.2%	0.204%				$6.23	1					$22.78						$0
Prairie Creek West Private (Large)	Private	17	9.30	9.30	6.1%	6.3%	0.207%				$6.31	1					$23.07						$0
Prairie Creek West Private (Large)	Private	18	0.19	0.19	0.1%	0.1%	0.004%				$0.13	1					$0.47						$0
Prairie Creek West Private (Large)	Private	19	9.35	9.35	6.1%	6.3%	0.208%				$6.34	1					$23.19						$0
Prairie Creek West Private (Large)	Private	20	2.33	2.33	1.5%	1.6%	0.052%				$1.58	1					$5.77						$0
Prairie Creek West Private (Large)	Private	21	0.52	0.52	0.3%	0.4%	0.012%				$0.35	1					$1.29						$0
Prairie Creek West Private (Large)	Private-ROW	22	4.95	4.95	3.2%		0.110%				$0.00	0					$0.00						$0
Shell Creek Delta	Private	1	46.81	46.81	100.0%	100.0%	1.041%	1	$1,000	10	$100.00	1	4,739	1,896	$0.90	20	$85.31	0	13,200	0	$4.80	1	$0
Shell Creek Preserve	Public	1	70.22	70.22	19.1%	19.3%	1.562%	1	$1,000	10	$19.29	1	23,728	9,491	$0.90	20	$82.37	0	13,200	0	$4.80	1	$0
Shell Creek Preserve	Public	2	31.34	31.34	8.5%	8.6%	0.697%				$8.61	1					$36.76						$0
Shell Creek Preserve	Public	3	0.25	0.25	0.1%	0.1%	0.006%				$0.07	1					$0.30						$0
Shell Creek Preserve	Public	4	98.70	98.70	26.9%	27.1%	2.195%				$27.11	1					$115.79						$0
Shell Creek Preserve	Public	5	21.15	21.15	5.8%	5.8%	0.470%				$5.81	1					$24.81						$0
Shell Creek Preserve	Public	6	24.47	24.47	6.7%	6.7%	0.544%				$6.72	1					$28.71						$0
Shell Creek Preserve	Public	7	26.46	26.46	7.2%	7.3%	0.589%				$7.27	1					$31.05						$0
Shell Creek Preserve	Public	8	26.71	26.71	7.3%	7.3%	0.594%				$7.34	1					$31.34						$0
Shell Creek Preserve	Public	9	26.29	26.29	7.2%	7.2%	0.585%				$7.22	1					$30.84						$0
Shell Creek Preserve	Public	10	28.89	28.89	7.9%	7.9%	0.643%				$7.94	1					$33.89						$0
Shell Creek Preserve	Public	11	9.58	9.58	2.6%	2.6%	0.213%				$2.63	1					$11.23						$0

								Management Plan Update				Fence & Gate Repair						Trail Maintenance					
Property Name	**Ownership****	**Property ID**	**Reserve Acres**	**Reserve Acres (Values)**	**% of PropGrp (weight)**	**% of PropGrp - noblanks (weight)**	**% of Total Reserve**	*Apply to property group*	*Unit Costs ($/Update)*	*Frequency (years)*	***Sub-Total Annual Cost***	*Apply to property group*	*Perimeter (feet)*	*Fence repaired (feet)*	*Unit Costs ($/ft)*	*Frequency (years)*	***Sub-Total Annual Cost***	*Apply to property group*	*Length trail / prop grp (Ave)*	*Length trail maint. (feet)*	*Unit Costs ($/ft)*	*Frequency (years)*	***Sub-Total Annual Cost***
Shell Creek Preserve	Public-ROW	12	2.82	2.82	0.8%		0.063%				$0.00	0					$0.00						$0
Shell Creek West Private	Private	1	48.59	48.59	23.5%	23.5%	1.081%	1	$1,000	10	$23.54	1	26,754	10,702	$0.90	20	$113.37	1	13,200	6,600	$4.80	1	$7,458
Shell Creek West Private	Private	2	9.58	9.58	4.6%	4.6%	0.213%				$4.64	1					$22.35						$1,470
Shell Creek West Private	Private	3	7.95	7.95	3.9%	3.9%	0.177%				$3.85	1					$18.56						$1,221
Shell Creek West Private	Private	4	5.81	5.81	2.8%	2.8%	0.129%				$2.81	1					$13.55						$891
Shell Creek West Private	Private	5	6.33	6.33	3.1%	3.1%	0.141%				$3.07	1					$14.76						$971
Shell Creek West Private	Private	6	6.25	6.25	3.0%	3.0%	0.139%				$3.03	1					$14.57						$959
Shell Creek West Private	Private	7	6.51	6.51	3.2%	3.2%	0.145%				$3.15	1					$15.18						$999
Shell Creek West Private	Private	8	4.56	4.56	2.2%	2.2%	0.101%				$2.21	1					$10.63						$699
Shell Creek West Private	Private	9	70.15	70.15	34.0%	34.0%	1.560%				$33.98	1					$163.66						$10,766
Shell Creek West Private	Private	10	33.02	33.02	16.0%	16.0%	0.734%				$16.00	1					$77.03						$5,067
Shell Creek West Private	Private	11	7.68	7.68	3.7%	3.7%	0.171%				$3.72	1					$17.92						$1,179
Shell Creek West Private	Private-ROW	12	0.05	0.05	0.0%		0.001%				$0.00	0					$0.00						$0
Washington Loop Private	Private	1	4.83	4.83	3.2%	3.2%	0.108%	1	$1,000	10	$3.20	1	40,080	16,032	$0.90	20	$23.06	0	13,200	0	$4.80	1	$0
Washington Loop Private	Private	2	2.33	2.33	1.5%	1.5%	0.052%				$1.54	1					$11.12						$0
Washington Loop Private	Private	3	2.50	2.50	1.6%	1.6%	0.055%				$1.65	1					$11.90						$0
Washington Loop Private	Private	4	2.51	2.51	1.7%	1.7%	0.056%				$1.66	1					$11.95						$0
Washington Loop Private	Private	5	1.93	1.93	1.3%	1.3%	0.043%				$1.28	1					$9.22						$0
Washington Loop Private	Private	6	2.35	2.35	1.6%	1.6%	0.052%				$1.56	1					$11.23						$0
Washington Loop Private	Private	7	0.86	0.86	0.6%	0.6%	0.019%				$0.57	1					$4.08						$0
Washington Loop Private	Private	8	2.40	2.40	1.6%	1.6%	0.053%				$1.59	1					$11.46						$0
Washington Loop Private	Private	9	1.98	1.98	1.3%	1.3%	0.044%				$1.31	1					$9.43						$0
Washington Loop Private	Private	10	2.27	2.27	1.5%	1.5%	0.051%				$1.50	1					$10.84						$0
Washington Loop Private	Private	11	4.88	4.88	3.2%	3.2%	0.109%				$3.23	1					$23.29						$0
Washington Loop Private	Private	12	2.35	2.35	1.6%	1.6%	0.052%				$1.55	1					$11.21						$0
Washington Loop Private	Private	13	2.38	2.38	1.6%	1.6%	0.053%				$1.57	1					$11.35						$0
Washington Loop Private	Private	14	1.52	1.52	1.0%	1.0%	0.034%				$1.00	1					$7.23						$0
Washington Loop Private	Private	15	2.67	2.67	1.8%	1.8%	0.059%				$1.77	1					$12.74						$0
Washington Loop Private	Private	16	1.18	1.18	0.8%	0.8%	0.026%				$0.78	1					$5.64						$0
Washington Loop Private	Private	17	2.58	2.58	1.7%	1.7%	0.057%				$1.71	1					$12.30						$0
Washington Loop Private	Private	18	2.44	2.44	1.6%	1.6%	0.054%				$1.61	1					$11.64						$0
Washington Loop Private	Private	19	2.58	2.58	1.7%	1.7%	0.057%				$1.70	1					$12.29						$0
Washington Loop Private	Private	20	4.05	4.05	2.7%	2.7%	0.090%				$2.68	1					$19.33						$0
Washington Loop Private	Private	21	2.67	2.67	1.8%	1.8%	0.059%				$1.77	1					$12.76						$0
Washington Loop Private	Private	22	3.12	3.12	2.1%	2.1%	0.069%				$2.06	1					$14.86						$0
Washington Loop Private	Private	23	4.35	4.35	2.9%	2.9%	0.097%				$2.87	1					$20.73						$0
Washington Loop Private	Private	24	2.67	2.67	1.8%	1.8%	0.059%				$1.77	1					$12.76						$0
Washington Loop Private	Private	25	3.05	3.05	2.0%	2.0%	0.068%				$2.02	1					$14.55						$0
Washington Loop Private	Private	26	2.60	2.60	1.7%	1.7%	0.058%				$1.72	1					$12.41						$0
Washington Loop Private	Private	27	4.78	4.78	3.2%	3.2%	0.106%				$3.16	1					$22.80						$0
Washington Loop Private	Private	28	2.89	2.89	1.9%	1.9%	0.064%				$1.91	1					$13.78						$0
Washington Loop Private	Private	29	3.57	3.57	2.4%	2.4%	0.079%				$2.36	1					$17.03						$0
Washington Loop Private	Private	30	2.79	2.79	1.8%	1.8%	0.062%				$1.84	1					$13.30						$0
Washington Loop Private	Private	31	2.81	2.81	1.9%	1.9%	0.062%				$1.86	1					$13.39						$0
Washington Loop Private	Private	32	2.42	2.42	1.6%	1.6%	0.054%				$1.60	1					$11.52						$0
Washington Loop Private	Private	33	5.54	5.54	3.7%	3.7%	0.123%				$3.66	1					$26.40						$0
Washington Loop Private	Private	34	2.79	2.79	1.8%	1.8%	0.062%				$1.84	1					$13.31						$0
Washington Loop Private	Private	35	2.59	2.59	1.7%	1.7%	0.058%				$1.71	1					$12.34						$0
Washington Loop Private	Private	36	2.44	2.44	1.6%	1.6%	0.054%				$1.61	1					$11.63						$0
Washington Loop Private	Private	37	2.25	2.25	1.5%	1.5%	0.050%				$1.49	1					$10.75						$0
Washington Loop Private	Private	38	2.55	2.55	1.7%	1.7%	0.057%				$1.69	1					$12.18						$0
Washington Loop Private	Private	39	2.30	2.30	1.5%	1.5%	0.051%				$1.52	1					$10.95						$0
Washington Loop Private	Private	40	3.51	3.51	2.3%	2.3%	0.078%				$2.32	1					$16.72						$0
Washington Loop Private	Private	41	2.57	2.57	1.7%	1.7%	0.057%				$1.70	1					$12.26						$0
Washington Loop Private	Private	42	8.25	8.25	5.5%	5.5%	0.183%				$5.45	1					$39.34						$0
Washington Loop Private	Private	43	8.25	8.25	5.5%	5.5%	0.183%				$5.45	1					$39.34						$0
Washington Loop Private	Private	44	0.07	0.07	0.0%	0.0%	0.002%				$0.05	1					$0.33						$0
Washington Loop Private	Private	45	2.57	2.57	1.7%	1.7%	0.057%				$1.70	1					$12.25						$0
Washington Loop Private	Private	46	2.14	2.14	1.4%	1.4%	0.048%				$1.42	1					$10.23						$0
Washington Loop Private	Private	47	2.78	2.78	1.8%	1.8%	0.062%				$1.84	1					$13.27						$0
Washington Loop Private	Private	48	0.67	0.67	0.4%	0.4%	0.015%				$0.44	1					$3.18						$0
Washington Loop Private - Easement	Private	1	5.34	5.34	3.5%	3.5%	0.119%				$3.53	1					$25.47						$0
Washington Loop Private - Easement	Private	2	2.44	2.44	1.6%	1.6%	0.054%				$1.61	1					$11.65						$0
Washington Loop Private - Easement	Private	3	1.52	1.52	1.0%	1.0%	0.034%				$1.01	1					$7.27						$0
Washington Loop Private - Easement	Private	4	2.39	2.39	1.6%	1.6%	0.053%				$1.58	1					$11.40						$0
Washington Loop Private - Easement	Private-ROW	5	0.07	0.07	0.0%		0.001%				$0.00	0					$0.00						$0
Amberjack Environmental Park	Public	--	102.00	102.00	100.0%	100.0%	2.269%	1	$1,000	10	$100.00	1	*11,663*	4,665	$0.90	20	$209.94	0	13,200	0	$4.80	1	$0
Rotunda Mitigation Area	Public	--	34.00	34.00	100.0%	100.0%	0.756%	1	$1,000	10	$100.00	1	*3,888*	1,555	$0.90	20	$69.98	0	13,200	0	$4.80	1	$0
Tippacanoe Environmental Park	Public	--	300.00	300.00	100.0%	100.0%	6.672%	1	$1,000	10	$100.00	1	*34,304*	13,722	$0.90	20	$617.47	0	13,200	0	$4.80	1	$0
Tippacanoe II Mitigation Area	Public	--	182.80	182.80	100.0%	100.0%	4.066%	1	$1,000	10	$100.00	1	*20,902*	8,361	$0.90	20	$376.24	0	13,200	0	$4.80	1	$0
San Casa Environmental Park	Public	--	66.90	66.90	100.0%	100.0%	1.488%	1	$1,000	10	$100.00	1	*7,650*	3,060	$0.90	20	$137.70	0	13,200	0	$4.80	1	$0
TOTAL	**--**	**--**	**4,496.30**	**4,496.30**	**--**	**--**	**100.0%**	**17**	***$1,000***	**--**	**$1,700**	**300**	**514,135**	**205,654**	***$0.90***	**--**	**$9,254**	**2**	**--**	**13,200**	***$4.80***	**--**	**$63,360**
													514,135	*40%*									

Charlotte County Scrub-Jay HCP - Economic Analysis

Habitat Management & Maintenance (fixed cost & endowment) - Worksht

			Exotic Removal (Mechanical) - Ongoing					Exotic Removal (Herbicide) - Ongoing					Mechanical Treatment (Mowing) - Ongoing					Prescribed Burning				
Property Name	**Ownership****	**Property ID**	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	*Frequency (years)*	***Sub-Total Annual Cost***	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	*Frequency (years)*	***Sub-Total Annual Cost***	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	*Frequency (years)*	***Sub-Total Annual Cost***	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	*Frequency (years)*	***Sub-Total Annual Cost***
Biscayne Trust CE	Public	1	1	0.0	$2,250.00	5.0	$8	1	0.0	$725.00	5.0	$3	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$0.96
Biscayne Trust CE	Public	2	1	4.5	$2,250.00	5.0	$2,044	1	4.5	$725.00	5.0	$659	1	9.1	$24.00	4.0	$55	1	45.4	$32.00	6.0	$242
Biscayne Trust CE	Public-ROW	3	0	0.0	$2,250.00	5.0	$0	0	0.0	$725.00	5.0	$0	0	0.0	$24.00	4.0	$0	0	0.0	$32.00	6.0	$0
Biscayne Trust Private	Public	1	1	1.9	$2,250.00	5.0	$870	1	1.9	$725.00	5.0	$280	1	3.9	$24.00	4.0	$23	1	19.3	$32.00	6.0	$103
Biscayne Trust Private	Public-ROW	2	0	0.0	$2,250.00	5.0	$0	0	0.0	$725.00	5.0	$0	0	0.0	$24.00	4.0	$0	0	0.0	$32.00	6.0	$0
Burchers Tract CE	Public	1	1	0.0	$2,250.00	5.0	$19	1	0.0	$725.00	5.0	$6	1	0.1	$24.00	4.0	$1	1	0.4	$32.00	6.0	$2
Burchers Tract CE	Public	2	1	0.5	$2,250.00	5.0	$221	1	0.5	$725.00	5.0	$71	1	1.0	$24.00	4.0	$6	1	4.9	$32.00	6.0	$26
Burchers Tract CE	Public	3	1	1.6	$2,250.00	5.0	$724	1	1.6	$725.00	5.0	$233	1	3.2	$24.00	4.0	$19	1	16.1	$32.00	6.0	$86
Burchers Tract CE	Public	4	1	8.0	$2,250.00	5.0	$3,606	1	8.0	$725.00	5.0	$1,162	1	16.0	$24.00	4.0	$96	1	80.1	$32.00	6.0	$427
Burchers Tract CE	Public	5	1	0.0	$2,250.00	5.0	$8	1	0.0	$725.00	5.0	$3	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$1
Burchers Tract CE	Public	6	1	4.4	$2,250.00	5.0	$1,983	1	4.4	$725.00	5.0	$639	1	8.8	$24.00	4.0	$53	1	44.1	$32.00	6.0	$235
Burchers Tract CE	Public	7	1	0.3	$2,250.00	5.0	$134	1	0.3	$725.00	5.0	$43	1	0.6	$24.00	4.0	$4	1	3.0	$32.00	6.0	$16
Burchers Tract CE	Public	8	1	4.6	$2,250.00	5.0	$2,057	1	4.6	$725.00	5.0	$663	1	9.1	$24.00	4.0	$55	1	45.7	$32.00	6.0	$244
Burchers Tract CE	Public	9	1	6.7	$2,250.00	5.0	$2,993	1	6.7	$725.00	5.0	$964	1	13.3	$24.00	4.0	$80	1	66.5	$32.00	6.0	$355
Burchers Tract CE	Public	10	1	3.6	$2,250.00	5.0	$1,616	1	3.6	$725.00	5.0	$521	1	7.2	$24.00	4.0	$43	1	35.9	$32.00	6.0	$191
Burchers Tract CE	Public	11	1	1.3	$2,250.00	5.0	$577	1	1.3	$725.00	5.0	$186	1	2.6	$24.00	4.0	$15	1	12.8	$32.00	6.0	$68
Burchers Tract CE	Public	12	1	0.1	$2,250.00	5.0	$25	1	0.1	$725.00	5.0	$8	1	0.1	$24.00	4.0	$1	1	0.5	$32.00	6.0	$3
Burchers Tract CE	Public-ROW	13	0	0.0	$2,250.00	5.0	$0	0	0.0	$725.00	5.0	$0	0	0.0	$24.00	4.0	$0	0	0.0	$32.00	6.0	$0
Deep Creek Public	Public	1	1	0.1	$2,250.00	5.0	$52	1	0.1	$725.00	5.0	$17	1	0.2	$24.00	4.0	$1	1	1.2	$32.00	6.0	$6
Deep Creek Public	Public	2	1	0.2	$2,250.00	5.0	$105	1	0.2	$725.00	5.0	$34	1	0.5	$24.00	4.0	$3	1	2.3	$32.00	6.0	$12
Deep Creek Public	Public	3	1	0.7	$2,250.00	5.0	$299	1	0.7	$725.00	5.0	$96	1	1.3	$24.00	4.0	$8	1	6.6	$32.00	6.0	$35
Deep Creek Public	Public	4	1	0.7	$2,250.00	5.0	$297	1	0.7	$725.00	5.0	$96	1	1.3	$24.00	4.0	$8	1	6.6	$32.00	6.0	$35
Deep Creek Public	Public	5	1	0.5	$2,250.00	5.0	$209	1	0.5	$725.00	5.0	$67	1	0.9	$24.00	4.0	$6	1	4.6	$32.00	6.0	$25
Deep Creek Public	Public	6	1	0.4	$2,250.00	5.0	$183	1	0.4	$725.00	5.0	$59	1	0.8	$24.00	4.0	$5	1	4.1	$32.00	6.0	$22
Deep Creek Public	Public	7	1	0.0	$2,250.00	5.0	$10	1	0.0	$725.00	5.0	$3	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$1
Deep Creek Public	Public	8	1	0.0	$2,250.00	5.0	$10	1	0.0	$725.00	5.0	$3	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$1
Deep Creek Public	Public	9	1	0.0	$2,250.00	5.0	$10	1	0.0	$725.00	5.0	$3	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$1
Deep Creek Public	Public	10	1	0.1	$2,250.00	5.0	$38	1	0.1	$725.00	5.0	$12	1	0.2	$24.00	4.0	$1	1	0.8	$32.00	6.0	$5
Deep Creek Public	Public	11	1	0.5	$2,250.00	5.0	$228	1	0.5	$725.00	5.0	$74	1	1.0	$24.00	4.0	$6	1	5.1	$32.00	6.0	$27
Deep Creek Public	Public	12	1	0.0	$2,250.00	5.0	$17	1	0.0	$725.00	5.0	$6	1	0.1	$24.00	4.0	$0	1	0.4	$32.00	6.0	$2
Deep Creek Public	Public	13	1	0.2	$2,250.00	5.0	$93	1	0.2	$725.00	5.0	$30	1	0.4	$24.00	4.0	$2	1	2.1	$32.00	6.0	$11
Deep Creek Public	Public	14	1	0.0	$2,250.00	5.0	$19	1	0.0	$725.00	5.0	$6	1	0.1	$24.00	4.0	$1	1	0.4	$32.00	6.0	$2
Deep Creek Public	Public	15	1	1.2	$2,250.00	5.0	$559	1	1.2	$725.00	5.0	$186	1	2.5	$24.00	4.0	$15	1	12.4	$32.00	6.0	$66
Deep Creek Public	Public	16	1	0.0	$2,250.00	5.0	$15	1	0.0	$725.00	5.0	$5	1	0.1	$24.00	4.0	$0	1	0.3	$32.00	6.0	$2
Deep Creek Public	Public	17	1	0.0	$2,250.00	5.0	$12	1	0.0	$725.00	5.0	$4	1	0.1	$24.00	4.0	$0	1	0.3	$32.00	6.0	$1
Deep Creek Public	Public	18	1	0.0	$2,250.00	5.0	$21	1	0.0	$725.00	5.0	$7	1	0.1	$24.00	4.0	$1	1	0.5	$32.00	6.0	$2
Deep Creek Public	Public	19	1	0.0	$2,250.00	5.0	$10	1	0.0	$725.00	5.0	$3	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$1
Deep Creek Public	Public	20	1	0.0	$2,250.00	5.0	$11	1	0.0	$725.00	5.0	$4	1	0.1	$24.00	4.0	$0	1	0.3	$32.00	6.0	$1
Deep Creek Public	Public	21	1	0.0	$2,250.00	5.0	$21	1	0.0	$725.00	5.0	$7	1	0.1	$24.00	4.0	$1	1	0.5	$32.00	6.0	$2
Deep Creek Public	Public	22	1	0.4	$2,250.00	5.0	$181	1	0.4	$725.00	5.0	$58	1	0.8	$24.00	4.0	$5	1	4.0	$32.00	6.0	$21
Deep Creek Public	Public	23	1	0.0	$2,250.00	5.0	$15	1	0.0	$725.00	5.0	$5	1	0.1	$24.00	4.0	$0	1	0.3	$32.00	6.0	$2
Deep Creek Public	Public	24	1	0.0	$2,250.00	5.0	$21	1	0.0	$725.00	5.0	$7	1	0.1	$24.00	4.0	$1	1	0.5	$32.00	6.0	$2
Deep Creek Public	Public	25	1	0.4	$2,250.00	5.0	$190	1	0.4	$725.00	5.0	$61	1	0.8	$24.00	4.0	$5	1	4.2	$32.00	6.0	$22
Deep Creek Public	Public	26	1	0.0	$2,250.00	5.0	$10	1	0.0	$725.00	5.0	$3	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$1
Deep Creek Public	Public	27	1	0.1	$2,250.00	5.0	$66	1	0.1	$725.00	5.0	$21	1	0.3	$24.00	4.0	$2	1	1.5	$32.00	6.0	$8
Deep Creek Public	Public	28	1	0.0	$2,250.00	5.0	$17	1	0.0	$725.00	5.0	$6	1	0.1	$24.00	4.0	$0	1	0.4	$32.00	6.0	$2
Deep Creek Public	Public	29	1	0.0	$2,250.00	5.0	$10	1	0.0	$725.00	5.0	$3	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$1
Deep Creek Public	Public	30	1	0.0	$2,250.00	5.0	$11	1	0.0	$725.00	5.0	$3	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$1
Deep Creek Public	Public	31	1	0.0	$2,250.00	5.0	$21	1	0.0	$725.00	5.0	$7	1	0.1	$24.00	4.0	$1	1	0.5	$32.00	6.0	$2
Deep Creek Public	Public	32	1	0.0	$2,250.00	5.0	$17	1	0.0	$725.00	5.0	$6	1	0.1	$24.00	4.0	$0	1	0.4	$32.00	6.0	$2
Deep Creek Public	Public	33	1	0.0	$2,250.00	5.0	$18	1	0.0	$725.00	5.0	$6	1	0.1	$24.00	4.0	$0	1	0.4	$32.00	6.0	$2
Deep Creek Public	Public	34	1	0.1	$2,250.00	5.0	$28	1	0.1	$725.00	5.0	$9	1	0.1	$24.00	4.0	$1	1	0.6	$32.00	6.0	$3
Deep Creek Public	Public	35	1	0.1	$2,250.00	5.0	$53	1	0.1	$725.00	5.0	$17	1	0.2	$24.00	4.0	$1	1	1.2	$32.00	6.0	$6
Deep Creek Public	Public	36	1	0.0	$2,250.00	5.0	$15	1	0.0	$725.00	5.0	$5	1	0.1	$24.00	4.0	$0	1	0.3	$32.00	6.0	$2
Deep Creek Public	Public	37	1	0.0	$2,250.00	5.0	$13	1	0.0	$725.00	5.0	$4	1	0.1	$24.00	4.0	$0	1	0.3	$32.00	6.0	$2
Deep Creek Public	Public	38	1	0.0	$2,250.00	5.0	$10	1	0.0	$725.00	5.0	$3	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$1
Deep Creek Public	Public	39	1	0.1	$2,250.00	5.0	$52	1	0.1	$725.00	5.0	$17	1	0.2	$24.00	4.0	$1	1	1.1	$32.00	6.0	$6
Deep Creek Public	Public	40	1	0.0	$2,250.00	5.0	$13	1	0.0	$725.00	5.0	$4	1	0.1	$24.00	4.0	$0	1	0.3	$32.00	6.0	$2
Deep Creek Public	Public	41	1	0.1	$2,250.00	5.0	$44	1	0.1	$725.00	5.0	$14	1	0.2	$24.00	4.0	$1	1	1.0	$32.00	6.0	$5
Deep Creek Public	Public	42	1	0.2	$2,250.00	5.0	$101	1	0.2	$725.00	5.0	$33	1	0.4	$24.00	4.0	$3	1	2.2	$32.00	6.0	$12
Deep Creek Public	Public	43	1	0.1	$2,250.00	5.0	$23	1	0.1	$725.00	5.0	$7	1	0.1	$24.00	4.0	$1	1	0.5	$32.00	6.0	$3
Deep Creek Public	Public	44	1	0.0	$2,250.00	5.0	$13	1	0.0	$725.00	5.0	$4	1	0.1	$24.00	4.0	$0	1	0.3	$32.00	6.0	$2
Deep Creek Public	Public	45	1	0.0	$2,250.00	5.0	$10	1	0.0	$725.00	5.0	$3	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$1
Deep Creek Public	Public	46	1	0.1	$2,250.00	5.0	$62	1	0.1	$725.00	5.0	$20	1	0.3	$24.00	4.0	$2	1	1.4	$32.00	6.0	$7
Deep Creek Public	Public	47	1	0.0	$2,250.00	5.0	$10	1	0.0	$725.00	5.0	$3	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$1
Deep Creek Public	Public	48	1	0.0	$2,250.00	5.0	$10	1	0.0	$725.00	5.0	$3	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$1
Deep Creek Public	Public	49	1	0.0	$2,250.00	5.0	$10	1	0.0	$725.00	5.0	$3	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$1
Deep Creek Public	Public	50	1	0.0	$2,250.00	5.0	$10	1	0.0	$725.00	5.0	$3	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$1
Deep Creek Public	Public	51	1	0.0	$2,250.00	5.0	$3	1	0.0	$725.00	5.0	$1	1	0.0	$24.00	4.0	$0	1	0.1	$32.00	6.0	$0
Deep Creek Public	Public	52	1	0.0	$2,250.00	5.0	$8	1	0.0	$725.00	5.0	$2	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$1
Deep Creek Public	Public	53	1	0.0	$2,250.00	5.0	$14	1	0.0	$725.00	5.0	$4	1	0.1	$24.00	4.0	$0	1	0.3	$32.00	6.0	$2
Deep Creek Public	Public	54	1	0.0	$2,250.00	5.0	$10	1	0.0	$725.00	5.0	$3	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$1
Deep Creek Public	Public	55	1	0.0	$2,250.00	5.0	$11	1	0.0	$725.00	5.0	$4	1	0.1	$24.00	4.0	$0	1	0.3	$32.00	6.0	$1
Deep Creek Public	Public	56	1	0.0	$2,250.00	5.0	$14	1	0.0	$725.00	5.0	$5	1	0.1	$24.00	4.0	$0	1	0.3	$32.00	6.0	$2
Deep Creek Public	Public	57	1	0.9	$2,250.00	5.0	$384	1	0.9	$725.00	5.0	$124	1	1.7	$24.00	4.0	$10	1	8.5	$32.00	6.0	$45
Deep Creek Public	Public	58	1	1.1	$2,250.00	5.0	$491	1	1.1	$725.00	5.0	$158	1	2.2	$24.00	4.0	$13	1	10.9	$32.00	6.0	$58
Deep Creek Public	Public	59	1	0.0	$2,250.00	5.0	$11	1	0.0	$725.00	5.0	$4	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$1
Deep Creek Public	Public-ROW	60	0	0.0	$2,250.00	5.0	$0	0	0.0	$725.00	5.0	$0	0	0.0	$24.00	4.0	$0	0	0.0	$32.00	6.0	$0
Hathaway Park	Public	1	1	1.9	$2,250.00	5.0	$870	1	1.9	$725.00	5.0	$280	1	3.9	$24.00	4.0	$23	1	19.3	$32.00	6.0	$103

			Exotic Removal (Mechanical) - Ongoing					Exotic Removal (Herbicide) - Ongoing					Mechanical Treatment (Mowing) - Ongoing					Prescribed Burning				
Property Name	**Ownership****	**Property ID**	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	*Frequency (years)*	***Sub-Total Annual Cost***	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	*Frequency (years)*	***Sub-Total Annual Cost***	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	*Frequency (years)*	***Sub-Total Annual Cost***	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	*Frequency (years)*	***Sub-Total Annual Cost***
Hathaway Park	Public-ROW	2	0	0.0	$2,250.00	5.0	**$0**	0	0.0	$725.00	5.0	**$0**	0	0.0	$24.00	4.0	**$0**	0	0.0	$32.00	6.0	**$0**
Lee Branch Private	Private	1	1	6.7	$2,250.00	5.0	**$3,028**	1	6.7	$725.00	5.0	**$976**	1	13.5	$24.00	4.0	**$81**	1	67.3	$32.00	6.0	**$359**
Lee Branch Private	Private	2	1	0.7	$2,250.00	5.0	**$304**	1	0.7	$725.00	5.0	**$98**	1	1.4	$24.00	4.0	**$8**	1	6.8	$32.00	6.0	**$36**
Lee Branch Private	Private	3	1	1.5	$2,250.00	5.0	**$671**	1	1.5	$725.00	5.0	**$216**	1	3.0	$24.00	4.0	**$18**	1	14.9	$32.00	6.0	**$80**
Lee Branch Private	Private	4	1	4.9	$2,250.00	5.0	**$2,219**	1	4.9	$725.00	5.0	**$715**	1	9.9	$24.00	4.0	**$59**	1	49.3	$32.00	6.0	**$263**
Lee Branch Private	Private-ROW	5	0	0.0	$2,250.00	5.0	**$0**	0	0.0	$725.00	5.0	**$0**	0	0.0	$24.00	4.0	**$0**	0	0.0	$32.00	6.0	**$0**
Prairie Creek Preserve	Public	1	1	66.3	$2,250.00	5.0	**$29,853**	1	66.3	$725.00	5.0	**$9,619**	1	132.7	$24.00	4.0	**$796**	1	663.4	$32.00	6.0	**$3,538**
Prairie Creek Preserve	Public	2	1	22.0	$2,250.00	5.0	**$9,907**	1	22.0	$725.00	5.0	**$3,192**	1	44.0	$24.00	4.0	**$264**	1	220.1	$32.00	6.0	**$1,174**
Prairie Creek Preserve	Public	3	1	61.2	$2,250.00	5.0	**$27,519**	1	61.2	$725.00	5.0	**$8,867**	1	122.3	$24.00	4.0	**$734**	1	611.5	$32.00	6.0	**$3,262**
Prairie Creek Preserve	Public	4	1	5.5	$2,250.00	5.0	**$2,496**	1	5.5	$725.00	5.0	**$804**	1	11.1	$24.00	4.0	**$67**	1	55.5	$32.00	6.0	**$296**
Prairie Creek Preserve	Public-ROW	5	0	0.0	$2,250.00	5.0	**$0**	0	0.0	$725.00	5.0	**$0**	0	0.0	$24.00	4.0	**$0**	0	0.0	$32.00	6.0	**$0**
Prairie Creek Private-CE	Private	1	1	0.5	$2,250.00	5.0	**$224**	1	0.5	$725.00	5.0	**$72**	1	1.0	$24.00	4.0	**$6**	1	5.0	$32.00	6.0	**$27**
Prairie Creek Private-CE	Private	2	1	0.5	$2,250.00	5.0	**$229**	1	0.5	$725.00	5.0	**$74**	1	1.0	$24.00	4.0	**$6**	1	5.1	$32.00	6.0	**$27**
Prairie Creek Private-CE	Private	3	1	0.5	$2,250.00	5.0	**$235**	1	0.5	$725.00	5.0	**$76**	1	1.0	$24.00	4.0	**$6**	1	5.2	$32.00	6.0	**$28**
Prairie Creek Private-CE	Private-ROW	4	0	0.0	$2,250.00	5.0	**$0**	0	0.0	$725.00	5.0	**$0**	0	0.0	$24.00	4.0	**$0**	0	0.0	$32.00	6.0	**$0**
Prairie Creek Private	Private	5	1	0.9	$2,250.00	5.0	**$384**	1	0.9	$725.00	5.0	**$124**	1	1.7	$24.00	4.0	**$10**	1	8.5	$32.00	6.0	**$46**
Prairie Creek Private	Private	6	1	0.5	$2,250.00	5.0	**$223**	1	0.5	$725.00	5.0	**$72**	1	1.0	$24.00	4.0	**$6**	1	5.0	$32.00	6.0	**$26**
Prairie Creek Private	Private	7	1	0.5	$2,250.00	5.0	**$221**	1	0.5	$725.00	5.0	**$71**	1	1.0	$24.00	4.0	**$6**	1	4.9	$32.00	6.0	**$26**
Prairie Creek Private	Private	8	1	0.6	$2,250.00	5.0	**$288**	1	0.6	$725.00	5.0	**$93**	1	1.3	$24.00	4.0	**$8**	1	6.4	$32.00	6.0	**$34**
Prairie Creek Private	Private	9	1	0.5	$2,250.00	5.0	**$231**	1	0.5	$725.00	5.0	**$74**	1	1.0	$24.00	4.0	**$6**	1	5.1	$32.00	6.0	**$27**
Prairie Creek Private	Private	10	1	0.5	$2,250.00	5.0	**$221**	1	0.5	$725.00	5.0	**$71**	1	1.0	$24.00	4.0	**$6**	1	4.9	$32.00	6.0	**$26**
Prairie Creek Private	Private	11	1	0.5	$2,250.00	5.0	**$217**	1	0.5	$725.00	5.0	**$70**	1	1.0	$24.00	4.0	**$6**	1	4.8	$32.00	6.0	**$26**
Prairie Creek Private	Private	12	1	0.5	$2,250.00	5.0	**$221**	1	0.5	$725.00	5.0	**$71**	1	1.0	$24.00	4.0	**$6**	1	4.9	$32.00	6.0	**$26**
Prairie Creek Private	Private	13	1	0.5	$2,250.00	5.0	**$230**	1	0.5	$725.00	5.0	**$74**	1	1.0	$24.00	4.0	**$6**	1	5.1	$32.00	6.0	**$27**
Prairie Creek Private	Private	14	1	0.7	$2,250.00	5.0	**$304**	1	0.7	$725.00	5.0	**$98**	1	1.3	$24.00	4.0	**$8**	1	6.7	$32.00	6.0	**$36**
Prairie Creek Private	Private	15	1	0.8	$2,250.00	5.0	**$362**	1	0.8	$725.00	5.0	**$117**	1	1.6	$24.00	4.0	**$10**	1	8.0	$32.00	6.0	**$43**
Prairie Creek Private	Private	16	1	0.7	$2,250.00	5.0	**$301**	1	0.7	$725.00	5.0	**$97**	1	1.3	$24.00	4.0	**$8**	1	6.7	$32.00	6.0	**$36**
Prairie Creek Private	Private	17	1	0.6	$2,250.00	5.0	**$268**	1	0.6	$725.00	5.0	**$86**	1	1.2	$24.00	4.0	**$7**	1	6.0	$32.00	6.0	**$32**
Prairie Creek Private	Private	18	1	1.0	$2,250.00	5.0	**$450**	1	1.0	$725.00	5.0	**$145**	1	2.0	$24.00	4.0	**$12**	1	10.0	$32.00	6.0	**$53**
Prairie Creek Private	Private	19	1	0.5	$2,250.00	5.0	**$223**	1	0.5	$725.00	5.0	**$72**	1	1.0	$24.00	4.0	**$6**	1	5.0	$32.00	6.0	**$26**
Prairie Creek Private	Private	20	1	0.5	$2,250.00	5.0	**$236**	1	0.5	$725.00	5.0	**$76**	1	1.0	$24.00	4.0	**$6**	1	5.2	$32.00	6.0	**$28**
Prairie Creek Private	Private	21	1	0.6	$2,250.00	5.0	**$259**	1	0.6	$725.00	5.0	**$83**	1	1.2	$24.00	4.0	**$7**	1	5.8	$32.00	6.0	**$31**
Prairie Creek Private	Private	22	1	0.6	$2,250.00	5.0	**$270**	1	0.6	$725.00	5.0	**$87**	1	1.2	$24.00	4.0	**$7**	1	6.0	$32.00	6.0	**$32**
Prairie Creek Private	Private	23	1	0.5	$2,250.00	5.0	**$217**	1	0.5	$725.00	5.0	**$70**	1	1.0	$24.00	4.0	**$6**	1	4.8	$32.00	6.0	**$26**
Prairie Creek Private	Private	24	1	0.6	$2,250.00	5.0	**$287**	1	0.6	$725.00	5.0	**$93**	1	1.3	$24.00	4.0	**$8**	1	6.4	$32.00	6.0	**$34**
Prairie Creek Private	Private	25	1	0.6	$2,250.00	5.0	**$267**	1	0.6	$725.00	5.0	**$86**	1	1.2	$24.00	4.0	**$7**	1	5.9	$32.00	6.0	**$32**
Prairie Creek Private	Private	26	1	0.5	$2,250.00	5.0	**$242**	1	0.5	$725.00	5.0	**$78**	1	1.1	$24.00	4.0	**$6**	1	5.4	$32.00	6.0	**$29**
Prairie Creek Private	Private	27	1	0.6	$2,250.00	5.0	**$269**	1	0.6	$725.00	5.0	**$87**	1	1.2	$24.00	4.0	**$7**	1	6.0	$32.00	6.0	**$32**
Prairie Creek Private	Private	28	1	0.6	$2,250.00	5.0	**$253**	1	0.6	$725.00	5.0	**$82**	1	1.1	$24.00	4.0	**$7**	1	5.6	$32.00	6.0	**$30**
Prairie Creek Private	Private	29	1	0.5	$2,250.00	5.0	**$220**	1	0.5	$725.00	5.0	**$71**	1	1.0	$24.00	4.0	**$6**	1	4.9	$32.00	6.0	**$26**
Prairie Creek Private	Private	30	1	0.5	$2,250.00	5.0	**$228**	1	0.5	$725.00	5.0	**$73**	1	1.0	$24.00	4.0	**$6**	1	5.1	$32.00	6.0	**$27**
Prairie Creek Private	Private	31	1	0.6	$2,250.00	5.0	**$260**	1	0.6	$725.00	5.0	**$84**	1	1.2	$24.00	4.0	**$7**	1	5.8	$32.00	6.0	**$31**
Prairie Creek Private	Private	32	1	0.6	$2,250.00	5.0	**$248**	1	0.6	$725.00	5.0	**$80**	1	1.1	$24.00	4.0	**$7**	1	5.5	$32.00	6.0	**$29**
Prairie Creek Private	Private	33	1	0.6	$2,250.00	5.0	**$254**	1	0.6	$725.00	5.0	**$82**	1	1.1	$24.00	4.0	**$7**	1	5.7	$32.00	6.0	**$30**
Prairie Creek Private	Private	34	1	0.5	$2,250.00	5.0	**$233**	1	0.5	$725.00	5.0	**$75**	1	1.0	$24.00	4.0	**$6**	1	5.2	$32.00	6.0	**$28**
Prairie Creek Private	Private	35	1	0.5	$2,250.00	5.0	**$227**	1	0.5	$725.00	5.0	**$73**	1	1.0	$24.00	4.0	**$6**	1	5.0	$32.00	6.0	**$27**
Prairie Creek Private	Private	36	1	0.5	$2,250.00	5.0	**$223**	1	0.5	$725.00	5.0	**$72**	1	1.0	$24.00	4.0	**$6**	1	5.0	$32.00	6.0	**$26**
Prairie Creek Private	Private	37	1	0.5	$2,250.00	5.0	**$224**	1	0.5	$725.00	5.0	**$72**	1	1.0	$24.00	4.0	**$6**	1	5.0	$32.00	6.0	**$27**
Prairie Creek Private	Private	38	1	0.5	$2,250.00	5.0	**$229**	1	0.5	$725.00	5.0	**$74**	1	1.0	$24.00	4.0	**$6**	1	5.1	$32.00	6.0	**$27**
Prairie Creek Private	Private	39	1	0.5	$2,250.00	5.0	**$230**	1	0.5	$725.00	5.0	**$74**	1	1.0	$24.00	4.0	**$6**	1	5.1	$32.00	6.0	**$27**
Prairie Creek Private	Private	40	1	0.5	$2,250.00	5.0	**$230**	1	0.5	$725.00	5.0	**$74**	1	1.0	$24.00	4.0	**$6**	1	5.1	$32.00	6.0	**$27**
Prairie Creek Private	Private	41	1	0.5	$2,250.00	5.0	**$219**	1	0.5	$725.00	5.0	**$70**	1	1.0	$24.00	4.0	**$6**	1	4.9	$32.00	6.0	**$26**
Prairie Creek Private	Private	42	1	1.0	$2,250.00	5.0	**$448**	1	1.0	$725.00	5.0	**$144**	1	2.0	$24.00	4.0	**$12**	1	10.0	$32.00	6.0	**$53**
Prairie Creek Private	Private	43	1	0.7	$2,250.00	5.0	**$308**	1	0.7	$725.00	5.0	**$99**	1	1.4	$24.00	4.0	**$8**	1	6.8	$32.00	6.0	**$36**
Prairie Creek Private	Private	44	1	0.7	$2,250.00	5.0	**$325**	1	0.7	$725.00	5.0	**$105**	1	1.4	$24.00	4.0	**$9**	1	7.2	$32.00	6.0	**$38**
Prairie Creek Private	Private	45	1	0.7	$2,250.00	5.0	**$323**	1	0.7	$725.00	5.0	**$104**	1	1.4	$24.00	4.0	**$9**	1	7.2	$32.00	6.0	**$38**
Prairie Creek Private	Private	46	1	0.5	$2,250.00	5.0	**$232**	1	0.5	$725.00	5.0	**$75**	1	1.0	$24.00	4.0	**$6**	1	5.2	$32.00	6.0	**$27**
Prairie Creek Private	Private	47	1	0.5	$2,250.00	5.0	**$237**	1	0.5	$725.00	5.0	**$76**	1	1.1	$24.00	4.0	**$6**	1	5.3	$32.00	6.0	**$28**
Prairie Creek Private	Private	48	1	0.6	$2,250.00	5.0	**$255**	1	0.6	$725.00	5.0	**$82**	1	1.1	$24.00	4.0	**$7**	1	5.7	$32.00	6.0	**$30**
Prairie Creek Private	Private	49	1	0.5	$2,250.00	5.0	**$236**	1	0.5	$725.00	5.0	**$76**	1	1.0	$24.00	4.0	**$6**	1	5.2	$32.00	6.0	**$28**
Prairie Creek Private	Private	50	1	0.5	$2,250.00	5.0	**$226**	1	0.5	$725.00	5.0	**$73**	1	1.0	$24.00	4.0	**$6**	1	5.0	$32.00	6.0	**$27**
Prairie Creek Private	Private	51	1	0.5	$2,250.00	5.0	**$226**	1	0.5	$725.00	5.0	**$73**	1	1.0	$24.00	4.0	**$6**	1	5.0	$32.00	6.0	**$27**
Prairie Creek Private	Private	52	1	0.6	$2,250.00	5.0	**$277**	1	0.6	$725.00	5.0	**$89**	1	1.2	$24.00	4.0	**$7**	1	6.2	$32.00	6.0	**$33**
Prairie Creek Private	Private	53	1	0.6	$2,250.00	5.0	**$259**	1	0.6	$725.00	5.0	**$83**	1	1.1	$24.00	4.0	**$7**	1	5.7	$32.00	6.0	**$31**
Prairie Creek Private	Private	54	1	0.6	$2,250.00	5.0	**$288**	1	0.6	$725.00	5.0	**$93**	1	1.3	$24.00	4.0	**$8**	1	6.4	$32.00	6.0	**$34**
Prairie Creek Private	Private	55	1	0.5	$2,250.00	5.0	**$237**	1	0.5	$725.00	5.0	**$76**	1	1.1	$24.00	4.0	**$6**	1	5.3	$32.00	6.0	**$28**
Prairie Creek Private	Private	56	1	0.7	$2,250.00	5.0	**$300**	1	0.7	$725.00	5.0	**$97**	1	1.3	$24.00	4.0	**$8**	1	6.7	$32.00	6.0	**$36**
Prairie Creek Private	Private	57	1	0.5	$2,250.00	5.0	**$234**	1	0.5	$725.00	5.0	**$75**	1	1.0	$24.00	4.0	**$6**	1	5.2	$32.00	6.0	**$28**
Prairie Creek Private	Private	58	1	0.5	$2,250.00	5.0	**$220**	1	0.5	$725.00	5.0	**$71**	1	1.0	$24.00	4.0	**$6**	1	4.9	$32.00	6.0	**$26**
Prairie Creek Private	Private	59	1	0.5	$2,250.00	5.0	**$227**	1	0.5	$725.00	5.0	**$73**	1	1.0	$24.00	4.0	**$6**	1	5.1	$32.00	6.0	**$27**
Prairie Creek Private	Private	60	1	0.6	$2,250.00	5.0	**$259**	1	0.6	$725.00	5.0	**$83**	1	1.2	$24.00	4.0	**$7**	1	5.8	$32.00	6.0	**$31**
Prairie Creek Private	Private	61	1	0.6	$2,250.00	5.0	**$283**	1	0.6	$725.00	5.0	**$91**	1	1.3	$24.00	4.0	**$8**	1	6.3	$32.00	6.0	**$34**
Prairie Creek Private	Private	62	1	0.8	$2,250.00	5.0	**$350**	1	0.8	$725.00	5.0	**$113**	1	1.6	$24.00	4.0	**$9**	1	7.8	$32.00	6.0	**$42**
Prairie Creek Private	Private	63	1	0.6	$2,250.00	5.0	**$264**	1	0.6	$725.00	5.0	**$85**	1	1.2	$24.00	4.0	**$7**	1	5.9	$32.00	6.0	**$31**
Prairie Creek Private	Private	64	1	0.5	$2,250.00	5.0	**$236**	1	0.5	$725.00	5.0	**$76**	1	1.0	$24.00	4.0	**$6**	1	5.2	$32.00	6.0	**$28**
Prairie Creek Private	Private	65	1	0.5	$2,250.00	5.0	**$245**	1	0.5	$725.00	5.0	**$79**	1	1.1	$24.00	4.0	**$7**	1	5.4	$32.00	6.0	**$29**
Prairie Creek Private	Private	66	1	0.5	$2,250.00	5.0	**$225**	1	0.5	$725.00	5.0	**$73**	1	1.0	$24.00	4.0	**$6**	1	5.0	$32.00	6.0	**$27**
Prairie Creek Private	Private	67	1	0.5	$2,250.00	5.0	**$226**	1	0.5	$725.00	5.0	**$73**	1	1.0	$24.00	4.0	**$6**	1	5.0	$32.00	6.0	**$27**
Prairie Creek Private	Private	68	1	0.6	$2,250.00	5.0	**$272**	1	0.6	$725.00	5.0	**$88**	1	1.2	$24.00	4.0	**$7**	1	6.0	$32.00	6.0	**$32**
Prairie Creek Private	Private	69	1	0.5	$2,250.00	5.0	**$233**	1	0.5	$725.00	5.0	**$75**	1	1.0	$24.00	4.0	**$6**	1	5.2	$32.00	6.0	**$28**
Prairie Creek Private	Private	70	1	0.5	$2,250.00	5.0	**$235**	1	0.5	$725.00	5.0	**$76**	1	1.0	$24.00	4.0	**$6**	1	5.2	$32.00	6.0	**$28**
Prairie Creek Private	Private	71	1	0.5	$2,250.00	5.0	**$227**	1	0.5	$725.00	5.0	**$73**	1	1.0	$24.00	4.0	**$6**	1	5.1	$32.00	6.0	**$27**

			Exotic Removal (Mechanical) - Ongoing					Exotic Removal (Herbicide) - Ongoing					Mechanical Treatment (Mowing) - Ongoing					Prescribed Burning				
Property Name	**Ownership****	**Property ID**	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	*Frequency (years)*	***Sub-Total Annual Cost***	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	*Frequency (years)*	***Sub-Total Annual Cost***	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	*Frequency (years)*	***Sub-Total Annual Cost***	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	*Frequency (years)*	***Sub-Total Annual Cost***
Prairie Creek Private	Private	72	1	0.5	$2,250.00	5.0	$233	1	0.5	$725.00	5.0	$75	1	1.0	$24.00	4.0	$6	1	5.2	$32.00	6.0	$28
Prairie Creek Private	Private	73	1	0.5	$2,250.00	5.0	$225	1	0.5	$725.00	5.0	$73	1	1.0	$24.00	4.0	$6	1	5.0	$32.00	6.0	$27
Prairie Creek Private	Private	74	1	0.5	$2,250.00	5.0	$223	1	0.5	$725.00	5.0	$72	1	1.0	$24.00	4.0	$6	1	5.0	$32.00	6.0	$26
Prairie Creek Private	Private	75	1	0.5	$2,250.00	5.0	$221	1	0.5	$725.00	5.0	$71	1	1.0	$24.00	4.0	$6	1	4.9	$32.00	6.0	$26
Prairie Creek Private	Private	76	1	0.5	$2,250.00	5.0	$229	1	0.5	$725.00	5.0	$74	1	1.0	$24.00	4.0	$6	1	5.1	$32.00	6.0	$27
Prairie Creek Private	Private	77	1	0.5	$2,250.00	5.0	$219	1	0.5	$725.00	5.0	$70	1	1.0	$24.00	4.0	$6	1	4.9	$32.00	6.0	$26
Prairie Creek Private	Private	78	1	0.5	$2,250.00	5.0	$231	1	0.5	$725.00	5.0	$74	1	1.0	$24.00	4.0	$6	1	5.1	$32.00	6.0	$27
Prairie Creek Private	Private	79	1	0.5	$2,250.00	5.0	$213	1	0.5	$725.00	5.0	$69	1	0.9	$24.00	4.0	$6	1	4.7	$32.00	6.0	$25
Prairie Creek Private	Private	80	1	0.5	$2,250.00	5.0	$239	1	0.5	$725.00	5.0	$77	1	1.1	$24.00	4.0	$6	1	5.3	$32.00	6.0	$28
Prairie Creek Private	Private	81	1	0.8	$2,250.00	5.0	$338	1	0.8	$725.00	5.0	$109	1	1.5	$24.00	4.0	$9	1	7.5	$32.00	6.0	$40
Prairie Creek Private	Private	82	1	0.5	$2,250.00	5.0	$228	1	0.5	$725.00	5.0	$74	1	1.0	$24.00	4.0	$6	1	5.1	$32.00	6.0	$27
Prairie Creek Private	Private	83	1	0.5	$2,250.00	5.0	$227	1	0.5	$725.00	5.0	$73	1	1.0	$24.00	4.0	$6	1	5.0	$32.00	6.0	$27
Prairie Creek Private	Private	84	1	0.5	$2,250.00	5.0	$221	1	0.5	$725.00	5.0	$71	1	1.0	$24.00	4.0	$6	1	4.9	$32.00	6.0	$26
Prairie Creek Private	Private	85	1	0.5	$2,250.00	5.0	$222	1	0.5	$725.00	5.0	$72	1	1.0	$24.00	4.0	$6	1	4.9	$32.00	6.0	$26
Prairie Creek Private	Private	86	1	1.0	$2,250.00	5.0	$433	1	1.0	$725.00	5.0	$140	1	1.9	$24.00	4.0	$12	1	9.6	$32.00	6.0	$51
Prairie Creek Private	Private	87	1	0.5	$2,250.00	5.0	$226	1	0.5	$725.00	5.0	$73	1	1.0	$24.00	4.0	$6	1	5.0	$32.00	6.0	$27
Prairie Creek Private	Private	88	1	0.5	$2,250.00	5.0	$229	1	0.5	$725.00	5.0	$74	1	1.0	$24.00	4.0	$6	1	5.1	$32.00	6.0	$27
Prairie Creek Private	Private	89	1	0.5	$2,250.00	5.0	$226	1	0.5	$725.00	5.0	$73	1	1.0	$24.00	4.0	$6	1	5.0	$32.00	6.0	$27
Prairie Creek Private	Private	90	1	0.5	$2,250.00	5.0	$220	1	0.5	$725.00	5.0	$71	1	1.0	$24.00	4.0	$6	1	4.9	$32.00	6.0	$26
Prairie Creek Private	Private	91	1	0.5	$2,250.00	5.0	$226	1	0.5	$725.00	5.0	$73	1	1.0	$24.00	4.0	$6	1	5.0	$32.00	6.0	$27
Prairie Creek Private	Private	92	1	0.5	$2,250.00	5.0	$234	1	0.5	$725.00	5.0	$75	1	1.0	$24.00	4.0	$6	1	5.2	$32.00	6.0	$28
Prairie Creek Private	Private	93	1	0.5	$2,250.00	5.0	$219	1	0.5	$725.00	5.0	$71	1	1.0	$24.00	4.0	$6	1	4.9	$32.00	6.0	$26
Prairie Creek Private	Private	94	1	0.5	$2,250.00	5.0	$233	1	0.5	$725.00	5.0	$75	1	1.0	$24.00	4.0	$6	1	5.2	$32.00	6.0	$28
Prairie Creek Private	Private	95	1	0.5	$2,250.00	5.0	$240	1	0.5	$725.00	5.0	$77	1	1.1	$24.00	4.0	$6	1	5.3	$32.00	6.0	$28
Prairie Creek Private	Private	96	1	0.7	$2,250.00	5.0	$311	1	0.7	$725.00	5.0	$100	1	1.4	$24.00	4.0	$8	1	6.9	$32.00	6.0	$37
Prairie Creek Private	Private	97	1	0.6	$2,250.00	5.0	$272	1	0.6	$725.00	5.0	$88	1	1.2	$24.00	4.0	$7	1	6.0	$32.00	6.0	$32
Prairie Creek Private	Private	98	1	0.5	$2,250.00	5.0	$229	1	0.5	$725.00	5.0	$74	1	1.0	$24.00	4.0	$6	1	5.1	$32.00	6.0	$27
Prairie Creek Private	Private	99	1	0.5	$2,250.00	5.0	$227	1	0.5	$725.00	5.0	$73	1	1.0	$24.00	4.0	$6	1	5.1	$32.00	6.0	$27
Prairie Creek Private	Private	100	1	0.5	$2,250.00	5.0	$225	1	0.5	$725.00	5.0	$72	1	1.0	$24.00	4.0	$6	1	5.0	$32.00	6.0	$27
Prairie Creek Private	Private	101	1	0.5	$2,250.00	5.0	$232	1	0.5	$725.00	5.0	$75	1	1.0	$24.00	4.0	$6	1	5.1	$32.00	6.0	$27
Prairie Creek Private	Private	102	1	0.5	$2,250.00	5.0	$233	1	0.5	$725.00	5.0	$75	1	1.0	$24.00	4.0	$6	1	5.2	$32.00	6.0	$28
Prairie Creek Private	Private	103	1	0.5	$2,250.00	5.0	$225	1	0.5	$725.00	5.0	$72	1	1.0	$24.00	4.0	$6	1	5.0	$32.00	6.0	$27
Prairie Creek Private	Private	104	1	0.5	$2,250.00	5.0	$223	1	0.5	$725.00	5.0	$72	1	1.0	$24.00	4.0	$6	1	5.0	$32.00	6.0	$26
Prairie Creek Private	Private	105	1	0.5	$2,250.00	5.0	$215	1	0.5	$725.00	5.0	$69	1	1.0	$24.00	4.0	$6	1	4.8	$32.00	6.0	$26
Prairie Creek Private	Private	106	1	0.5	$2,250.00	5.0	$227	1	0.5	$725.00	5.0	$73	1	1.0	$24.00	4.0	$6	1	5.0	$32.00	6.0	$27
Prairie Creek Private	Private	107	1	0.5	$2,250.00	5.0	$228	1	0.5	$725.00	5.0	$73	1	1.0	$24.00	4.0	$6	1	5.1	$32.00	6.0	$27
Prairie Creek Private	Private	108	1	0.5	$2,250.00	5.0	$224	1	0.5	$725.00	5.0	$72	1	1.0	$24.00	4.0	$6	1	5.0	$32.00	6.0	$27
Prairie Creek Private	Private	109	1	0.5	$2,250.00	5.0	$224	1	0.5	$725.00	5.0	$72	1	1.0	$24.00	4.0	$6	1	5.0	$32.00	6.0	$27
Prairie Creek Private	Private	110	1	0.5	$2,250.00	5.0	$221	1	0.5	$725.00	5.0	$71	1	1.0	$24.00	4.0	$6	1	4.9	$32.00	6.0	$26
Prairie Creek Private	Private	111	1	0.5	$2,250.00	5.0	$224	1	0.5	$725.00	5.0	$72	1	1.0	$24.00	4.0	$6	1	5.0	$32.00	6.0	$27
Prairie Creek Private	Private	112	1	0.5	$2,250.00	5.0	$222	1	0.5	$725.00	5.0	$71	1	1.0	$24.00	4.0	$6	1	4.9	$32.00	6.0	$26
Prairie Creek Private	Private	113	1	0.5	$2,250.00	5.0	$221	1	0.5	$725.00	5.0	$71	1	1.0	$24.00	4.0	$6	1	4.9	$32.00	6.0	$26
Prairie Creek Private	Private	114	1	0.5	$2,250.00	5.0	$216	1	0.5	$725.00	5.0	$69	1	1.0	$24.00	4.0	$6	1	4.8	$32.00	6.0	$26
Prairie Creek Private	Private	115	1	0.5	$2,250.00	5.0	$239	1	0.5	$725.00	5.0	$77	1	1.1	$24.00	4.0	$6	1	5.3	$32.00	6.0	$28
Prairie Creek Private	Private-ROW	116	0	0.0	$2,250.00	5.0	$0	0	0.0	$725.00	5.0	$0	0	0.0	$24.00	4.0	$0	0	0.0	$32.00	6.0	$0
Prairie Creek West Private	Private	1	1	1.3	$2,250.00	5.0	$597	1	1.3	$725.00	5.0	$193	1	2.7	$24.00	4.0	$16	1	13.3	$32.00	6.0	$71
Prairie Creek West Private	Private	2	1	0.0	$2,250.00	5.0	$15	1	0.0	$725.00	5.0	$5	1	0.1	$24.00	4.0	$0	1	0.3	$32.00	6.0	$2
Prairie Creek West Private	Private-ROW	3	0	0.0	$2,250.00	5.0	$0	0	0.0	$725.00	5.0	$0	0	0.0	$24.00	4.0	$0	0	0.0	$32.00	6.0	$0
Prairie Creek West Private (Large)	Private	1	1	0.6	$2,250.00	5.0	$253	1	0.6	$725.00	5.0	$82	1	1.1	$24.00	4.0	$7	1	5.6	$32.00	6.0	$30
Prairie Creek West Private (Large)	Private	2	1	0.0	$2,250.00	5.0	$9	1	0.0	$725.00	5.0	$3	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$1
Prairie Creek West Private (Large)	Private	3	1	0.1	$2,250.00	5.0	$37	1	0.1	$725.00	5.0	$12	1	0.2	$24.00	4.0	$1	1	0.8	$32.00	6.0	$4
Prairie Creek West Private (Large)	Private	4	1	2.2	$2,250.00	5.0	$978	1	2.2	$725.00	5.0	$315	1	4.3	$24.00	4.0	$26	1	21.7	$32.00	6.0	$116
Prairie Creek West Private (Large)	Private	5	1	0.3	$2,250.00	5.0	$133	1	0.3	$725.00	5.0	$43	1	0.6	$24.00	4.0	$4	1	3.0	$32.00	6.0	$16
Prairie Creek West Private (Large)	Private	6	1	0.4	$2,250.00	5.0	$193	1	0.4	$725.00	5.0	$62	1	0.9	$24.00	4.0	$5	1	4.3	$32.00	6.0	$23
Prairie Creek West Private (Large)	Private	7	1	1.5	$2,250.00	5.0	$654	1	1.5	$725.00	5.0	$211	1	2.9	$24.00	4.0	$17	1	14.5	$32.00	6.0	$78
Prairie Creek West Private (Large)	Private	8	1	0.7	$2,250.00	5.0	$317	1	0.7	$725.00	5.0	$102	1	1.4	$24.00	4.0	$8	1	7.1	$32.00	6.0	$38
Prairie Creek West Private (Large)	Private	9	1	0.2	$2,250.00	5.0	$112	1	0.2	$725.00	5.0	$36	1	0.5	$24.00	4.0	$3	1	2.5	$32.00	6.0	$13
Prairie Creek West Private (Large)	Private	10	1	0.4	$2,250.00	5.0	$161	1	0.4	$725.00	5.0	$52	1	0.7	$24.00	4.0	$4	1	3.6	$32.00	6.0	$19
Prairie Creek West Private (Large)	Private	11	1	0.8	$2,250.00	5.0	$366	1	0.8	$725.00	5.0	$118	1	1.6	$24.00	4.0	$10	1	8.1	$32.00	6.0	$43
Prairie Creek West Private (Large)	Private	12	1	1.2	$2,250.00	5.0	$546	1	1.2	$725.00	5.0	$176	1	2.4	$24.00	4.0	$15	1	12.1	$32.00	6.0	$65
Prairie Creek West Private (Large)	Private	13	1	1.4	$2,250.00	5.0	$616	1	1.4	$725.00	5.0	$198	1	2.7	$24.00	4.0	$16	1	13.7	$32.00	6.0	$73
Prairie Creek West Private (Large)	Private	14	1	0.2	$2,250.00	5.0	$101	1	0.2	$725.00	5.0	$32	1	0.4	$24.00	4.0	$3	1	2.2	$32.00	6.0	$12
Prairie Creek West Private (Large)	Private	15	1	0.3	$2,250.00	5.0	$157	1	0.3	$725.00	5.0	$50	1	0.7	$24.00	4.0	$4	1	3.5	$32.00	6.0	$19
Prairie Creek West Private (Large)	Private	16	1	0.9	$2,250.00	5.0	$413	1	0.9	$725.00	5.0	$133	1	1.8	$24.00	4.0	$11	1	9.2	$32.00	6.0	$49
Prairie Creek West Private (Large)	Private	17	1	0.9	$2,250.00	5.0	$418	1	0.9	$725.00	5.0	$135	1	1.9	$24.00	4.0	$11	1	9.3	$32.00	6.0	$50
Prairie Creek West Private (Large)	Private	18	1	0.0	$2,250.00	5.0	$8	1	0.0	$725.00	5.0	$3	1	0.0	$24.00	4.0	$0	1	0.2	$32.00	6.0	$1
Prairie Creek West Private (Large)	Private	19	1	0.9	$2,250.00	5.0	$421	1	0.9	$725.00	5.0	$136	1	1.9	$24.00	4.0	$11	1	9.3	$32.00	6.0	$50
Prairie Creek West Private (Large)	Private	20	1	0.2	$2,250.00	5.0	$105	1	0.2	$725.00	5.0	$34	1	0.5	$24.00	4.0	$3	1	2.3	$32.00	6.0	$12
Prairie Creek West Private (Large)	Private	21	1	0.1	$2,250.00	5.0	$23	1	0.1	$725.00	5.0	$8	1	0.1	$24.00	4.0	$1	1	0.5	$32.00	6.0	$3
Prairie Creek West Private (Large)	Private-ROW	22	0	0.0	$2,250.00	5.0	$0	0	0.0	$725.00	5.0	$0	0	0.0	$24.00	4.0	$0	0	0.0	$32.00	6.0	$0
Shell Creek Delta	Private	1	1	4.7	$2,250.00	5.0	$2,106	1	4.7	$725.00	5.0	$679	1	9.4	$24.00	4.0	$56	1	46.8	$32.00	6.0	$250
Shell Creek Preserve	Public	1	1	7.0	$2,250.00	5.0	$3,160	1	7.0	$725.00	5.0	$1,018	1	14.0	$24.00	4.0	$84	1	70.2	$32.00	6.0	$374
Shell Creek Preserve	Public	2	1	3.1	$2,250.00	5.0	$1,410	1	3.1	$725.00	5.0	$454	1	6.3	$24.00	4.0	$38	1	31.3	$32.00	6.0	$167
Shell Creek Preserve	Public	3	1	0.0	$2,250.00	5.0	$11	1	0.0	$725.00	5.0	$4	1	0.1	$24.00	4.0	$0	1	0.3	$32.00	6.0	$1
Shell Creek Preserve	Public	4	1	9.9	$2,250.00	5.0	$4,442	1	9.9	$725.00	5.0	$1,431	1	19.7	$24.00	4.0	$118	1	98.7	$32.00	6.0	$526
Shell Creek Preserve	Public	5	1	2.1	$2,250.00	5.0	$952	1	2.1	$725.00	5.0	$307	1	4.2	$24.00	4.0	$25	1	21.2	$32.00	6.0	$113
Shell Creek Preserve	Public	6	1	2.4	$2,250.00	5.0	$1,101	1	2.4	$725.00	5.0	$355	1	4.9	$24.00	4.0	$29	1	24.5	$32.00	6.0	$131
Shell Creek Preserve	Public	7	1	2.6	$2,250.00	5.0	$1,191	1	2.6	$725.00	5.0	$384	1	5.3	$24.00	4.0	$32	1	26.5	$32.00	6.0	$141
Shell Creek Preserve	Public	8	1	2.7	$2,250.00	5.0	$1,202	1	2.7	$725.00	5.0	$387	1	5.3	$24.00	4.0	$32	1	26.7	$32.00	6.0	$142
Shell Creek Preserve	Public	9	1	2.6	$2,250.00	5.0	$1,183	1	2.6	$725.00	5.0	$381	1	5.3	$24.00	4.0	$32	1	26.3	$32.00	6.0	$140
Shell Creek Preserve	Public	10	1	2.9	$2,250.00	5.0	$1,300	1	2.9	$725.00	5.0	$419	1	5.8	$24.00	4.0	$35	1	28.9	$32.00	6.0	$154
Shell Creek Preserve	Public	11	1	1.0	$2,250.00	5.0	$431	1	1.0	$725.00	5.0	$139	1	1.9	$24.00	4.0	$11	1	9.6	$32.00	6.0	$51

			Exotic Removal (Mechanical) - Ongoing					Exotic Removal (Herbicide) - Ongoing					Mechanical Treatment (Mowing) - Ongoing					Prescribed Burning				
Property Name	**Ownership****	**Property ID**	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	*Frequency (years)*	***Sub-Total Annual Cost***	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	*Frequency (years)*	***Sub-Total Annual Cost***	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	*Frequency (years)*	***Sub-Total Annual Cost***	*Apply to property group*	*# acres treated*	*Unit Costs ($/acre)*	*Frequency (years)*	***Sub-Total Annual Cost***
Shell Creek Preserve	Public-ROW	12	0	0.0	$2,250.00	5.0	$0	0	0.0	$725.00	5.0	$0	0	0.0	$24.00	4.0	$0	0	0.0	$32.00	6.0	$0
Shell Creek West Private	Private	1	1	4.9	$2,250.00	5.0	$2,187	1	4.9	$725.00	5.0	$705	1	9.7	$24.00	4.0	$58	1	48.6	$32.00	6.0	$259
Shell Creek West Private	Private	2	1	1.0	$2,250.00	5.0	$431	1	1.0	$725.00	5.0	$139	1	1.9	$24.00	4.0	$11	1	9.6	$32.00	6.0	$51
Shell Creek West Private	Private	3	1	0.8	$2,250.00	5.0	$358	1	0.8	$725.00	5.0	$115	1	1.6	$24.00	4.0	$10	1	8.0	$32.00	6.0	$42
Shell Creek West Private	Private	4	1	0.6	$2,250.00	5.0	$261	1	0.6	$725.00	5.0	$84	1	1.2	$24.00	4.0	$7	1	5.8	$32.00	6.0	$31
Shell Creek West Private	Private	5	1	0.6	$2,250.00	5.0	$285	1	0.6	$725.00	5.0	$92	1	1.3	$24.00	4.0	$8	1	6.3	$32.00	6.0	$34
Shell Creek West Private	Private	6	1	0.6	$2,250.00	5.0	$281	1	0.6	$725.00	5.0	$91	1	1.2	$24.00	4.0	$7	1	6.2	$32.00	6.0	$33
Shell Creek West Private	Private	7	1	0.7	$2,250.00	5.0	$293	1	0.7	$725.00	5.0	$94	1	1.3	$24.00	4.0	$8	1	6.5	$32.00	6.0	$35
Shell Creek West Private	Private	8	1	0.5	$2,250.00	5.0	$205	1	0.5	$725.00	5.0	$66	1	0.9	$24.00	4.0	$5	1	4.6	$32.00	6.0	$24
Shell Creek West Private	Private	9	1	7.0	$2,250.00	5.0	$3,157	1	7.0	$725.00	5.0	$1,017	1	14.0	$24.00	4.0	$84	1	70.1	$32.00	6.0	$374
Shell Creek West Private	Private	10	1	3.3	$2,250.00	5.0	$1,486	1	3.3	$725.00	5.0	$479	1	6.6	$24.00	4.0	$40	1	33.0	$32.00	6.0	$176
Shell Creek West Private	Private	11	1	0.8	$2,250.00	5.0	$346	1	0.8	$725.00	5.0	$111	1	1.5	$24.00	4.0	$9	1	7.7	$32.00	6.0	$41
Shell Creek West Private	Private-ROW	12	0	0.0	$2,250.00	5.0	$0	0	0.0	$725.00	5.0	$0	0	0.0	$24.00	4.0	$0	0	0.0	$32.00	6.0	$0
Washington Loop Private	Private	1	1	0.5	$2,250.00	5.0	$218	1	0.5	$725.00	5.0	$70	1	1.0	$24.00	4.0	$6	1	4.8	$32.00	6.0	$26
Washington Loop Private	Private	2	1	0.2	$2,250.00	5.0	$105	1	0.2	$725.00	5.0	$34	1	0.5	$24.00	4.0	$3	1	2.3	$32.00	6.0	$12
Washington Loop Private	Private	3	1	0.2	$2,250.00	5.0	$112	1	0.2	$725.00	5.0	$36	1	0.5	$24.00	4.0	$3	1	2.5	$32.00	6.0	$13
Washington Loop Private	Private	4	1	0.3	$2,250.00	5.0	$113	1	0.3	$725.00	5.0	$36	1	0.5	$24.00	4.0	$3	1	2.5	$32.00	6.0	$13
Washington Loop Private	Private	5	1	0.2	$2,250.00	5.0	$87	1	0.2	$725.00	5.0	$28	1	0.4	$24.00	4.0	$2	1	1.9	$32.00	6.0	$10
Washington Loop Private	Private	6	1	0.2	$2,250.00	5.0	$106	1	0.2	$725.00	5.0	$34	1	0.5	$24.00	4.0	$3	1	2.4	$32.00	6.0	$13
Washington Loop Private	Private	7	1	0.1	$2,250.00	5.0	$39	1	0.1	$725.00	5.0	$12	1	0.2	$24.00	4.0	$1	1	0.9	$32.00	6.0	$5
Washington Loop Private	Private	8	1	0.2	$2,250.00	5.0	$108	1	0.2	$725.00	5.0	$35	1	0.5	$24.00	4.0	$3	1	2.4	$32.00	6.0	$13
Washington Loop Private	Private	9	1	0.2	$2,250.00	5.0	$89	1	0.2	$725.00	5.0	$29	1	0.4	$24.00	4.0	$2	1	2.0	$32.00	6.0	$11
Washington Loop Private	Private	10	1	0.2	$2,250.00	5.0	$102	1	0.2	$725.00	5.0	$33	1	0.5	$24.00	4.0	$3	1	2.3	$32.00	6.0	$12
Washington Loop Private	Private	11	1	0.5	$2,250.00	5.0	$220	1	0.5	$725.00	5.0	$71	1	1.0	$24.00	4.0	$6	1	4.9	$32.00	6.0	$26
Washington Loop Private	Private	12	1	0.2	$2,250.00	5.0	$106	1	0.2	$725.00	5.0	$34	1	0.5	$24.00	4.0	$3	1	2.4	$32.00	6.0	$13
Washington Loop Private	Private	13	1	0.2	$2,250.00	5.0	$107	1	0.2	$725.00	5.0	$35	1	0.5	$24.00	4.0	$3	1	2.4	$32.00	6.0	$13
Washington Loop Private	Private	14	1	0.2	$2,250.00	5.0	$68	1	0.2	$725.00	5.0	$22	1	0.3	$24.00	4.0	$2	1	1.5	$32.00	6.0	$8
Washington Loop Private	Private	15	1	0.3	$2,250.00	5.0	$120	1	0.3	$725.00	5.0	$39	1	0.5	$24.00	4.0	$3	1	2.7	$32.00	6.0	$14
Washington Loop Private	Private	16	1	0.1	$2,250.00	5.0	$53	1	0.1	$725.00	5.0	$17	1	0.2	$24.00	4.0	$1	1	1.2	$32.00	6.0	$6
Washington Loop Private	Private	17	1	0.3	$2,250.00	5.0	$116	1	0.3	$725.00	5.0	$37	1	0.5	$24.00	4.0	$3	1	2.6	$32.00	6.0	$14
Washington Loop Private	Private	18	1	0.2	$2,250.00	5.0	$110	1	0.2	$725.00	5.0	$35	1	0.5	$24.00	4.0	$3	1	2.4	$32.00	6.0	$13
Washington Loop Private	Private	19	1	0.3	$2,250.00	5.0	$116	1	0.3	$725.00	5.0	$37	1	0.5	$24.00	4.0	$3	1	2.6	$32.00	6.0	$14
Washington Loop Private	Private	20	1	0.4	$2,250.00	5.0	$182	1	0.4	$725.00	5.0	$59	1	0.8	$24.00	4.0	$5	1	4.1	$32.00	6.0	$22
Washington Loop Private	Private	21	1	0.3	$2,250.00	5.0	$120	1	0.3	$725.00	5.0	$39	1	0.5	$24.00	4.0	$3	1	2.7	$32.00	6.0	$14
Washington Loop Private	Private	22	1	0.3	$2,250.00	5.0	$140	1	0.3	$725.00	5.0	$45	1	0.6	$24.00	4.0	$4	1	3.1	$32.00	6.0	$17
Washington Loop Private	Private	23	1	0.4	$2,250.00	5.0	$196	1	0.4	$725.00	5.0	$63	1	0.9	$24.00	4.0	$5	1	4.3	$32.00	6.0	$23
Washington Loop Private	Private	24	1	0.3	$2,250.00	5.0	$120	1	0.3	$725.00	5.0	$39	1	0.5	$24.00	4.0	$3	1	2.7	$32.00	6.0	$14
Washington Loop Private	Private	25	1	0.3	$2,250.00	5.0	$137	1	0.3	$725.00	5.0	$44	1	0.6	$24.00	4.0	$4	1	3.0	$32.00	6.0	$16
Washington Loop Private	Private	26	1	0.3	$2,250.00	5.0	$117	1	0.3	$725.00	5.0	$38	1	0.5	$24.00	4.0	$3	1	2.6	$32.00	6.0	$14
Washington Loop Private	Private	27	1	0.5	$2,250.00	5.0	$215	1	0.5	$725.00	5.0	$69	1	1.0	$24.00	4.0	$6	1	4.8	$32.00	6.0	$26
Washington Loop Private	Private	28	1	0.3	$2,250.00	5.0	$130	1	0.3	$725.00	5.0	$42	1	0.6	$24.00	4.0	$3	1	2.9	$32.00	6.0	$15
Washington Loop Private	Private	29	1	0.4	$2,250.00	5.0	$161	1	0.4	$725.00	5.0	$52	1	0.7	$24.00	4.0	$4	1	3.6	$32.00	6.0	$19
Washington Loop Private	Private	30	1	0.3	$2,250.00	5.0	$125	1	0.3	$725.00	5.0	$40	1	0.6	$24.00	4.0	$3	1	2.8	$32.00	6.0	$15
Washington Loop Private	Private	31	1	0.3	$2,250.00	5.0	$126	1	0.3	$725.00	5.0	$41	1	0.6	$24.00	4.0	$3	1	2.8	$32.00	6.0	$15
Washington Loop Private	Private	32	1	0.2	$2,250.00	5.0	$109	1	0.2	$725.00	5.0	$35	1	0.5	$24.00	4.0	$3	1	2.4	$32.00	6.0	$13
Washington Loop Private	Private	33	1	0.6	$2,250.00	5.0	$249	1	0.6	$725.00	5.0	$80	1	1.1	$24.00	4.0	$7	1	5.5	$32.00	6.0	$30
Washington Loop Private	Private	34	1	0.3	$2,250.00	5.0	$126	1	0.3	$725.00	5.0	$40	1	0.6	$24.00	4.0	$3	1	2.8	$32.00	6.0	$15
Washington Loop Private	Private	35	1	0.3	$2,250.00	5.0	$116	1	0.3	$725.00	5.0	$38	1	0.5	$24.00	4.0	$3	1	2.6	$32.00	6.0	$14
Washington Loop Private	Private	36	1	0.2	$2,250.00	5.0	$110	1	0.2	$725.00	5.0	$35	1	0.5	$24.00	4.0	$3	1	2.4	$32.00	6.0	$13
Washington Loop Private	Private	37	1	0.2	$2,250.00	5.0	$101	1	0.2	$725.00	5.0	$33	1	0.5	$24.00	4.0	$3	1	2.3	$32.00	6.0	$12
Washington Loop Private	Private	38	1	0.3	$2,250.00	5.0	$115	1	0.3	$725.00	5.0	$37	1	0.5	$24.00	4.0	$3	1	2.6	$32.00	6.0	$14
Washington Loop Private	Private	39	1	0.2	$2,250.00	5.0	$103	1	0.2	$725.00	5.0	$33	1	0.5	$24.00	4.0	$3	1	2.3	$32.00	6.0	$12
Washington Loop Private	Private	40	1	0.4	$2,250.00	5.0	$158	1	0.4	$725.00	5.0	$51	1	0.7	$24.00	4.0	$4	1	3.5	$32.00	6.0	$19
Washington Loop Private	Private	41	1	0.3	$2,250.00	5.0	$116	1	0.3	$725.00	5.0	$37	1	0.5	$24.00	4.0	$3	1	2.6	$32.00	6.0	$14
Washington Loop Private	Private	42	1	0.8	$2,250.00	5.0	$371	1	0.8	$725.00	5.0	$120	1	1.6	$24.00	4.0	$10	1	8.2	$32.00	6.0	$44
Washington Loop Private	Private	43	1	0.8	$2,250.00	5.0	$371	1	0.8	$725.00	5.0	$120	1	1.6	$24.00	4.0	$10	1	8.2	$32.00	6.0	$44
Washington Loop Private	Private	44	1	0.0	$2,250.00	5.0	$3	1	0.0	$725.00	5.0	$1	1	0.0	$24.00	4.0	$0	1	0.1	$32.00	6.0	$0
Washington Loop Private	Private	45	1	0.3	$2,250.00	5.0	$116	1	0.3	$725.00	5.0	$37	1	0.5	$24.00	4.0	$3	1	2.6	$32.00	6.0	$14
Washington Loop Private	Private	46	1	0.2	$2,250.00	5.0	$97	1	0.2	$725.00	5.0	$31	1	0.4	$24.00	4.0	$3	1	2.1	$32.00	6.0	$11
Washington Loop Private	Private	47	1	0.3	$2,250.00	5.0	$125	1	0.3	$725.00	5.0	$40	1	0.6	$24.00	4.0	$3	1	2.8	$32.00	6.0	$15
Washington Loop Private	Private	48	1	0.1	$2,250.00	5.0	$30	1	0.1	$725.00	5.0	$10	1	0.1	$24.00	4.0	$1	1	0.7	$32.00	6.0	$4
Washington Loop Private - Easement	Private	1	1	0.5	$2,250.00	5.0	$240	1	0.5	$725.00	5.0	$77	1	1.1	$24.00	4.0	$6	1	5.3	$32.00	6.0	$28
Washington Loop Private - Easement	Private	2	1	0.2	$2,250.00	5.0	$110	1	0.2	$725.00	5.0	$35	1	0.5	$24.00	4.0	$3	1	2.4	$32.00	6.0	$13
Washington Loop Private - Easement	Private	3	1	0.2	$2,250.00	5.0	$69	1	0.2	$725.00	5.0	$22	1	0.3	$24.00	4.0	$2	1	1.5	$32.00	6.0	$8
Washington Loop Private - Easement	Private	4	1	0.2	$2,250.00	5.0	$108	1	0.2	$725.00	5.0	$35	1	0.5	$24.00	4.0	$3	1	2.4	$32.00	6.0	$13
Washington Loop Private - Easement	Private-ROW	5	0	0.0	$2,250.00	5.0	$0	0	0.0	$725.00	5.0	$0	0	0.0	$24.00	4.0	$0	0	0.0	$32.00	6.0	$0
Amberjack Environmental Park	Public	--	1	10.2	$2,250.00	5.0	$4,590	1	10.2	$725.00	5.0	$1,479	1	20.4	$24.00	4.0	$122	1	102.0	$32.00	6.0	$544
Rotunda Mitigation Area	Public	--	1	3.4	$2,250.00	5.0	$1,530	1	3.4	$725.00	5.0	$493	1	6.8	$24.00	4.0	$41	1	34.0	$32.00	6.0	$181
Tippacanoe Environmental Park	Public	--	1	30.0	$2,250.00	5.0	$13,500	1	30.0	$725.00	5.0	$4,350	1	60.0	$24.00	4.0	$360	1	300.0	$32.00	6.0	$1,600
Tippacanoe II Mitigation Area	Public	--	1	18.3	$2,250.00	5.0	$8,226	1	18.3	$725.00	5.0	$2,651	1	36.6	$24.00	4.0	$219	1	182.8	$32.00	6.0	$975
San Casa Environmental Park	Public	--	1	6.7	$2,250.00	5.0	$3,011	1	6.7	$725.00	5.0	$970	1	13.4	$24.00	4.0	$80	1	66.9	$32.00	6.0	$357
TOTAL	--	--	300	441.1	***$2,250.00***	--	$198,514	300	441.1	***$652.27***	--	$57,549	300	882.3	***$24.00***	--	$5,294	300	4,411.4	***$32.00***	--	$23,528
				88.2			*$198,514*		88.2			*$57,549*		220.6			*$5,294*		735.2			*$23,528*

Charlotte County Scrub-Jay HCP - Economic Analysis

Habitat Management & Maintenance (fixed cost & endowment) - Worksh

Property Name	Ownership**	Property ID	Total Annual Cost (Parcel)	Total Annual Cost (Reserve Group)	Annual Cost per Acre
Biscayne Trust CE	Public	1	$13	$4,625	$71.21
Biscayne Trust CE	Public	2	$3,235		$71.21
Biscayne Trust CE	Public-ROW	3	$0		$0.00
Biscayne Trust Private	Public	1	$1,377		$71.21
Biscayne Trust Private	Public-ROW	2	$0		$0.00
Burchers Tract CE	Public	1	$29	$21,359	$68.83
Burchers Tract CE	Public	2	$338		$68.83
Burchers Tract CE	Public	3	$1,108		$68.83
Burchers Tract CE	Public	4	$5,516		$68.83
Burchers Tract CE	Public	5	$12		$68.83
Burchers Tract CE	Public	6	$3,034		$68.83
Burchers Tract CE	Public	7	$206		$68.83
Burchers Tract CE	Public	8	$3,146		$68.83
Burchers Tract CE	Public	9	$4,578		$68.83
Burchers Tract CE	Public	10	$2,472		$68.83
Burchers Tract CE	Public	11	$883		$68.83
Burchers Tract CE	Public	12	$38		$68.83
Burchers Tract CE	Public-ROW	13	$0		$0.00
Deep Creek Public	Public	1	$80	$6,538	$69.63
Deep Creek Public	Public	2	$162		$69.63
Deep Creek Public	Public	3	$462		$69.63
Deep Creek Public	Public	4	$459		$69.63
Deep Creek Public	Public	5	$324		$69.63
Deep Creek Public	Public	6	$283		$69.63
Deep Creek Public	Public	7	$16		$69.63
Deep Creek Public	Public	8	$16		$69.63
Deep Creek Public	Public	9	$16		$69.63
Deep Creek Public	Public	10	$59		$69.63
Deep Creek Public	Public	11	$354		$69.63
Deep Creek Public	Public	12	$26		$69.63
Deep Creek Public	Public	13	$144		$69.63
Deep Creek Public	Public	14	$29		$69.63
Deep Creek Public	Public	15	$866		$69.63
Deep Creek Public	Public	16	$24		$69.63
Deep Creek Public	Public	17	$18		$69.63
Deep Creek Public	Public	18	$32		$69.63
Deep Creek Public	Public	19	$16		$69.63
Deep Creek Public	Public	20	$18		$69.63
Deep Creek Public	Public	21	$32		$69.63
Deep Creek Public	Public	22	$281		$69.63
Deep Creek Public	Public	23	$24		$69.63
Deep Creek Public	Public	24	$32		$69.63
Deep Creek Public	Public	25	$293		$69.63
Deep Creek Public	Public	26	$16		$69.63
Deep Creek Public	Public	27	$102		$69.63
Deep Creek Public	Public	28	$27		$69.63
Deep Creek Public	Public	29	$16		$69.63
Deep Creek Public	Public	30	$17		$69.63
Deep Creek Public	Public	31	$32		$69.63
Deep Creek Public	Public	32	$27		$69.63
Deep Creek Public	Public	33	$26		$69.63
Deep Creek Public	Public	34	$44		$69.63
Deep Creek Public	Public	35	$83		$69.63
Deep Creek Public	Public	36	$24		$69.63
Deep Creek Public	Public	37	$20		$69.63
Deep Creek Public	Public	38	$16		$69.63
Deep Creek Public	Public	39	$80		$69.63
Deep Creek Public	Public	40	$20		$69.63
Deep Creek Public	Public	41	$68		$69.63
Deep Creek Public	Public	42	$157		$69.63
Deep Creek Public	Public	43	$36		$69.63
Deep Creek Public	Public	44	$20		$69.63
Deep Creek Public	Public	45	$16		$69.63
Deep Creek Public	Public	46	$96		$69.63
Deep Creek Public	Public	47	$16		$69.63
Deep Creek Public	Public	48	$16		$69.63
Deep Creek Public	Public	49	$16		$69.63
Deep Creek Public	Public	50	$16		$69.63
Deep Creek Public	Public	51	$5		$69.63
Deep Creek Public	Public	52	$12		$69.63
Deep Creek Public	Public	53	$21		$69.63
Deep Creek Public	Public	54	$16		$69.63
Deep Creek Public	Public	55	$18		$69.63
Deep Creek Public	Public	56	$22		$69.63
Deep Creek Public	Public	57	$594		$69.63
Deep Creek Public	Public	58	$759		$69.63
Deep Creek Public	Public	59	$17		$69.63
Deep Creek Public	Public-ROW	60	$0		$0.00
Hathaway Park	Public	1	$1,477	$1,477	$76.42

Property Name	Ownership**	Property ID	Total Annual Cost (Parcel)	Total Annual Cost (Reserve Group)	Annual Cost per Acre
Hathaway Park	Public-ROW	2	$0		$0.00
Lee Branch Private	Private	1	$20,000	**$41,098**	$297.20
Lee Branch Private	Private	2	$2,010		$297.20
Lee Branch Private	Private	3	$4,432		$297.20
Lee Branch Private	Private	4	$14,656		$297.20
Lee Branch Private	Private-ROW	5	$0		$0.00
Prairie Creek Preserve	Public	1	$44,223	**$103,361**	$66.66
Prairie Creek Preserve	Public	2	$14,676		$66.66
Prairie Creek Preserve	Public	3	$40,766		$66.66
Prairie Creek Preserve	Public	4	$3,697		$66.66
Prairie Creek Preserve	Public-ROW	5	$0		$0.00
Prairie Creek Private-CE	Private	1	$356	**$45,223**	$71.50
Prairie Creek Private-CE	Private	2	$364		$71.50
Prairie Creek Private-CE	Private	3	$373		$71.50
Prairie Creek Private-CE	Private-ROW	4	$0		$0.00
Prairie Creek Private	Private	5	$611		$71.50
Prairie Creek Private	Private	6	$354		$71.50
Prairie Creek Private	Private	7	$351		$71.50
Prairie Creek Private	Private	8	$457		$71.50
Prairie Creek Private	Private	9	$367		$71.50
Prairie Creek Private	Private	10	$351		$71.50
Prairie Creek Private	Private	11	$345		$71.50
Prairie Creek Private	Private	12	$352		$71.50
Prairie Creek Private	Private	13	$366		$71.50
Prairie Creek Private	Private	14	$482		$71.50
Prairie Creek Private	Private	15	$575		$71.50
Prairie Creek Private	Private	16	$478		$71.50
Prairie Creek Private	Private	17	$426		$71.50
Prairie Creek Private	Private	18	$715		$71.50
Prairie Creek Private	Private	19	$354		$71.50
Prairie Creek Private	Private	20	$375		$71.50
Prairie Creek Private	Private	21	$411		$71.50
Prairie Creek Private	Private	22	$429		$71.50
Prairie Creek Private	Private	23	$345		$71.50
Prairie Creek Private	Private	24	$457		$71.50
Prairie Creek Private	Private	25	$424		$71.50
Prairie Creek Private	Private	26	$384		$71.50
Prairie Creek Private	Private	27	$427		$71.50
Prairie Creek Private	Private	28	$402		$71.50
Prairie Creek Private	Private	29	$349		$71.50
Prairie Creek Private	Private	30	$362		$71.50
Prairie Creek Private	Private	31	$413		$71.50
Prairie Creek Private	Private	32	$394		$71.50
Prairie Creek Private	Private	33	$404		$71.50
Prairie Creek Private	Private	34	$370		$71.50
Prairie Creek Private	Private	35	$361		$71.50
Prairie Creek Private	Private	36	$355		$71.50
Prairie Creek Private	Private	37	$356		$71.50
Prairie Creek Private	Private	38	$364		$71.50
Prairie Creek Private	Private	39	$365		$71.50
Prairie Creek Private	Private	40	$365		$71.50
Prairie Creek Private	Private	41	$347		$71.50
Prairie Creek Private	Private	42	$712		$71.50
Prairie Creek Private	Private	43	$489		$71.50
Prairie Creek Private	Private	44	$516		$71.50
Prairie Creek Private	Private	45	$514		$71.50
Prairie Creek Private	Private	46	$368		$71.50
Prairie Creek Private	Private	47	$376		$71.50
Prairie Creek Private	Private	48	$405		$71.50
Prairie Creek Private	Private	49	$375		$71.50
Prairie Creek Private	Private	50	$359		$71.50
Prairie Creek Private	Private	51	$359		$71.50
Prairie Creek Private	Private	52	$440		$71.50
Prairie Creek Private	Private	53	$411		$71.50
Prairie Creek Private	Private	54	$457		$71.50
Prairie Creek Private	Private	55	$376		$71.50
Prairie Creek Private	Private	56	$476		$71.50
Prairie Creek Private	Private	57	$372		$71.50
Prairie Creek Private	Private	58	$350		$71.50
Prairie Creek Private	Private	59	$361		$71.50
Prairie Creek Private	Private	60	$411		$71.50
Prairie Creek Private	Private	61	$450		$71.50
Prairie Creek Private	Private	62	$557		$71.50
Prairie Creek Private	Private	63	$419		$71.50
Prairie Creek Private	Private	64	$375		$71.50
Prairie Creek Private	Private	65	$390		$71.50
Prairie Creek Private	Private	66	$357		$71.50
Prairie Creek Private	Private	67	$359		$71.50
Prairie Creek Private	Private	68	$432		$71.50
Prairie Creek Private	Private	69	$370		$71.50
Prairie Creek Private	Private	70	$373		$71.50
Prairie Creek Private	Private	71	$361		$71.50

Property Name	Ownership**	Property ID	Total Annual Cost (Parcel)	Total Annual Cost (Reserve Group)	Annual Cost per Acre
Prairie Creek Private	Private	72	$371		$71.50
Prairie Creek Private	Private	73	$358		$71.50
Prairie Creek Private	Private	74	$355		$71.50
Prairie Creek Private	Private	75	$351		$71.50
Prairie Creek Private	Private	76	$364		$71.50
Prairie Creek Private	Private	77	$347		$71.50
Prairie Creek Private	Private	78	$367		$71.50
Prairie Creek Private	Private	79	$339		$71.50
Prairie Creek Private	Private	80	$380		$71.50
Prairie Creek Private	Private	81	$537		$71.50
Prairie Creek Private	Private	82	$363		$71.50
Prairie Creek Private	Private	83	$361		$71.50
Prairie Creek Private	Private	84	$351		$71.50
Prairie Creek Private	Private	85	$353		$71.50
Prairie Creek Private	Private	86	$688		$71.50
Prairie Creek Private	Private	87	$359		$71.50
Prairie Creek Private	Private	88	$363		$71.50
Prairie Creek Private	Private	89	$359		$71.50
Prairie Creek Private	Private	90	$349		$71.50
Prairie Creek Private	Private	91	$358		$71.50
Prairie Creek Private	Private	92	$371		$71.50
Prairie Creek Private	Private	93	$348		$71.50
Prairie Creek Private	Private	94	$371		$71.50
Prairie Creek Private	Private	95	$382		$71.50
Prairie Creek Private	Private	96	$494		$71.50
Prairie Creek Private	Private	97	$432		$71.50
Prairie Creek Private	Private	98	$364		$71.50
Prairie Creek Private	Private	99	$361		$71.50
Prairie Creek Private	Private	100	$357		$71.50
Prairie Creek Private	Private	101	$368		$71.50
Prairie Creek Private	Private	102	$370		$71.50
Prairie Creek Private	Private	103	$357		$71.50
Prairie Creek Private	Private	104	$355		$71.50
Prairie Creek Private	Private	105	$342		$71.50
Prairie Creek Private	Private	106	$360		$71.50
Prairie Creek Private	Private	107	$362		$71.50
Prairie Creek Private	Private	108	$356		$71.50
Prairie Creek Private	Private	109	$356		$71.50
Prairie Creek Private	Private	110	$352		$71.50
Prairie Creek Private	Private	111	$356		$71.50
Prairie Creek Private	Private	112	$352		$71.50
Prairie Creek Private	Private	113	$351		$71.50
Prairie Creek Private	Private	114	$343		$71.50
Prairie Creek Private	Private	115	$381		$71.50
Prairie Creek Private	Private-ROW	116	$0		$0.00
Prairie Creek West Private	Private	1	$919	**$10,197**	$69.19
Prairie Creek West Private	Private	2	$22		$69.19
Prairie Creek West Private	Private-ROW	3	$0		$0.00
Prairie Creek West Private (Large)	Private	1	$390		$69.19
Prairie Creek West Private (Large)	Private	2	$13		$69.19
Prairie Creek West Private (Large)	Private	3	$57		$69.19
Prairie Creek West Private (Large)	Private	4	$1,504		$69.19
Prairie Creek West Private (Large)	Private	5	$204		$69.19
Prairie Creek West Private (Large)	Private	6	$296		$69.19
Prairie Creek West Private (Large)	Private	7	$1,006		$69.19
Prairie Creek West Private (Large)	Private	8	$488		$69.19
Prairie Creek West Private (Large)	Private	9	$172		$69.19
Prairie Creek West Private (Large)	Private	10	$248		$69.19
Prairie Creek West Private (Large)	Private	11	$563		$69.19
Prairie Creek West Private (Large)	Private	12	$839		$69.19
Prairie Creek West Private (Large)	Private	13	$947		$69.19
Prairie Creek West Private (Large)	Private	14	$155		$69.19
Prairie Creek West Private (Large)	Private	15	$241		$69.19
Prairie Creek West Private (Large)	Private	16	$635		$69.19
Prairie Creek West Private (Large)	Private	17	$643		$69.19
Prairie Creek West Private (Large)	Private	18	$13		$69.19
Prairie Creek West Private (Large)	Private	19	$647		$69.19
Prairie Creek West Private (Large)	Private	20	$161		$69.19
Prairie Creek West Private (Large)	Private	21	$36		$69.19
Prairie Creek West Private (Large)	Private-ROW	22	$0		$0.00
Shell Creek Delta	Private	1	$3,276	**$3,276**	$69.99
Shell Creek Preserve	Public	1	$4,738	**$24,568**	$67.48
Shell Creek Preserve	Public	2	$2,115		$67.48
Shell Creek Preserve	Public	3	$17		$67.48
Shell Creek Preserve	Public	4	$6,660		$67.48
Shell Creek Preserve	Public	5	$1,427		$67.48
Shell Creek Preserve	Public	6	$1,651		$67.48
Shell Creek Preserve	Public	7	$1,786		$67.48
Shell Creek Preserve	Public	8	$1,803		$67.48
Shell Creek Preserve	Public	9	$1,774		$67.48
Shell Creek Preserve	Public	10	$1,950		$67.48
Shell Creek Preserve	Public	11	$646		$67.48

Property Name	Ownership**	Property ID	Total Annual Cost (Parcel)	Total Annual Cost (Reserve Group)	Annual Cost per Acre
Shell Creek Preserve	Public-ROW	12	$0		$0.00
Shell Creek West Private	Private	1	$10,803	$45,892	$222.33
Shell Creek West Private	Private	2	$2,130		$222.33
Shell Creek West Private	Private	3	$1,768		$222.33
Shell Creek West Private	Private	4	$1,291		$222.33
Shell Creek West Private	Private	5	$1,407		$222.33
Shell Creek West Private	Private	6	$1,389		$222.33
Shell Creek West Private	Private	7	$1,447		$222.33
Shell Creek West Private	Private	8	$1,013		$222.33
Shell Creek West Private	Private	9	$15,595		$222.33
Shell Creek West Private	Private	10	$7,341		$222.33
Shell Creek West Private	Private	11	$1,707		$222.33
Shell Creek West Private	Private-ROW	12	$0		$0.00
Washington Loop Private	Private	1	$346	$10,810	$71.46
Washington Loop Private	Private	2	$167		$71.46
Washington Loop Private	Private	3	$178		$71.46
Washington Loop Private	Private	4	$179		$71.46
Washington Loop Private	Private	5	$138		$71.46
Washington Loop Private	Private	6	$168		$71.46
Washington Loop Private	Private	7	$61		$71.46
Washington Loop Private	Private	8	$172		$71.46
Washington Loop Private	Private	9	$141		$71.46
Washington Loop Private	Private	10	$162		$71.46
Washington Loop Private	Private	11	$349		$71.46
Washington Loop Private	Private	12	$168		$71.46
Washington Loop Private	Private	13	$170		$71.46
Washington Loop Private	Private	14	$108		$71.46
Washington Loop Private	Private	15	$191		$71.46
Washington Loop Private	Private	16	$85		$71.46
Washington Loop Private	Private	17	$184		$71.46
Washington Loop Private	Private	18	$174		$71.46
Washington Loop Private	Private	19	$184		$71.46
Washington Loop Private	Private	20	$290		$71.46
Washington Loop Private	Private	21	$191		$71.46
Washington Loop Private	Private	22	$223		$71.46
Washington Loop Private	Private	23	$311		$71.46
Washington Loop Private	Private	24	$191		$71.46
Washington Loop Private	Private	25	$218		$71.46
Washington Loop Private	Private	26	$186		$71.46
Washington Loop Private	Private	27	$342		$71.46
Washington Loop Private	Private	28	$206		$71.46
Washington Loop Private	Private	29	$255		$71.46
Washington Loop Private	Private	30	$199		$71.46
Washington Loop Private	Private	31	$201		$71.46
Washington Loop Private	Private	32	$173		$71.46
Washington Loop Private	Private	33	$396		$71.46
Washington Loop Private	Private	34	$199		$71.46
Washington Loop Private	Private	35	$185		$71.46
Washington Loop Private	Private	36	$174		$71.46
Washington Loop Private	Private	37	$161		$71.46
Washington Loop Private	Private	38	$183		$71.46
Washington Loop Private	Private	39	$164		$71.46
Washington Loop Private	Private	40	$251		$71.46
Washington Loop Private	Private	41	$184		$71.46
Washington Loop Private	Private	42	$589		$71.46
Washington Loop Private	Private	43	$589		$71.46
Washington Loop Private	Private	44	$5		$71.46
Washington Loop Private	Private	45	$184		$71.46
Washington Loop Private	Private	46	$153		$71.46
Washington Loop Private	Private	47	$199		$71.46
Washington Loop Private	Private	48	$48		$71.46
Washington Loop Private - Easement	Private	1	$382		$71.46
Washington Loop Private - Easement	Private	2	$175		$71.46
Washington Loop Private - Easement	Private	3	$109		$71.46
Washington Loop Private - Easement	Private	4	$171		$71.46
Washington Loop Private - Easement	Private-ROW	5	$0		$0.00
Amberjack Environmental Park	Public	--	$7,045	$7,045	$69.07
Rotunda Mitigation Area	Public	--	$2,415	$2,415	$71.03
Tippacanoe Environmental Park	Public	--	$20,527	$20,527	$68.42
Tippacanoe II Mitigation Area	Public	--	$12,547	$12,547	$68.64
San Casa Environmental Park	Public	--	$4,655	$4,655	$69.59
TOTAL	--	--	$365,615	$365,615	~~$273.66~~
					~~$301.02~~
					$81.31
					$89.45

Charlotte County Scrub-Jay HCP - Economic Analysis

Monitoring & Adaptive Management (fixed costs & endowment) - Summary

Parameter	Total (Permit Term)	Annual Average (Permit Term)	Annual Average (Post Permit)
Management & Maintenance Costs	$559,620	$18,654	$21,170
Contingency	$55,962	$1,865	$2,117
Total Cost:	**$615,582**	**$20,519**	**$23,287**
Fee/acre (Development):	**$58.89**		
Annual cost/acre (Conservation):	**$5.18**		

Charlotte County Scrub-Jay HCP - Economic Analysis

Monitoring & Adaptive Management (fixed costs & endowment) - Worksheet

								Species Monitoring & Inventory								
Property Name	**Ownership****	**Property ID**	**Reserve Acres**	**Reserve Acres (Values)**	**% of PropGrp (weight)**	**% of PropGrp - noblanks (weight)**	**% of Total Reserve**	*Apply to property group*	*# acres monitored*	*Unit Costs ($/acre)*	*Frequency (years)*	***Sub-Total Annual Cost***	**Total Annual Cost**	**Total Annual Cost (Reserve Group)**	**Annual Cost per Acre**
Biscayne Trust CE	Public	1	0.18	0.18	0.2%	0.3%	0.004%	1	0.05	$10.00	1	**$1**	$1	**$195**	$3.00
Biscayne Trust CE	Public	2	45.43	45.43	60.3%	69.9%	1.010%	1	13.63	$10.00	1	**$136**	$136		$3.00
Biscayne Trust CE	Public-ROW	3	9.17	9.17	12.2%		0.204%	0	0.00	$0.00	1	**$0**	$0		$0.00
Biscayne Trust Private	Public	1	19.34	19.34	25.7%	29.8%	0.430%	1	5.80	$10.00	1	**$58**	$58		$3.00
Biscayne Trust Private	Public-ROW	2	1.26	1.26	1.7%		0.028%	0	0.00	$0.00	1	**$0**	$0		$0.00
Burchers Tract CE	Public	1	0.43	0.43	0.1%	0.1%	0.010%	1	0.13	$10.00	1	**$1**	$1	**$931**	$3.00
Burchers Tract CE	Public	2	4.92	4.92	1.6%	1.6%	0.109%	1	1.47	$10.00	1	**$15**	$15		$3.00
Burchers Tract CE	Public	3	16.09	16.09	5.2%	5.2%	0.358%	1	4.83	$10.00	1	**$48**	$48		$3.00
Burchers Tract CE	Public	4	80.13	80.13	25.8%	25.8%	1.782%	1	24.04	$10.00	1	**$240**	$240		$3.00
Burchers Tract CE	Public	5	0.18	0.18	0.1%	0.1%	0.004%	1	0.05	$10.00	1	**$1**	$1		$3.00
Burchers Tract CE	Public	6	44.07	44.07	14.2%	14.2%	0.980%	1	13.22	$10.00	1	**$132**	$132		$3.00
Burchers Tract CE	Public	7	2.99	2.99	1.0%	1.0%	0.066%	1	0.90	$10.00	1	**$9**	$9		$3.00
Burchers Tract CE	Public	8	45.71	45.71	14.7%	14.7%	1.017%	1	13.71	$10.00	1	**$137**	$137		$3.00
Burchers Tract CE	Public	9	66.51	66.51	21.4%	21.4%	1.479%	1	19.95	$10.00	1	**$200**	$200		$3.00
Burchers Tract CE	Public	10	35.91	35.91	11.6%	11.6%	0.799%	1	10.77	$10.00	1	**$108**	$108		$3.00
Burchers Tract CE	Public	11	12.83	12.83	4.1%	4.1%	0.285%	1	3.85	$10.00	1	**$38**	$38		$3.00
Burchers Tract CE	Public	12	0.55	0.55	0.2%	0.2%	0.012%	1	0.16	$10.00	1	**$2**	$2		$3.00
Burchers Tract CE	Public-ROW	13	0.35	0.35	0.1%		0.008%	0	0.00	$0.00	1	**$0**	$0		$0.00
Deep Creek Public	Public	1	1.15	1.15	0.8%	1.2%	0.026%	1	0.35	$10.00	1	**$3**	$3	**$282**	$3.00
Deep Creek Public	Public	2	2.33	2.33	1.7%	2.5%	0.052%	1	0.70	$10.00	1	**$7**	$7		$3.00
Deep Creek Public	Public	3	6.64	6.64	4.7%	7.1%	0.148%	1	1.99	$10.00	1	**$20**	$20		$3.00
Deep Creek Public	Public	4	6.59	6.59	4.7%	7.0%	0.147%	1	1.98	$10.00	1	**$20**	$20		$3.00
Deep Creek Public	Public	5	4.65	4.65	3.3%	5.0%	0.103%	1	1.39	$10.00	1	**$14**	$14		$3.00
Deep Creek Public	Public	6	4.06	4.06	2.9%	4.3%	0.090%	1	1.22	$10.00	1	**$12**	$12		$3.00
Deep Creek Public	Public	7	0.23	0.23	0.2%	0.2%	0.005%	1	0.07	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	8	0.23	0.23	0.2%	0.2%	0.005%	1	0.07	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	9	0.23	0.23	0.2%	0.2%	0.005%	1	0.07	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	10	0.85	0.85	0.6%	0.9%	0.019%	1	0.25	$10.00	1	**$3**	$3		$3.00
Deep Creek Public	Public	11	5.08	5.08	3.6%	5.4%	0.113%	1	1.52	$10.00	1	**$15**	$15		$3.00
Deep Creek Public	Public	12	0.38	0.38	0.3%	0.4%	0.008%	1	0.11	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	13	2.07	2.07	1.5%	2.2%	0.046%	1	0.62	$10.00	1	**$6**	$6		$3.00
Deep Creek Public	Public	14	0.42	0.42	0.3%	0.5%	0.009%	1	0.13	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	15	12.43	12.43	8.9%	13.2%	0.277%	1	3.73	$10.00	1	**$37**	$37		$3.00
Deep Creek Public	Public	16	0.34	0.34	0.2%	0.4%	0.008%	1	0.10	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	17	0.26	0.26	0.2%	0.3%	0.006%	1	0.08	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	18	0.46	0.46	0.3%	0.5%	0.010%	1	0.14	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	19	0.22	0.22	0.2%	0.2%	0.005%	1	0.07	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	20	0.26	0.26	0.2%	0.3%	0.006%	1	0.08	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	21	0.46	0.46	0.3%	0.5%	0.010%	1	0.14	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	22	4.03	4.03	2.9%	4.3%	0.090%	1	1.21	$10.00	1	**$12**	$12		$3.00
Deep Creek Public	Public	23	0.34	0.34	0.2%	0.4%	0.008%	1	0.10	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	24	0.46	0.46	0.3%	0.5%	0.010%	1	0.14	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	25	4.21	4.21	3.0%	4.5%	0.094%	1	1.26	$10.00	1	**$13**	$13		$3.00
Deep Creek Public	Public	26	0.23	0.23	0.2%	0.2%	0.005%	1	0.07	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	27	1.47	1.47	1.0%	1.6%	0.033%	1	0.44	$10.00	1	**$4**	$4		$3.00
Deep Creek Public	Public	28	0.38	0.38	0.3%	0.4%	0.009%	1	0.12	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	29	0.23	0.23	0.2%	0.2%	0.005%	1	0.07	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	30	0.24	0.24	0.2%	0.3%	0.005%	1	0.07	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	31	0.46	0.46	0.3%	0.5%	0.010%	1	0.14	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	32	0.38	0.38	0.3%	0.4%	0.009%	1	0.11	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	33	0.40	0.40	0.3%	0.4%	0.009%	1	0.12	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	34	0.63	0.63	0.5%	0.7%	0.014%	1	0.19	$10.00	1	**$2**	$2		$3.00
Deep Creek Public	Public	35	1.19	1.19	0.8%	1.3%	0.026%	1	0.36	$10.00	1	**$4**	$4		$3.00
Deep Creek Public	Public	36	0.34	0.34	0.2%	0.4%	0.008%	1	0.10	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	37	0.29	0.29	0.2%	0.3%	0.006%	1	0.09	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	38	0.23	0.23	0.2%	0.2%	0.005%	1	0.07	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	39	1.15	1.15	0.8%	1.2%	0.026%	1	0.34	$10.00	1	**$3**	$3		$3.00
Deep Creek Public	Public	40	0.29	0.29	0.2%	0.3%	0.006%	1	0.09	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	41	0.97	0.97	0.7%	1.0%	0.022%	1	0.29	$10.00	1	**$3**	$3		$3.00
Deep Creek Public	Public	42	2.25	2.25	1.6%	2.4%	0.050%	1	0.67	$10.00	1	**$7**	$7		$3.00
Deep Creek Public	Public	43	0.52	0.52	0.4%	0.6%	0.011%	1	0.15	$10.00	1	**$2**	$2		$3.00
Deep Creek Public	Public	44	0.29	0.29	0.2%	0.3%	0.006%	1	0.09	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	45	0.23	0.23	0.2%	0.2%	0.005%	1	0.07	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	46	1.38	1.38	1.0%	1.5%	0.031%	1	0.41	$10.00	1	**$4**	$4		$3.00
Deep Creek Public	Public	47	0.23	0.23	0.2%	0.2%	0.005%	1	0.07	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	48	0.23	0.23	0.2%	0.2%	0.005%	1	0.07	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	49	0.23	0.23	0.2%	0.2%	0.005%	1	0.07	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	50	0.23	0.23	0.2%	0.2%	0.005%	1	0.07	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	51	0.07	0.07	0.1%	0.1%	0.002%	1	0.02	$10.00	1	**$0**	$0		$3.00
Deep Creek Public	Public	52	0.17	0.17	0.1%	0.2%	0.004%	1	0.05	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	53	0.31	0.31	0.2%	0.3%	0.007%	1	0.09	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	54	0.23	0.23	0.2%	0.2%	0.005%	1	0.07	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	55	0.25	0.25	0.2%	0.3%	0.006%	1	0.08	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	56	0.32	0.32	0.2%	0.3%	0.007%	1	0.10	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public	57	8.53	8.53	6.1%	9.1%	0.190%	1	2.56	$10.00	1	**$26**	$26		$3.00
Deep Creek Public	Public	58	10.90	10.90	7.8%	11.6%	0.242%	1	3.27	$10.00	1	**$33**	$33		$3.00
Deep Creek Public	Public	59	0.25	0.25	0.2%	0.3%	0.005%	1	0.07	$10.00	1	**$1**	$1		$3.00
Deep Creek Public	Public-ROW	60	46.39	46.39	33.1%		1.032%	0	0.00	$0.00	1	**$0**	$0		$0.00
Hathaway Park	Public	1	19.33	19.33	98.9%	100.0%	0.430%	1	5.80	$10.00	1	**$58**	$58	**$58**	$3.00

								Species Monitoring & Inventory								
Property Name	Ownership**	Property ID	Reserve Acres	Reserve Acres (Values)	% of PropGrp (weight)	% of PropGrp - noblanks (weight)	% of Total Reserve	*Apply to property group*	*# acres monitored*	*Unit Costs ($/acre)*	*Frequency (years)*	***Sub-Total Annual Cost***	Total Annual Cost	Total Annual Cost (Reserve Group)	Annual Cost per Acre
Hathaway Park	Public-ROW	2	0.21	0.21	1.1%		0.005%	0	0.00	$0.00	1	**$0**	$0		$0.00
Lee Branch Private	Private	1	67.29	67.29	48.7%	48.7%	1.497%	1	20.19	$30.00	1	**$606**	$606	**$1,245**	$9.00
Lee Branch Private	Private	2	6.76	6.76	4.9%	4.9%	0.150%	1	2.03	$30.00	1	**$61**	$61		$9.00
Lee Branch Private	Private	3	14.91	14.91	10.8%	10.8%	0.332%	1	4.47	$30.00	1	**$134**	$134		$9.00
Lee Branch Private	Private	4	49.31	49.31	35.7%	35.7%	1.097%	1	14.79	$30.00	1	**$444**	$444		$9.00
Lee Branch Private	Private-ROW	5	0.00	0.00	0.0%		0.000%	0	0.00	$0.00	1	**$0**	$0		$0.00
Prairie Creek Preserve	Public	1	663.40	663.40	42.5%	42.8%	14.754%	1	199.02	$10.00	1	**$1,990**	$1,990	**$4,652**	$3.00
Prairie Creek Preserve	Public	2	220.15	220.15	14.1%	14.2%	4.896%	1	66.04	$10.00	1	**$660**	$660		$3.00
Prairie Creek Preserve	Public	3	611.53	611.53	39.2%	39.4%	13.601%	1	183.46	$10.00	1	**$1,835**	$1,835		$3.00
Prairie Creek Preserve	Public	4	55.46	55.46	3.6%	3.6%	1.233%	1	16.64	$10.00	1	**$166**	$166		$3.00
Prairie Creek Preserve	Public-ROW	5	11.30	11.30	0.7%		0.251%	0	0.00	$0.00	1	**$0**	$0		$0.00
Prairie Creek Private-CE	Private	1	4.97	4.97	0.8%	0.8%	0.111%	1	1.49	$30.00	1	**$45**	$45	**$5,693**	$9.00
Prairie Creek Private-CE	Private	2	5.09	5.09	0.8%	0.8%	0.113%	1	1.53	$30.00	1	**$46**	$46		$9.00
Prairie Creek Private-CE	Private	3	5.22	5.22	0.8%	0.8%	0.116%	1	1.57	$30.00	1	**$47**	$47		$9.00
Prairie Creek Private-CE	Private-ROW	4	0.21	0.21	0.0%		0.005%	0	0.00	$0.00	1	**$0**	$0		$0.00
Prairie Creek Private	Private	5	8.54	8.54	1.3%	1.4%	0.190%	1	2.56	$30.00	1	**$77**	$77		$9.00
Prairie Creek Private	Private	6	4.95	4.95	0.8%	0.8%	0.110%	1	1.49	$30.00	1	**$45**	$45		$9.00
Prairie Creek Private	Private	7	4.92	4.92	0.8%	0.8%	0.109%	1	1.47	$30.00	1	**$44**	$44		$9.00
Prairie Creek Private	Private	8	6.40	6.40	1.0%	1.0%	0.142%	1	1.92	$30.00	1	**$58**	$58		$9.00
Prairie Creek Private	Private	9	5.13	5.13	0.8%	0.8%	0.114%	1	1.54	$30.00	1	**$46**	$46		$9.00
Prairie Creek Private	Private	10	4.91	4.91	0.8%	0.8%	0.109%	1	1.47	$30.00	1	**$44**	$44		$9.00
Prairie Creek Private	Private	11	4.83	4.83	0.8%	0.8%	0.107%	1	1.45	$30.00	1	**$43**	$43		$9.00
Prairie Creek Private	Private	12	4.92	4.92	0.8%	0.8%	0.109%	1	1.48	$30.00	1	**$44**	$44		$9.00
Prairie Creek Private	Private	13	5.11	5.11	0.8%	0.8%	0.114%	1	1.53	$30.00	1	**$46**	$46		$9.00
Prairie Creek Private	Private	14	6.74	6.74	1.1%	1.1%	0.150%	1	2.02	$30.00	1	**$61**	$61		$9.00
Prairie Creek Private	Private	15	8.04	8.04	1.3%	1.3%	0.179%	1	2.41	$30.00	1	**$72**	$72		$9.00
Prairie Creek Private	Private	16	6.69	6.69	1.0%	1.1%	0.149%	1	2.01	$30.00	1	**$60**	$60		$9.00
Prairie Creek Private	Private	17	5.96	5.96	0.9%	0.9%	0.133%	1	1.79	$30.00	1	**$54**	$54		$9.00
Prairie Creek Private	Private	18	10.00	10.00	1.6%	1.6%	0.222%	1	3.00	$30.00	1	**$90**	$90		$9.00
Prairie Creek Private	Private	19	4.95	4.95	0.8%	0.8%	0.110%	1	1.49	$30.00	1	**$45**	$45		$9.00
Prairie Creek Private	Private	20	5.25	5.25	0.8%	0.8%	0.117%	1	1.57	$30.00	1	**$47**	$47		$9.00
Prairie Creek Private	Private	21	5.75	5.75	0.9%	0.9%	0.128%	1	1.73	$30.00	1	**$52**	$52		$9.00
Prairie Creek Private	Private	22	5.99	5.99	0.9%	0.9%	0.133%	1	1.80	$30.00	1	**$54**	$54		$9.00
Prairie Creek Private	Private	23	4.83	4.83	0.8%	0.8%	0.107%	1	1.45	$30.00	1	**$43**	$43		$9.00
Prairie Creek Private	Private	24	6.39	6.39	1.0%	1.0%	0.142%	1	1.92	$30.00	1	**$57**	$57		$9.00
Prairie Creek Private	Private	25	5.94	5.94	0.9%	0.9%	0.132%	1	1.78	$30.00	1	**$53**	$53		$9.00
Prairie Creek Private	Private	26	5.37	5.37	0.8%	0.8%	0.119%	1	1.61	$30.00	1	**$48**	$48		$9.00
Prairie Creek Private	Private	27	5.98	5.98	0.9%	0.9%	0.133%	1	1.79	$30.00	1	**$54**	$54		$9.00
Prairie Creek Private	Private	28	5.63	5.63	0.9%	0.9%	0.125%	1	1.69	$30.00	1	**$51**	$51		$9.00
Prairie Creek Private	Private	29	4.88	4.88	0.8%	0.8%	0.109%	1	1.46	$30.00	1	**$44**	$44		$9.00
Prairie Creek Private	Private	30	5.07	5.07	0.8%	0.8%	0.113%	1	1.52	$30.00	1	**$46**	$46		$9.00
Prairie Creek Private	Private	31	5.78	5.78	0.9%	0.9%	0.128%	1	1.73	$30.00	1	**$52**	$52		$9.00
Prairie Creek Private	Private	32	5.50	5.50	0.9%	0.9%	0.122%	1	1.65	$30.00	1	**$50**	$50		$9.00
Prairie Creek Private	Private	33	5.65	5.65	0.9%	0.9%	0.126%	1	1.70	$30.00	1	**$51**	$51		$9.00
Prairie Creek Private	Private	34	5.17	5.17	0.8%	0.8%	0.115%	1	1.55	$30.00	1	**$47**	$47		$9.00
Prairie Creek Private	Private	35	5.05	5.05	0.8%	0.8%	0.112%	1	1.51	$30.00	1	**$45**	$45		$9.00
Prairie Creek Private	Private	36	4.97	4.97	0.8%	0.8%	0.110%	1	1.49	$30.00	1	**$45**	$45		$9.00
Prairie Creek Private	Private	37	4.98	4.98	0.8%	0.8%	0.111%	1	1.49	$30.00	1	**$45**	$45		$9.00
Prairie Creek Private	Private	38	5.10	5.10	0.8%	0.8%	0.113%	1	1.53	$30.00	1	**$46**	$46		$9.00
Prairie Creek Private	Private	39	5.11	5.11	0.8%	0.8%	0.114%	1	1.53	$30.00	1	**$46**	$46		$9.00
Prairie Creek Private	Private	40	5.11	5.11	0.8%	0.8%	0.114%	1	1.53	$30.00	1	**$46**	$46		$9.00
Prairie Creek Private	Private	41	4.86	4.86	0.8%	0.8%	0.108%	1	1.46	$30.00	1	**$44**	$44		$9.00
Prairie Creek Private	Private	42	9.96	9.96	1.6%	1.6%	0.221%	1	2.99	$30.00	1	**$90**	$90		$9.00
Prairie Creek Private	Private	43	6.84	6.84	1.1%	1.1%	0.152%	1	2.05	$30.00	1	**$62**	$62		$9.00
Prairie Creek Private	Private	44	7.22	7.22	1.1%	1.1%	0.160%	1	2.16	$30.00	1	**$65**	$65		$9.00
Prairie Creek Private	Private	45	7.19	7.19	1.1%	1.1%	0.160%	1	2.16	$30.00	1	**$65**	$65		$9.00
Prairie Creek Private	Private	46	5.15	5.15	0.8%	0.8%	0.115%	1	1.55	$30.00	1	**$46**	$46		$9.00
Prairie Creek Private	Private	47	5.26	5.26	0.8%	0.8%	0.117%	1	1.58	$30.00	1	**$47**	$47		$9.00
Prairie Creek Private	Private	48	5.66	5.66	0.9%	0.9%	0.126%	1	1.70	$30.00	1	**$51**	$51		$9.00
Prairie Creek Private	Private	49	5.24	5.24	0.8%	0.8%	0.117%	1	1.57	$30.00	1	**$47**	$47		$9.00
Prairie Creek Private	Private	50	5.02	5.02	0.8%	0.8%	0.112%	1	1.51	$30.00	1	**$45**	$45		$9.00
Prairie Creek Private	Private	51	5.02	5.02	0.8%	0.8%	0.112%	1	1.51	$30.00	1	**$45**	$45		$9.00
Prairie Creek Private	Private	52	6.15	6.15	1.0%	1.0%	0.137%	1	1.85	$30.00	1	**$55**	$55		$9.00
Prairie Creek Private	Private	53	5.75	5.75	0.9%	0.9%	0.128%	1	1.72	$30.00	1	**$52**	$52		$9.00
Prairie Creek Private	Private	54	6.40	6.40	1.0%	1.0%	0.142%	1	1.92	$30.00	1	**$58**	$58		$9.00
Prairie Creek Private	Private	55	5.26	5.26	0.8%	0.8%	0.117%	1	1.58	$30.00	1	**$47**	$47		$9.00
Prairie Creek Private	Private	56	6.66	6.66	1.0%	1.1%	0.148%	1	2.00	$30.00	1	**$60**	$60		$9.00
Prairie Creek Private	Private	57	5.20	5.20	0.8%	0.8%	0.116%	1	1.56	$30.00	1	**$47**	$47		$9.00
Prairie Creek Private	Private	58	4.89	4.89	0.8%	0.8%	0.109%	1	1.47	$30.00	1	**$44**	$44		$9.00
Prairie Creek Private	Private	59	5.05	5.05	0.8%	0.8%	0.112%	1	1.52	$30.00	1	**$45**	$45		$9.00
Prairie Creek Private	Private	60	5.75	5.75	0.9%	0.9%	0.128%	1	1.73	$30.00	1	**$52**	$52		$9.00
Prairie Creek Private	Private	61	6.29	6.29	1.0%	1.0%	0.140%	1	1.89	$30.00	1	**$57**	$57		$9.00
Prairie Creek Private	Private	62	7.79	7.79	1.2%	1.2%	0.173%	1	2.34	$30.00	1	**$70**	$70		$9.00
Prairie Creek Private	Private	63	5.86	5.86	0.9%	0.9%	0.130%	1	1.76	$30.00	1	**$53**	$53		$9.00
Prairie Creek Private	Private	64	5.25	5.25	0.8%	0.8%	0.117%	1	1.57	$30.00	1	**$47**	$47		$9.00
Prairie Creek Private	Private	65	5.45	5.45	0.9%	0.9%	0.121%	1	1.63	$30.00	1	**$49**	$49		$9.00
Prairie Creek Private	Private	66	5.00	5.00	0.8%	0.8%	0.111%	1	1.50	$30.00	1	**$45**	$45		$9.00
Prairie Creek Private	Private	67	5.02	5.02	0.8%	0.8%	0.112%	1	1.51	$30.00	1	**$45**	$45		$9.00
Prairie Creek Private	Private	68	6.04	6.04	0.9%	1.0%	0.134%	1	1.81	$30.00	1	**$54**	$54		$9.00
Prairie Creek Private	Private	69	5.18	5.18	0.8%	0.8%	0.115%	1	1.55	$30.00	1	**$47**	$47		$9.00
Prairie Creek Private	Private	70	5.22	5.22	0.8%	0.8%	0.116%	1	1.56	$30.00	1	**$47**	$47		$9.00
Prairie Creek Private	Private	71	5.05	5.05	0.8%	0.8%	0.112%	1	1.52	$30.00	1	**$45**	$45		$9.00
Prairie Creek Private	Private	72	5.18	5.18	0.8%	0.8%	0.115%	1	1.56	$30.00	1	**$47**	$47		$9.00

								Species Monitoring & Inventory								
Property Name	Ownership**	Property ID	Reserve Acres	Reserve Acres (Values)	% of PropGrp (weight)	% of PropGrp - noblanks (weight)	% of Total Reserve	Apply to property group	# acres monitored	Unit Costs ($/acre)	Frequency (years)	Sub-Total Annual Cost	Total Annual Cost	Total Annual Cost (Reserve Group)	Annual Cost per Acre
Prairie Creek Private	Private	73	5.01	5.01	0.8%	0.8%	0.111%	1	1.50	$30.00	1	$45	$45		$9.00
Prairie Creek Private	Private	74	4.96	4.96	0.8%	0.8%	0.110%	1	1.49	$30.00	1	$45	$45		$9.00
Prairie Creek Private	Private	75	4.90	4.90	0.8%	0.8%	0.109%	1	1.47	$30.00	1	$44	$44		$9.00
Prairie Creek Private	Private	76	5.10	5.10	0.8%	0.8%	0.113%	1	1.53	$30.00	1	$46	$46		$9.00
Prairie Creek Private	Private	77	4.86	4.86	0.8%	0.8%	0.108%	1	1.46	$30.00	1	$44	$44		$9.00
Prairie Creek Private	Private	78	5.13	5.13	0.8%	0.8%	0.114%	1	1.54	$30.00	1	$46	$46		$9.00
Prairie Creek Private	Private	79	4.74	4.74	0.7%	0.7%	0.105%	1	1.42	$30.00	1	$43	$43		$9.00
Prairie Creek Private	Private	80	5.32	5.32	0.8%	0.8%	0.118%	1	1.60	$30.00	1	$48	$48		$9.00
Prairie Creek Private	Private	81	7.51	7.51	1.2%	1.2%	0.167%	1	2.25	$30.00	1	$68	$68		$9.00
Prairie Creek Private	Private	82	5.08	5.08	0.8%	0.8%	0.113%	1	1.52	$30.00	1	$46	$46		$9.00
Prairie Creek Private	Private	83	5.04	5.04	0.8%	0.8%	0.112%	1	1.51	$30.00	1	$45	$45		$9.00
Prairie Creek Private	Private	84	4.91	4.91	0.8%	0.8%	0.109%	1	1.47	$30.00	1	$44	$44		$9.00
Prairie Creek Private	Private	85	4.93	4.93	0.8%	0.8%	0.110%	1	1.48	$30.00	1	$44	$44		$9.00
Prairie Creek Private	Private	86	9.62	9.62	1.5%	1.5%	0.214%	1	2.89	$30.00	1	$87	$87		$9.00
Prairie Creek Private	Private	87	5.02	5.02	0.8%	0.8%	0.112%	1	1.51	$30.00	1	$45	$45		$9.00
Prairie Creek Private	Private	88	5.08	5.08	0.8%	0.8%	0.113%	1	1.52	$30.00	1	$46	$46		$9.00
Prairie Creek Private	Private	89	5.02	5.02	0.8%	0.8%	0.112%	1	1.51	$30.00	1	$45	$45		$9.00
Prairie Creek Private	Private	90	4.88	4.88	0.8%	0.8%	0.109%	1	1.47	$30.00	1	$44	$44		$9.00
Prairie Creek Private	Private	91	5.01	5.01	0.8%	0.8%	0.111%	1	1.50	$30.00	1	$45	$45		$9.00
Prairie Creek Private	Private	92	5.20	5.20	0.8%	0.8%	0.116%	1	1.56	$30.00	1	$47	$47		$9.00
Prairie Creek Private	Private	93	4.87	4.87	0.8%	0.8%	0.108%	1	1.46	$30.00	1	$44	$44		$9.00
Prairie Creek Private	Private	94	5.19	5.19	0.8%	0.8%	0.115%	1	1.56	$30.00	1	$47	$47		$9.00
Prairie Creek Private	Private	95	5.34	5.34	0.8%	0.8%	0.119%	1	1.60	$30.00	1	$48	$48		$9.00
Prairie Creek Private	Private	96	6.91	6.91	1.1%	1.1%	0.154%	1	2.07	$30.00	1	$62	$62		$9.00
Prairie Creek Private	Private	97	6.05	6.05	0.9%	1.0%	0.135%	1	1.81	$30.00	1	$54	$54		$9.00
Prairie Creek Private	Private	98	5.09	5.09	0.8%	0.8%	0.113%	1	1.53	$30.00	1	$46	$46		$9.00
Prairie Creek Private	Private	99	5.05	5.05	0.8%	0.8%	0.112%	1	1.52	$30.00	1	$45	$45		$9.00
Prairie Creek Private	Private	100	5.00	5.00	0.8%	0.8%	0.111%	1	1.50	$30.00	1	$45	$45		$9.00
Prairie Creek Private	Private	101	5.15	5.15	0.8%	0.8%	0.115%	1	1.54	$30.00	1	$46	$46		$9.00
Prairie Creek Private	Private	102	5.17	5.17	0.8%	0.8%	0.115%	1	1.55	$30.00	1	$47	$47		$9.00
Prairie Creek Private	Private	103	4.99	4.99	0.8%	0.8%	0.111%	1	1.50	$30.00	1	$45	$45		$9.00
Prairie Creek Private	Private	104	4.96	4.96	0.8%	0.8%	0.110%	1	1.49	$30.00	1	$45	$45		$9.00
Prairie Creek Private	Private	105	4.78	4.78	0.7%	0.8%	0.106%	1	1.43	$30.00	1	$43	$43		$9.00
Prairie Creek Private	Private	106	5.04	5.04	0.8%	0.8%	0.112%	1	1.51	$30.00	1	$45	$45		$9.00
Prairie Creek Private	Private	107	5.07	5.07	0.8%	0.8%	0.113%	1	1.52	$30.00	1	$46	$46		$9.00
Prairie Creek Private	Private	108	4.97	4.97	0.8%	0.8%	0.111%	1	1.49	$30.00	1	$45	$45		$9.00
Prairie Creek Private	Private	109	4.98	4.98	0.8%	0.8%	0.111%	1	1.49	$30.00	1	$45	$45		$9.00
Prairie Creek Private	Private	110	4.92	4.92	0.8%	0.8%	0.109%	1	1.48	$30.00	1	$44	$44		$9.00
Prairie Creek Private	Private	111	4.98	4.98	0.8%	0.8%	0.111%	1	1.50	$30.00	1	$45	$45		$9.00
Prairie Creek Private	Private	112	4.92	4.92	0.8%	0.8%	0.109%	1	1.48	$30.00	1	$44	$44		$9.00
Prairie Creek Private	Private	113	4.91	4.91	0.8%	0.8%	0.109%	1	1.47	$30.00	1	$44	$44		$9.00
Prairie Creek Private	Private	114	4.79	4.79	0.7%	0.8%	0.107%	1	1.44	$30.00	1	$43	$43		$9.00
Prairie Creek Private	Private	115	5.32	5.32	0.8%	0.8%	0.118%	1	1.60	$30.00	1	$48	$48		$9.00
Prairie Creek Private	Private-ROW	116	7.99	7.99	1.2%		0.178%	0	0.00	$0.00	1	$0	$0		$0.00
Prairie Creek West Private	Private	1	13.28	13.28	8.7%	9.0%	0.295%	1	3.98	$30.00	1	$119	$119	$1,326	$9.00
Prairie Creek West Private	Private	2	0.32	0.32	0.2%	0.2%	0.007%	1	0.10	$30.00	1	$3	$3		$9.00
Prairie Creek West Private	Private-ROW	3	0.11	0.11	0.1%		0.002%	0	0.00	$0.00	1	$0	$0		$0.00
Prairie Creek West Private (Large)	Private	1	5.63	5.63	3.7%	3.8%	0.125%	1	1.69	$30.00	1	$51	$51		$9.00
Prairie Creek West Private (Large)	Private	2	0.19	0.19	0.1%	0.1%	0.004%	1	0.06	$30.00	1	$2	$2		$9.00
Prairie Creek West Private (Large)	Private	3	0.83	0.83	0.5%	0.6%	0.018%	1	0.25	$30.00	1	$7	$7		$9.00
Prairie Creek West Private (Large)	Private	4	21.73	21.73	14.3%	14.7%	0.483%	1	6.52	$30.00	1	$196	$196		$9.00
Prairie Creek West Private (Large)	Private	5	2.95	2.95	1.9%	2.0%	0.066%	1	0.89	$30.00	1	$27	$27		$9.00
Prairie Creek West Private (Large)	Private	6	4.28	4.28	2.8%	2.9%	0.095%	1	1.28	$30.00	1	$39	$39		$9.00
Prairie Creek West Private (Large)	Private	7	14.54	14.54	9.5%	9.9%	0.323%	1	4.36	$30.00	1	$131	$131		$9.00
Prairie Creek West Private (Large)	Private	8	7.05	7.05	4.6%	4.8%	0.157%	1	2.12	$30.00	1	$63	$63		$9.00
Prairie Creek West Private (Large)	Private	9	2.48	2.48	1.6%	1.7%	0.055%	1	0.74	$30.00	1	$22	$22		$9.00
Prairie Creek West Private (Large)	Private	10	3.58	3.58	2.3%	2.4%	0.080%	1	1.07	$30.00	1	$32	$32		$9.00
Prairie Creek West Private (Large)	Private	11	8.13	8.13	5.3%	5.5%	0.181%	1	2.44	$30.00	1	$73	$73		$9.00
Prairie Creek West Private (Large)	Private	12	12.13	12.13	8.0%	8.2%	0.270%	1	3.64	$30.00	1	$109	$109		$9.00
Prairie Creek West Private (Large)	Private	13	13.68	13.68	9.0%	9.3%	0.304%	1	4.10	$30.00	1	$123	$123		$9.00
Prairie Creek West Private (Large)	Private	14	2.24	2.24	1.5%	1.5%	0.050%	1	0.67	$30.00	1	$20	$20		$9.00
Prairie Creek West Private (Large)	Private	15	3.48	3.48	2.3%	2.4%	0.077%	1	1.04	$30.00	1	$31	$31		$9.00
Prairie Creek West Private (Large)	Private	16	9.18	9.18	6.0%	6.2%	0.204%	1	2.75	$30.00	1	$83	$83		$9.00
Prairie Creek West Private (Large)	Private	17	9.30	9.30	6.1%	6.3%	0.207%	1	2.79	$30.00	1	$84	$84		$9.00
Prairie Creek West Private (Large)	Private	18	0.19	0.19	0.1%	0.1%	0.004%	1	0.06	$30.00	1	$2	$2		$9.00
Prairie Creek West Private (Large)	Private	19	9.35	9.35	6.1%	6.3%	0.208%	1	2.80	$30.00	1	$84	$84		$9.00
Prairie Creek West Private (Large)	Private	20	2.33	2.33	1.5%	1.6%	0.052%	1	0.70	$30.00	1	$21	$21		$9.00
Prairie Creek West Private (Large)	Private	21	0.52	0.52	0.3%	0.4%	0.012%	1	0.16	$30.00	1	$5	$5		$9.00
Prairie Creek West Private (Large)	Private-ROW	22	4.95	4.95	3.2%		0.110%	0	0.00	$0.00	1	$0	$0		$0.00
Shell Creek Delta	Private	1	46.81	46.81	100.0%	100.0%	1.041%	1	14.04	$30.00	1	$421	$421	$421	$9.00
Shell Creek Preserve	Public	1	70.22	70.22	19.1%	19.3%	1.562%	1	21.07	$10.00	1	$211	$211	$1,092	$3.00
Shell Creek Preserve	Public	2	31.34	31.34	8.5%	8.6%	0.697%	1	9.40	$10.00	1	$94	$94		$3.00
Shell Creek Preserve	Public	3	0.25	0.25	0.1%	0.1%	0.006%	1	0.08	$10.00	1	$1	$1		$3.00
Shell Creek Preserve	Public	4	98.70	98.70	26.9%	27.1%	2.195%	1	29.61	$10.00	1	$296	$296		$3.00
Shell Creek Preserve	Public	5	21.15	21.15	5.8%	5.8%	0.470%	1	6.35	$10.00	1	$63	$63		$3.00
Shell Creek Preserve	Public	6	24.47	24.47	6.7%	6.7%	0.544%	1	7.34	$10.00	1	$73	$73		$3.00
Shell Creek Preserve	Public	7	26.46	26.46	7.2%	7.3%	0.589%	1	7.94	$10.00	1	$79	$79		$3.00
Shell Creek Preserve	Public	8	26.71	26.71	7.3%	7.3%	0.594%	1	8.01	$10.00	1	$80	$80		$3.00
Shell Creek Preserve	Public	9	26.29	26.29	7.2%	7.2%	0.585%	1	7.89	$10.00	1	$79	$79		$3.00
Shell Creek Preserve	Public	10	28.89	28.89	7.9%	7.9%	0.643%	1	8.67	$10.00	1	$87	$87		$3.00
Shell Creek Preserve	Public	11	9.58	9.58	2.6%	2.6%	0.213%	1	2.87	$10.00	1	$29	$29		$3.00
Shell Creek Preserve	Public-ROW	12	2.82	2.82	0.8%		0.063%	0	0.00	$0.00	1	$0	$0		$0.00
Shell Creek West Private	Private	1	48.59	48.59	23.5%	23.5%	1.081%	1	14.58	$30.00	1	$437	$437	$1,858	$9.00

								Species Monitoring & Inventory								
Property Name	Ownership**	Property ID	Reserve Acres	Reserve Acres (Values)	% of PropGrp (weight)	% of PropGrp - noblanks (weight)	% of Total Reserve	Apply to property group	# acres monitored	Unit Costs ($/acre)	Frequency (years)	Sub-Total Annual Cost	Total Annual Cost	Total Annual Cost (Reserve Group)	Annual Cost per Acre
Shell Creek West Private	Private	2	9.58	9.58	4.6%	4.6%	0.213%	1	2.87	$30.00	1	$86	$86		$9.00
Shell Creek West Private	Private	3	7.95	7.95	3.9%	3.9%	0.177%	1	2.39	$30.00	1	$72	$72		$9.00
Shell Creek West Private	Private	4	5.81	5.81	2.8%	2.8%	0.129%	1	1.74	$30.00	1	$52	$52		$9.00
Shell Creek West Private	Private	5	6.33	6.33	3.1%	3.1%	0.141%	1	1.90	$30.00	1	$57	$57		$9.00
Shell Creek West Private	Private	6	6.25	6.25	3.0%	3.0%	0.139%	1	1.87	$30.00	1	$56	$56		$9.00
Shell Creek West Private	Private	7	6.51	6.51	3.2%	3.2%	0.145%	1	1.95	$30.00	1	$59	$59		$9.00
Shell Creek West Private	Private	8	4.56	4.56	2.2%	2.2%	0.101%	1	1.37	$30.00	1	$41	$41		$9.00
Shell Creek West Private	Private	9	70.15	70.15	34.0%	34.0%	1.560%	1	21.04	$30.00	1	$631	$631		$9.00
Shell Creek West Private	Private	10	33.02	33.02	16.0%	16.0%	0.734%	1	9.91	$30.00	1	$297	$297		$9.00
Shell Creek West Private	Private	11	7.68	7.68	3.7%	3.7%	0.171%	1	2.30	$30.00	1	$69	$69		$9.00
Shell Creek West Private	Private-ROW	12	0.05	0.05	0.0%		0.001%	0	0.00	$0.00	1	$0	$0		$0.00
Washington Loop Private	Private	1	4.83	4.83	3.2%	3.2%	0.108%	1	1.45	$30.00	1	$44	$44	$1,361	$9.00
Washington Loop Private	Private	2	2.33	2.33	1.5%	1.5%	0.052%	1	0.70	$30.00	1	$21	$21		$9.00
Washington Loop Private	Private	3	2.50	2.50	1.6%	1.6%	0.055%	1	0.75	$30.00	1	$22	$22		$9.00
Washington Loop Private	Private	4	2.51	2.51	1.7%	1.7%	0.056%	1	0.75	$30.00	1	$23	$23		$9.00
Washington Loop Private	Private	5	1.93	1.93	1.3%	1.3%	0.043%	1	0.58	$30.00	1	$17	$17		$9.00
Washington Loop Private	Private	6	2.35	2.35	1.6%	1.6%	0.052%	1	0.71	$30.00	1	$21	$21		$9.00
Washington Loop Private	Private	7	0.86	0.86	0.6%	0.6%	0.019%	1	0.26	$30.00	1	$8	$8		$9.00
Washington Loop Private	Private	8	2.40	2.40	1.6%	1.6%	0.053%	1	0.72	$30.00	1	$22	$22		$9.00
Washington Loop Private	Private	9	1.98	1.98	1.3%	1.3%	0.044%	1	0.59	$30.00	1	$18	$18		$9.00
Washington Loop Private	Private	10	2.27	2.27	1.5%	1.5%	0.051%	1	0.68	$30.00	1	$20	$20		$9.00
Washington Loop Private	Private	11	4.88	4.88	3.2%	3.2%	0.109%	1	1.47	$30.00	1	$44	$44		$9.00
Washington Loop Private	Private	12	2.35	2.35	1.6%	1.6%	0.052%	1	0.71	$30.00	1	$21	$21		$9.00
Washington Loop Private	Private	13	2.38	2.38	1.6%	1.6%	0.053%	1	0.71	$30.00	1	$21	$21		$9.00
Washington Loop Private	Private	14	1.52	1.52	1.0%	1.0%	0.034%	1	0.45	$30.00	1	$14	$14		$9.00
Washington Loop Private	Private	15	2.67	2.67	1.8%	1.8%	0.059%	1	0.80	$30.00	1	$24	$24		$9.00
Washington Loop Private	Private	16	1.18	1.18	0.8%	0.8%	0.026%	1	0.35	$30.00	1	$11	$11		$9.00
Washington Loop Private	Private	17	2.58	2.58	1.7%	1.7%	0.057%	1	0.77	$30.00	1	$23	$23		$9.00
Washington Loop Private	Private	18	2.44	2.44	1.6%	1.6%	0.054%	1	0.73	$30.00	1	$22	$22		$9.00
Washington Loop Private	Private	19	2.58	2.58	1.7%	1.7%	0.057%	1	0.77	$30.00	1	$23	$23		$9.00
Washington Loop Private	Private	20	4.05	4.05	2.7%	2.7%	0.090%	1	1.22	$30.00	1	$36	$36		$9.00
Washington Loop Private	Private	21	2.67	2.67	1.8%	1.8%	0.059%	1	0.80	$30.00	1	$24	$24		$9.00
Washington Loop Private	Private	22	3.12	3.12	2.1%	2.1%	0.069%	1	0.93	$30.00	1	$28	$28		$9.00
Washington Loop Private	Private	23	4.35	4.35	2.9%	2.9%	0.097%	1	1.30	$30.00	1	$39	$39		$9.00
Washington Loop Private	Private	24	2.67	2.67	1.8%	1.8%	0.059%	1	0.80	$30.00	1	$24	$24		$9.00
Washington Loop Private	Private	25	3.05	3.05	2.0%	2.0%	0.068%	1	0.91	$30.00	1	$27	$27		$9.00
Washington Loop Private	Private	26	2.60	2.60	1.7%	1.7%	0.058%	1	0.78	$30.00	1	$23	$23		$9.00
Washington Loop Private	Private	27	4.78	4.78	3.2%	3.2%	0.106%	1	1.43	$30.00	1	$43	$43		$9.00
Washington Loop Private	Private	28	2.89	2.89	1.9%	1.9%	0.064%	1	0.87	$30.00	1	$26	$26		$9.00
Washington Loop Private	Private	29	3.57	3.57	2.4%	2.4%	0.079%	1	1.07	$30.00	1	$32	$32		$9.00
Washington Loop Private	Private	30	2.79	2.79	1.8%	1.8%	0.062%	1	0.84	$30.00	1	$25	$25		$9.00
Washington Loop Private	Private	31	2.81	2.81	1.9%	1.9%	0.062%	1	0.84	$30.00	1	$25	$25		$9.00
Washington Loop Private	Private	32	2.42	2.42	1.6%	1.6%	0.054%	1	0.72	$30.00	1	$22	$22		$9.00
Washington Loop Private	Private	33	5.54	5.54	3.7%	3.7%	0.123%	1	1.66	$30.00	1	$50	$50		$9.00
Washington Loop Private	Private	34	2.79	2.79	1.8%	1.8%	0.062%	1	0.84	$30.00	1	$25	$25		$9.00
Washington Loop Private	Private	35	2.59	2.59	1.7%	1.7%	0.058%	1	0.78	$30.00	1	$23	$23		$9.00
Washington Loop Private	Private	36	2.44	2.44	1.6%	1.6%	0.054%	1	0.73	$30.00	1	$22	$22		$9.00
Washington Loop Private	Private	37	2.25	2.25	1.5%	1.5%	0.050%	1	0.68	$30.00	1	$20	$20		$9.00
Washington Loop Private	Private	38	2.55	2.55	1.7%	1.7%	0.057%	1	0.77	$30.00	1	$23	$23		$9.00
Washington Loop Private	Private	39	2.30	2.30	1.5%	1.5%	0.051%	1	0.69	$30.00	1	$21	$21		$9.00
Washington Loop Private	Private	40	3.51	3.51	2.3%	2.3%	0.078%	1	1.05	$30.00	1	$32	$32		$9.00
Washington Loop Private	Private	41	2.57	2.57	1.7%	1.7%	0.057%	1	0.77	$30.00	1	$23	$23		$9.00
Washington Loop Private	Private	42	8.25	8.25	5.5%	5.5%	0.183%	1	2.47	$30.00	1	$74	$74		$9.00
Washington Loop Private	Private	43	8.25	8.25	5.5%	5.5%	0.183%	1	2.47	$30.00	1	$74	$74		$9.00
Washington Loop Private	Private	44	0.07	0.07	0.0%	0.0%	0.002%	1	0.02	$30.00	1	$1	$1		$9.00
Washington Loop Private	Private	45	2.57	2.57	1.7%	1.7%	0.057%	1	0.77	$30.00	1	$23	$23		$9.00
Washington Loop Private	Private	46	2.14	2.14	1.4%	1.4%	0.048%	1	0.64	$30.00	1	$19	$19		$9.00
Washington Loop Private	Private	47	2.78	2.78	1.8%	1.8%	0.062%	1	0.83	$30.00	1	$25	$25		$9.00
Washington Loop Private	Private	48	0.67	0.67	0.4%	0.4%	0.015%	1	0.20	$30.00	1	$6	$6		$9.00
Washington Loop Private - Easement	Private	1	5.34	5.34	3.5%	3.5%	0.119%	1	1.60	$30.00	1	$48	$48		$9.00
Washington Loop Private - Easement	Private	2	2.44	2.44	1.6%	1.6%	0.054%	1	0.73	$30.00	1	$22	$22		$9.00
Washington Loop Private - Easement	Private	3	1.52	1.52	1.0%	1.0%	0.034%	1	0.46	$30.00	1	$14	$14		$9.00
Washington Loop Private - Easement	Private	4	2.39	2.39	1.6%	1.6%	0.053%	1	0.72	$30.00	1	$22	$22		$9.00
Washington Loop Private - Easement	Private-ROW	5	0.07	0.07	0.0%		0.001%	0	0.00	$0.00	1	$0	$0		$0.00
Amberjack Environmental Park	Public	--	102.00	102.00	100.0%	100.0%	2.269%	1	30.60	$10.00	1	$306	$306	$306	$3.00
Rotunda Mitigation Area	Public	--	34.00	34.00	100.0%	100.0%	0.756%	1	10.20	$10.00	1	$102	$102	$102	$3.00
Tippacanoe Environmental Park	Public	--	300.00	300.00	100.0%	100.0%	6.672%	1	90.00	$10.00	1	$900	$900	$900	$3.00
Tippacanoe II Mitigation Area	Public	--	182.80	182.80	100.0%	100.0%	4.066%	1	54.84	$10.00	1	$548	$548	$548	$3.00
San Casa Environmental Park	Public	--	66.90	66.90	100.0%	100.0%	1.488%	1	20.07	$10.00	1	$201	$201	$201	$3.00
TOTAL	--	--	4,496.30	4,496.30	--	--	100.0%	300	1323.43	$16.00	--	$21,170	$21,170	$21,170	$15.85
															$17.43
															$4.71
															$5.18

Charlotte County Scrub-Jay HCP - Economic Analysis

Changed Circumstances / Remedial Measures (fixed cost & endowment) - Summary

Parameter	Total (Permit Term)	Annual Average (Permit Term)	Annual Average (Post Permit)
Management & Maintenance Costs	$966,477	$32,216	$36,562
~~Contingency~~	~~$0~~	~~$0~~	~~$0~~
Total Cost:	**$966,477**	**$32,216**	**$36,562**
Fee/acre (Development):	**$92.45**		
Annual cost/acre (Conservation):	**$8.13**		

Charlotte County Scrub-Jay HCP - Economic Analysis

Changed Circumstances / Remedial Measures (fixed cost & endowment) - Worksheet

								Remedial Measures						
Property Name	Ownership**	Property ID	Reserve Acres	Reserve Acres (Values)	% of PropGrp (weight)	% of PropGrp - noblanks (weight)	% of Total Reserve	*Apply to property group*	*# acres*	*Unit Costs ($/acre)*	***Sub-Total Annual Cost***	Total Annual Cost (Parcel)	Total Annual Cost (Reserve Group)	Annual Cost per Acre
Biscayne Trust CE	Public	1	0.18	0.18	0.2%	0.3%	0.004%	1	0.18	$7.12	$1	$1	$462	$7.12
Biscayne Trust CE	Public	2	45.43	45.43	60.3%	69.9%	1.010%	1	45.43	$7.12	$324	$324		$7.12
Biscayne Trust CE	Public-ROW	3	9.17	9.17	12.2%		0.204%	0	0.00	$0.00	$0	$0		$0.00
Biscayne Trust Private	Public	1	19.34	19.34	25.7%	29.8%	0.430%	1	19.34	$7.12	$138	$138		$7.12
Biscayne Trust Private	Public-ROW	2	1.26	1.26	1.7%		0.028%	0	0.00	$0.00	$0	$0		$0.00
Burchers Tract CE	Public	1	0.43	0.43	0.1%	0.1%	0.010%	1	0.43	$6.88	$3	$3	$2,136	$6.88
Burchers Tract CE	Public	2	4.92	4.92	1.6%	1.6%	0.109%	1	4.92	$6.88	$34	$34		$6.88
Burchers Tract CE	Public	3	16.09	16.09	5.2%	5.2%	0.358%	1	16.09	$6.88	$111	$111		$6.88
Burchers Tract CE	Public	4	80.13	80.13	25.8%	25.8%	1.782%	1	80.13	$6.88	$552	$552		$6.88
Burchers Tract CE	Public	5	0.18	0.18	0.1%	0.1%	0.004%	1	0.18	$6.88	$1	$1		$6.88
Burchers Tract CE	Public	6	44.07	44.07	14.2%	14.2%	0.980%	1	44.07	$6.88	$303	$303		$6.88
Burchers Tract CE	Public	7	2.99	2.99	1.0%	1.0%	0.066%	1	2.99	$6.88	$21	$21		$6.88
Burchers Tract CE	Public	8	45.71	45.71	14.7%	14.7%	1.017%	1	45.71	$6.88	$315	$315		$6.88
Burchers Tract CE	Public	9	66.51	66.51	21.4%	21.4%	1.479%	1	66.51	$6.88	$458	$458		$6.88
Burchers Tract CE	Public	10	35.91	35.91	11.6%	11.6%	0.799%	1	35.91	$6.88	$247	$247		$6.88
Burchers Tract CE	Public	11	12.83	12.83	4.1%	4.1%	0.285%	1	12.83	$6.88	$88	$88		$6.88
Burchers Tract CE	Public	12	0.55	0.55	0.2%	0.2%	0.012%	1	0.55	$6.88	$4	$4		$6.88
Burchers Tract CE	Public-ROW	13	0.35	0.35	0.1%		0.008%	0	0.00	$0.00	$0	$0		$0.00
Deep Creek Public	Public	1	1.15	1.15	0.8%	1.2%	0.026%	1	1.15	$6.96	$8	$8	$654	$6.96
Deep Creek Public	Public	2	2.33	2.33	1.7%	2.5%	0.052%	1	2.33	$6.96	$16	$16		$6.96
Deep Creek Public	Public	3	6.64	6.64	4.7%	7.1%	0.148%	1	6.64	$6.96	$46	$46		$6.96
Deep Creek Public	Public	4	6.59	6.59	4.7%	7.0%	0.147%	1	6.59	$6.96	$46	$46		$6.96
Deep Creek Public	Public	5	4.65	4.65	3.3%	5.0%	0.103%	1	4.65	$6.96	$32	$32		$6.96
Deep Creek Public	Public	6	4.06	4.06	2.9%	4.3%	0.090%	1	4.06	$6.96	$28	$28		$6.96
Deep Creek Public	Public	7	0.23	0.23	0.2%	0.2%	0.005%	1	0.23	$6.96	$2	$2		$6.96
Deep Creek Public	Public	8	0.23	0.23	0.2%	0.2%	0.005%	1	0.23	$6.96	$2	$2		$6.96
Deep Creek Public	Public	9	0.23	0.23	0.2%	0.2%	0.005%	1	0.23	$6.96	$2	$2		$6.96
Deep Creek Public	Public	10	0.85	0.85	0.6%	0.9%	0.019%	1	0.85	$6.96	$6	$6		$6.96
Deep Creek Public	Public	11	5.08	5.08	3.6%	5.4%	0.113%	1	5.08	$6.96	$35	$35		$6.96
Deep Creek Public	Public	12	0.38	0.38	0.3%	0.4%	0.008%	1	0.38	$6.96	$3	$3		$6.96
Deep Creek Public	Public	13	2.07	2.07	1.5%	2.2%	0.046%	1	2.07	$6.96	$14	$14		$6.96
Deep Creek Public	Public	14	0.42	0.42	0.3%	0.5%	0.009%	1	0.42	$6.96	$3	$3		$6.96
Deep Creek Public	Public	15	12.43	12.43	8.9%	13.2%	0.277%	1	12.43	$6.96	$87	$87		$6.96
Deep Creek Public	Public	16	0.34	0.34	0.2%	0.4%	0.008%	1	0.34	$6.96	$2	$2		$6.96
Deep Creek Public	Public	17	0.26	0.26	0.2%	0.3%	0.006%	1	0.26	$6.96	$2	$2		$6.96
Deep Creek Public	Public	18	0.46	0.46	0.3%	0.5%	0.010%	1	0.46	$6.96	$3	$3		$6.96
Deep Creek Public	Public	19	0.22	0.22	0.2%	0.2%	0.005%	1	0.22	$6.96	$2	$2		$6.96
Deep Creek Public	Public	20	0.26	0.26	0.2%	0.3%	0.006%	1	0.26	$6.96	$2	$2		$6.96
Deep Creek Public	Public	21	0.46	0.46	0.3%	0.5%	0.010%	1	0.46	$6.96	$3	$3		$6.96
Deep Creek Public	Public	22	4.03	4.03	2.9%	4.3%	0.090%	1	4.03	$6.96	$28	$28		$6.96
Deep Creek Public	Public	23	0.34	0.34	0.2%	0.4%	0.008%	1	0.34	$6.96	$2	$2		$6.96
Deep Creek Public	Public	24	0.46	0.46	0.3%	0.5%	0.010%	1	0.46	$6.96	$3	$3		$6.96
Deep Creek Public	Public	25	4.21	4.21	3.0%	4.5%	0.094%	1	4.21	$6.96	$29	$29		$6.96
Deep Creek Public	Public	26	0.23	0.23	0.2%	0.2%	0.005%	1	0.23	$6.96	$2	$2		$6.96
Deep Creek Public	Public	27	1.47	1.47	1.0%	1.6%	0.033%	1	1.47	$6.96	$10	$10		$6.96
Deep Creek Public	Public	28	0.38	0.38	0.3%	0.4%	0.009%	1	0.38	$6.96	$3	$3		$6.96
Deep Creek Public	Public	29	0.23	0.23	0.2%	0.2%	0.005%	1	0.23	$6.96	$2	$2		$6.96
Deep Creek Public	Public	30	0.24	0.24	0.2%	0.3%	0.005%	1	0.24	$6.96	$2	$2		$6.96
Deep Creek Public	Public	31	0.46	0.46	0.3%	0.5%	0.010%	1	0.46	$6.96	$3	$3		$6.96
Deep Creek Public	Public	32	0.38	0.38	0.3%	0.4%	0.009%	1	0.38	$6.96	$3	$3		$6.96
Deep Creek Public	Public	33	0.40	0.40	0.3%	0.4%	0.009%	1	0.40	$6.96	$3	$3		$6.96
Deep Creek Public	Public	34	0.63	0.63	0.5%	0.7%	0.014%	1	0.63	$6.96	$4	$4		$6.96
Deep Creek Public	Public	35	1.19	1.19	0.8%	1.3%	0.026%	1	1.19	$6.96	$8	$8		$6.96
Deep Creek Public	Public	36	0.34	0.34	0.2%	0.4%	0.008%	1	0.34	$6.96	$2	$2		$6.96
Deep Creek Public	Public	37	0.29	0.29	0.2%	0.3%	0.006%	1	0.29	$6.96	$2	$2		$6.96
Deep Creek Public	Public	38	0.23	0.23	0.2%	0.2%	0.005%	1	0.23	$6.96	$2	$2		$6.96
Deep Creek Public	Public	39	1.15	1.15	0.8%	1.2%	0.026%	1	1.15	$6.96	$8	$8		$6.96
Deep Creek Public	Public	40	0.29	0.29	0.2%	0.3%	0.006%	1	0.29	$6.96	$2	$2		$6.96
Deep Creek Public	Public	41	0.97	0.97	0.7%	1.0%	0.022%	1	0.97	$6.96	$7	$7		$6.96
Deep Creek Public	Public	42	2.25	2.25	1.6%	2.4%	0.050%	1	2.25	$6.96	$16	$16		$6.96
Deep Creek Public	Public	43	0.52	0.52	0.4%	0.6%	0.011%	1	0.52	$6.96	$4	$4		$6.96
Deep Creek Public	Public	44	0.29	0.29	0.2%	0.3%	0.006%	1	0.29	$6.96	$2	$2		$6.96
Deep Creek Public	Public	45	0.23	0.23	0.2%	0.2%	0.005%	1	0.23	$6.96	$2	$2		$6.96
Deep Creek Public	Public	46	1.38	1.38	1.0%	1.5%	0.031%	1	1.38	$6.96	$10	$10		$6.96
Deep Creek Public	Public	47	0.23	0.23	0.2%	0.2%	0.005%	1	0.23	$6.96	$2	$2		$6.96
Deep Creek Public	Public	48	0.23	0.23	0.2%	0.2%	0.005%	1	0.23	$6.96	$2	$2		$6.96
Deep Creek Public	Public	49	0.23	0.23	0.2%	0.2%	0.005%	1	0.23	$6.96	$2	$2		$6.96
Deep Creek Public	Public	50	0.23	0.23	0.2%	0.2%	0.005%	1	0.23	$6.96	$2	$2		$6.96
Deep Creek Public	Public	51	0.07	0.07	0.1%	0.1%	0.002%	1	0.07	$6.96	$0	$0		$6.96
Deep Creek Public	Public	52	0.17	0.17	0.1%	0.2%	0.004%	1	0.17	$6.96	$1	$1		$6.96
Deep Creek Public	Public	53	0.31	0.31	0.2%	0.3%	0.007%	1	0.31	$6.96	$2	$2		$6.96
Deep Creek Public	Public	54	0.23	0.23	0.2%	0.2%	0.005%	1	0.23	$6.96	$2	$2		$6.96
Deep Creek Public	Public	55	0.25	0.25	0.2%	0.3%	0.006%	1	0.25	$6.96	$2	$2		$6.96
Deep Creek Public	Public	56	0.32	0.32	0.2%	0.3%	0.007%	1	0.32	$6.96	$2	$2		$6.96
Deep Creek Public	Public	57	8.53	8.53	6.1%	9.1%	0.190%	1	8.53	$6.96	$59	$59		$6.96
Deep Creek Public	Public	58	10.90	10.90	7.8%	11.6%	0.242%	1	10.90	$6.96	$76	$76		$6.96
Deep Creek Public	Public	59	0.25	0.25	0.2%	0.3%	0.005%	1	0.25	$6.96	$2	$2		$6.96
Deep Creek Public	Public-ROW	60	46.39	46.39	33.1%		1.032%	0	0.00	$0.00	$0	$0		$0.00
Hathaway Park	Public	1	19.33	19.33	98.9%	100.0%	0.430%	1	19.33	$7.64	$148	$148	$148	$7.64

								Remedial Measures							
Property Name	Ownership**	Property ID	Reserve Acres	Reserve Acres (Values)	% of PropGrp (weight)	% of PropGrp - noblanks (weight)	% of Total Reserve	Apply to property group	# acres	Unit Costs ($/acre)	Sub-Total Annual Cost	Total Annual Cost (Parcel)	Total Annual Cost (Reserve Group)	Annual Cost per Acre
Hathaway Park	Public-ROW	2	0.21	0.21	1.1%		0.005%	0	0.00	$0.00	$0	$0		$0.00
Lee Branch Private	Private	1	67.29	67.29	48.7%	48.7%	1.497%	1	67.29	$29.72	$2,000	$2,000	$4,110	$29.72
Lee Branch Private	Private	2	6.76	6.76	4.9%	4.9%	0.150%	1	6.76	$29.72	$201	$201		$29.72
Lee Branch Private	Private	3	14.91	14.91	10.8%	10.8%	0.332%	1	14.91	$29.72	$443	$443		$29.72
Lee Branch Private	Private	4	49.31	49.31	35.7%	35.7%	1.097%	1	49.31	$29.72	$1,466	$1,466		$29.72
Lee Branch Private	Private-ROW	5	0.00	0.00	0.0%		0.000%	0	0.00	$0.00	$0	$0		$0.00
Prairie Creek Preserve	Public	1	663.40	663.40	42.5%	42.8%	14.754%	1	663.40	$6.67	$4,422	$4,422	$10,336	$6.67
Prairie Creek Preserve	Public	2	220.15	220.15	14.1%	14.2%	4.896%	1	220.15	$6.67	$1,468	$1,468		$6.67
Prairie Creek Preserve	Public	3	611.53	611.53	39.2%	39.4%	13.601%	1	611.53	$6.67	$4,077	$4,077		$6.67
Prairie Creek Preserve	Public	4	55.46	55.46	3.6%	3.6%	1.233%	1	55.46	$6.67	$370	$370		$6.67
Prairie Creek Preserve	Public-ROW	5	11.30	11.30	0.7%		0.251%	0	0.00	$0.00	$0	$0		$0.00
Prairie Creek Private-CE	Private	1	4.97	4.97	0.8%	0.8%	0.111%	1	4.97	$7.15	$36	$36	$4,522	$7.15
Prairie Creek Private-CE	Private	2	5.09	5.09	0.8%	0.8%	0.113%	1	5.09	$7.15	$36	$36		$7.15
Prairie Creek Private-CE	Private	3	5.22	5.22	0.8%	0.8%	0.116%	1	5.22	$7.15	$37	$37		$7.15
Prairie Creek Private-CE	Private-ROW	4	0.21	0.21	0.0%		0.005%	0	0.00	$0.00	$0	$0		$0.00
Prairie Creek Private	Private	5	8.54	8.54	1.3%	1.4%	0.190%	1	8.54	$7.15	$61	$61		$7.15
Prairie Creek Private	Private	6	4.95	4.95	0.8%	0.8%	0.110%	1	4.95	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	7	4.92	4.92	0.8%	0.8%	0.109%	1	4.92	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	8	6.40	6.40	1.0%	1.0%	0.142%	1	6.40	$7.15	$46	$46		$7.15
Prairie Creek Private	Private	9	5.13	5.13	0.8%	0.8%	0.114%	1	5.13	$7.15	$37	$37		$7.15
Prairie Creek Private	Private	10	4.91	4.91	0.8%	0.8%	0.109%	1	4.91	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	11	4.83	4.83	0.8%	0.8%	0.107%	1	4.83	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	12	4.92	4.92	0.8%	0.8%	0.109%	1	4.92	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	13	5.11	5.11	0.8%	0.8%	0.114%	1	5.11	$7.15	$37	$37		$7.15
Prairie Creek Private	Private	14	6.74	6.74	1.1%	1.1%	0.150%	1	6.74	$7.15	$48	$48		$7.15
Prairie Creek Private	Private	15	8.04	8.04	1.3%	1.3%	0.179%	1	8.04	$7.15	$58	$58		$7.15
Prairie Creek Private	Private	16	6.69	6.69	1.0%	1.1%	0.149%	1	6.69	$7.15	$48	$48		$7.15
Prairie Creek Private	Private	17	5.96	5.96	0.9%	0.9%	0.133%	1	5.96	$7.15	$43	$43		$7.15
Prairie Creek Private	Private	18	10.00	10.00	1.6%	1.6%	0.222%	1	10.00	$7.15	$71	$71		$7.15
Prairie Creek Private	Private	19	4.95	4.95	0.8%	0.8%	0.110%	1	4.95	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	20	5.25	5.25	0.8%	0.8%	0.117%	1	5.25	$7.15	$38	$38		$7.15
Prairie Creek Private	Private	21	5.75	5.75	0.9%	0.9%	0.128%	1	5.75	$7.15	$41	$41		$7.15
Prairie Creek Private	Private	22	5.99	5.99	0.9%	0.9%	0.133%	1	5.99	$7.15	$43	$43		$7.15
Prairie Creek Private	Private	23	4.83	4.83	0.8%	0.8%	0.107%	1	4.83	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	24	6.39	6.39	1.0%	1.0%	0.142%	1	6.39	$7.15	$46	$46		$7.15
Prairie Creek Private	Private	25	5.94	5.94	0.9%	0.9%	0.132%	1	5.94	$7.15	$42	$42		$7.15
Prairie Creek Private	Private	26	5.37	5.37	0.8%	0.8%	0.119%	1	5.37	$7.15	$38	$38		$7.15
Prairie Creek Private	Private	27	5.98	5.98	0.9%	0.9%	0.133%	1	5.98	$7.15	$43	$43		$7.15
Prairie Creek Private	Private	28	5.63	5.63	0.9%	0.9%	0.125%	1	5.63	$7.15	$40	$40		$7.15
Prairie Creek Private	Private	29	4.88	4.88	0.8%	0.8%	0.109%	1	4.88	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	30	5.07	5.07	0.8%	0.8%	0.113%	1	5.07	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	31	5.78	5.78	0.9%	0.9%	0.128%	1	5.78	$7.15	$41	$41		$7.15
Prairie Creek Private	Private	32	5.50	5.50	0.9%	0.9%	0.122%	1	5.50	$7.15	$39	$39		$7.15
Prairie Creek Private	Private	33	5.65	5.65	0.9%	0.9%	0.126%	1	5.65	$7.15	$40	$40		$7.15
Prairie Creek Private	Private	34	5.17	5.17	0.8%	0.8%	0.115%	1	5.17	$7.15	$37	$37		$7.15
Prairie Creek Private	Private	35	5.05	5.05	0.8%	0.8%	0.112%	1	5.05	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	36	4.97	4.97	0.8%	0.8%	0.110%	1	4.97	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	37	4.98	4.98	0.8%	0.8%	0.111%	1	4.98	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	38	5.10	5.10	0.8%	0.8%	0.113%	1	5.10	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	39	5.11	5.11	0.8%	0.8%	0.114%	1	5.11	$7.15	$37	$37		$7.15
Prairie Creek Private	Private	40	5.11	5.11	0.8%	0.8%	0.114%	1	5.11	$7.15	$37	$37		$7.15
Prairie Creek Private	Private	41	4.86	4.86	0.8%	0.8%	0.108%	1	4.86	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	42	9.96	9.96	1.6%	1.6%	0.221%	1	9.96	$7.15	$71	$71		$7.15
Prairie Creek Private	Private	43	6.84	6.84	1.1%	1.1%	0.152%	1	6.84	$7.15	$49	$49		$7.15
Prairie Creek Private	Private	44	7.22	7.22	1.1%	1.1%	0.160%	1	7.22	$7.15	$52	$52		$7.15
Prairie Creek Private	Private	45	7.19	7.19	1.1%	1.1%	0.160%	1	7.19	$7.15	$51	$51		$7.15
Prairie Creek Private	Private	46	5.15	5.15	0.8%	0.8%	0.115%	1	5.15	$7.15	$37	$37		$7.15
Prairie Creek Private	Private	47	5.26	5.26	0.8%	0.8%	0.117%	1	5.26	$7.15	$38	$38		$7.15
Prairie Creek Private	Private	48	5.66	5.66	0.9%	0.9%	0.126%	1	5.66	$7.15	$40	$40		$7.15
Prairie Creek Private	Private	49	5.24	5.24	0.8%	0.8%	0.117%	1	5.24	$7.15	$37	$37		$7.15
Prairie Creek Private	Private	50	5.02	5.02	0.8%	0.8%	0.112%	1	5.02	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	51	5.02	5.02	0.8%	0.8%	0.112%	1	5.02	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	52	6.15	6.15	1.0%	1.0%	0.137%	1	6.15	$7.15	$44	$44		$7.15
Prairie Creek Private	Private	53	5.75	5.75	0.9%	0.9%	0.128%	1	5.75	$7.15	$41	$41		$7.15
Prairie Creek Private	Private	54	6.40	6.40	1.0%	1.0%	0.142%	1	6.40	$7.15	$46	$46		$7.15
Prairie Creek Private	Private	55	5.26	5.26	0.8%	0.8%	0.117%	1	5.26	$7.15	$38	$38		$7.15
Prairie Creek Private	Private	56	6.66	6.66	1.0%	1.1%	0.148%	1	6.66	$7.15	$48	$48		$7.15
Prairie Creek Private	Private	57	5.20	5.20	0.8%	0.8%	0.116%	1	5.20	$7.15	$37	$37		$7.15
Prairie Creek Private	Private	58	4.89	4.89	0.8%	0.8%	0.109%	1	4.89	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	59	5.05	5.05	0.8%	0.8%	0.112%	1	5.05	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	60	5.75	5.75	0.9%	0.9%	0.128%	1	5.75	$7.15	$41	$41		$7.15
Prairie Creek Private	Private	61	6.29	6.29	1.0%	1.0%	0.140%	1	6.29	$7.15	$45	$45		$7.15
Prairie Creek Private	Private	62	7.79	7.79	1.2%	1.2%	0.173%	1	7.79	$7.15	$56	$56		$7.15
Prairie Creek Private	Private	63	5.86	5.86	0.9%	0.9%	0.130%	1	5.86	$7.15	$42	$42		$7.15
Prairie Creek Private	Private	64	5.25	5.25	0.8%	0.8%	0.117%	1	5.25	$7.15	$38	$38		$7.15
Prairie Creek Private	Private	65	5.45	5.45	0.9%	0.9%	0.121%	1	5.45	$7.15	$39	$39		$7.15
Prairie Creek Private	Private	66	5.00	5.00	0.8%	0.8%	0.111%	1	5.00	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	67	5.02	5.02	0.8%	0.8%	0.112%	1	5.02	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	68	6.04	6.04	0.9%	1.0%	0.134%	1	6.04	$7.15	$43	$43		$7.15
Prairie Creek Private	Private	69	5.18	5.18	0.8%	0.8%	0.115%	1	5.18	$7.15	$37	$37		$7.15
Prairie Creek Private	Private	70	5.22	5.22	0.8%	0.8%	0.116%	1	5.22	$7.15	$37	$37		$7.15
Prairie Creek Private	Private	71	5.05	5.05	0.8%	0.8%	0.112%	1	5.05	$7.15	$36	$36		$7.15

								Remedial Measures						
Property Name	Ownership**	Property ID	Reserve Acres	Reserve Acres (Values)	% of PropGrp (weight)	% of PropGrp - noblanks (weight)	% of Total Reserve	*Apply to property group*	*# acres*	*Unit Costs ($/acre)*	***Sub-Total Annual Cost***	Total Annual Cost (Parcel)	Total Annual Cost (Reserve Group)	Annual Cost per Acre
Prairie Creek Private	Private	72	5.18	5.18	0.8%	0.8%	0.115%	1	5.18	$7.15	$37	$37		$7.15
Prairie Creek Private	Private	73	5.01	5.01	0.8%	0.8%	0.111%	1	5.01	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	74	4.96	4.96	0.8%	0.8%	0.110%	1	4.96	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	75	4.90	4.90	0.8%	0.8%	0.109%	1	4.90	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	76	5.10	5.10	0.8%	0.8%	0.113%	1	5.10	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	77	4.86	4.86	0.8%	0.8%	0.108%	1	4.86	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	78	5.13	5.13	0.8%	0.8%	0.114%	1	5.13	$7.15	$37	$37		$7.15
Prairie Creek Private	Private	79	4.74	4.74	0.7%	0.7%	0.105%	1	4.74	$7.15	$34	$34		$7.15
Prairie Creek Private	Private	80	5.32	5.32	0.8%	0.8%	0.118%	1	5.32	$7.15	$38	$38		$7.15
Prairie Creek Private	Private	81	7.51	7.51	1.2%	1.2%	0.167%	1	7.51	$7.15	$54	$54		$7.15
Prairie Creek Private	Private	82	5.08	5.08	0.8%	0.8%	0.113%	1	5.08	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	83	5.04	5.04	0.8%	0.8%	0.112%	1	5.04	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	84	4.91	4.91	0.8%	0.8%	0.109%	1	4.91	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	85	4.93	4.93	0.8%	0.8%	0.110%	1	4.93	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	86	9.62	9.62	1.5%	1.5%	0.214%	1	9.62	$7.15	$69	$69		$7.15
Prairie Creek Private	Private	87	5.02	5.02	0.8%	0.8%	0.112%	1	5.02	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	88	5.08	5.08	0.8%	0.8%	0.113%	1	5.08	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	89	5.02	5.02	0.8%	0.8%	0.112%	1	5.02	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	90	4.88	4.88	0.8%	0.8%	0.109%	1	4.88	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	91	5.01	5.01	0.8%	0.8%	0.111%	1	5.01	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	92	5.20	5.20	0.8%	0.8%	0.116%	1	5.20	$7.15	$37	$37		$7.15
Prairie Creek Private	Private	93	4.87	4.87	0.8%	0.8%	0.108%	1	4.87	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	94	5.19	5.19	0.8%	0.8%	0.115%	1	5.19	$7.15	$37	$37		$7.15
Prairie Creek Private	Private	95	5.34	5.34	0.8%	0.8%	0.119%	1	5.34	$7.15	$38	$38		$7.15
Prairie Creek Private	Private	96	6.91	6.91	1.1%	1.1%	0.154%	1	6.91	$7.15	$49	$49		$7.15
Prairie Creek Private	Private	97	6.05	6.05	0.9%	1.0%	0.135%	1	6.05	$7.15	$43	$43		$7.15
Prairie Creek Private	Private	98	5.09	5.09	0.8%	0.8%	0.113%	1	5.09	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	99	5.05	5.05	0.8%	0.8%	0.112%	1	5.05	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	100	5.00	5.00	0.8%	0.8%	0.111%	1	5.00	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	101	5.15	5.15	0.8%	0.8%	0.115%	1	5.15	$7.15	$37	$37		$7.15
Prairie Creek Private	Private	102	5.17	5.17	0.8%	0.8%	0.115%	1	5.17	$7.15	$37	$37		$7.15
Prairie Creek Private	Private	103	4.99	4.99	0.8%	0.8%	0.111%	1	4.99	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	104	4.96	4.96	0.8%	0.8%	0.110%	1	4.96	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	105	4.78	4.78	0.7%	0.8%	0.106%	1	4.78	$7.15	$34	$34		$7.15
Prairie Creek Private	Private	106	5.04	5.04	0.8%	0.8%	0.112%	1	5.04	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	107	5.07	5.07	0.8%	0.8%	0.113%	1	5.07	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	108	4.97	4.97	0.8%	0.8%	0.111%	1	4.97	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	109	4.98	4.98	0.8%	0.8%	0.111%	1	4.98	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	110	4.92	4.92	0.8%	0.8%	0.109%	1	4.92	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	111	4.98	4.98	0.8%	0.8%	0.111%	1	4.98	$7.15	$36	$36		$7.15
Prairie Creek Private	Private	112	4.92	4.92	0.8%	0.8%	0.109%	1	4.92	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	113	4.91	4.91	0.8%	0.8%	0.109%	1	4.91	$7.15	$35	$35		$7.15
Prairie Creek Private	Private	114	4.79	4.79	0.7%	0.8%	0.107%	1	4.79	$7.15	$34	$34		$7.15
Prairie Creek Private	Private	115	5.32	5.32	0.8%	0.8%	0.118%	1	5.32	$7.15	$38	$38		$7.15
Prairie Creek Private	Private-ROW	116	7.99	7.99	1.2%		0.178%	0	0.00	$0.00	$0	$0		$0.00
Prairie Creek West Private	Private	1	13.28	13.28	8.7%	9.0%	0.295%	1	13.28	$6.92	$92	$92	$1,020	$6.92
Prairie Creek West Private	Private	2	0.32	0.32	0.2%	0.2%	0.007%	1	0.32	$6.92	$2	$2		$6.92
Prairie Creek West Private	Private-ROW	3	0.11	0.11	0.1%		0.002%	0	0.00	$0.00	$0	$0		$0.00
Prairie Creek West Private (Large)	Private	1	5.63	5.63	3.7%	3.8%	0.125%	1	5.63	$6.92	$39	$39		$6.92
Prairie Creek West Private (Large)	Private	2	0.19	0.19	0.1%	0.1%	0.004%	1	0.19	$6.92	$1	$1		$6.92
Prairie Creek West Private (Large)	Private	3	0.83	0.83	0.5%	0.6%	0.018%	1	0.83	$6.92	$6	$6		$6.92
Prairie Creek West Private (Large)	Private	4	21.73	21.73	14.3%	14.7%	0.483%	1	21.73	$6.92	$150	$150		$6.92
Prairie Creek West Private (Large)	Private	5	2.95	2.95	1.9%	2.0%	0.066%	1	2.95	$6.92	$20	$20		$6.92
Prairie Creek West Private (Large)	Private	6	4.28	4.28	2.8%	2.9%	0.095%	1	4.28	$6.92	$30	$30		$6.92
Prairie Creek West Private (Large)	Private	7	14.54	14.54	9.5%	9.9%	0.323%	1	14.54	$6.92	$101	$101		$6.92
Prairie Creek West Private (Large)	Private	8	7.05	7.05	4.6%	4.8%	0.157%	1	7.05	$6.92	$49	$49		$6.92
Prairie Creek West Private (Large)	Private	9	2.48	2.48	1.6%	1.7%	0.055%	1	2.48	$6.92	$17	$17		$6.92
Prairie Creek West Private (Large)	Private	10	3.58	3.58	2.3%	2.4%	0.080%	1	3.58	$6.92	$25	$25		$6.92
Prairie Creek West Private (Large)	Private	11	8.13	8.13	5.3%	5.5%	0.181%	1	8.13	$6.92	$56	$56		$6.92
Prairie Creek West Private (Large)	Private	12	12.13	12.13	8.0%	8.2%	0.270%	1	12.13	$6.92	$84	$84		$6.92
Prairie Creek West Private (Large)	Private	13	13.68	13.68	9.0%	9.3%	0.304%	1	13.68	$6.92	$95	$95		$6.92
Prairie Creek West Private (Large)	Private	14	2.24	2.24	1.5%	1.5%	0.050%	1	2.24	$6.92	$15	$15		$6.92
Prairie Creek West Private (Large)	Private	15	3.48	3.48	2.3%	2.4%	0.077%	1	3.48	$6.92	$24	$24		$6.92
Prairie Creek West Private (Large)	Private	16	9.18	9.18	6.0%	6.2%	0.204%	1	9.18	$6.92	$64	$64		$6.92
Prairie Creek West Private (Large)	Private	17	9.30	9.30	6.1%	6.3%	0.207%	1	9.30	$6.92	$64	$64		$6.92
Prairie Creek West Private (Large)	Private	18	0.19	0.19	0.1%	0.1%	0.004%	1	0.19	$6.92	$1	$1		$6.92
Prairie Creek West Private (Large)	Private	19	9.35	9.35	6.1%	6.3%	0.208%	1	9.35	$6.92	$65	$65		$6.92
Prairie Creek West Private (Large)	Private	20	2.33	2.33	1.5%	1.6%	0.052%	1	2.33	$6.92	$16	$16		$6.92
Prairie Creek West Private (Large)	Private	21	0.52	0.52	0.3%	0.4%	0.012%	1	0.52	$6.92	$4	$4		$6.92
Prairie Creek West Private (Large)	Private-ROW	22	4.95	4.95	3.2%		0.110%	0	0.00	$0.00	$0	$0		$0.00
Shell Creek Delta	Private	1	46.81	46.81	100.0%	100.0%	1.041%	1	46.81	$7.00	$328	$328	$328	$7.00
Shell Creek Preserve	Public	1	70.22	70.22	19.1%	19.3%	1.562%	1	70.22	$6.75	$474	$474	$2,457	$6.75
Shell Creek Preserve	Public	2	31.34	31.34	8.5%	8.6%	0.697%	1	31.34	$6.75	$211	$211		$6.75
Shell Creek Preserve	Public	3	0.25	0.25	0.1%	0.1%	0.006%	1	0.25	$6.75	$2	$2		$6.75
Shell Creek Preserve	Public	4	98.70	98.70	26.9%	27.1%	2.195%	1	98.70	$6.75	$666	$666		$6.75
Shell Creek Preserve	Public	5	21.15	21.15	5.8%	5.8%	0.470%	1	21.15	$6.75	$143	$143		$6.75
Shell Creek Preserve	Public	6	24.47	24.47	6.7%	6.7%	0.544%	1	24.47	$6.75	$165	$165		$6.75
Shell Creek Preserve	Public	7	26.46	26.46	7.2%	7.3%	0.589%	1	26.46	$6.75	$179	$179		$6.75
Shell Creek Preserve	Public	8	26.71	26.71	7.3%	7.3%	0.594%	1	26.71	$6.75	$180	$180		$6.75
Shell Creek Preserve	Public	9	26.29	26.29	7.2%	7.2%	0.585%	1	26.29	$6.75	$177	$177		$6.75
Shell Creek Preserve	Public	10	28.89	28.89	7.9%	7.9%	0.643%	1	28.89	$6.75	$195	$195		$6.75
Shell Creek Preserve	Public	11	9.58	9.58	2.6%	2.6%	0.213%	1	9.58	$6.75	$65	$65		$6.75

								Remedial Measures							
Property Name	Ownership**	Property ID	Reserve Acres	Reserve Acres (Values)	% of PropGrp (weight)	% of PropGrp - noblanks (weight)	% of Total Reserve	Apply to property group	# acres	Unit Costs ($/acre)	Sub-Total Annual Cost	Total Annual Cost (Parcel)	Total Annual Cost (Reserve Group)	Annual Cost per Acre
Shell Creek Preserve	Public-ROW	12	2.82	2.82	0.8%		0.063%	0	0.00	$0.00	$0	$0		$0.00
Shell Creek West Private	Private	1	48.59	48.59	23.5%	23.5%	1.081%	1	48.59	$22.23	$1,080	$1,080	$4,589	$22.23
Shell Creek West Private	Private	2	9.58	9.58	4.6%	4.6%	0.213%	1	9.58	$22.23	$213	$213		$22.23
Shell Creek West Private	Private	3	7.95	7.95	3.9%	3.9%	0.177%	1	7.95	$22.23	$177	$177		$22.23
Shell Creek West Private	Private	4	5.81	5.81	2.8%	2.8%	0.129%	1	5.81	$22.23	$129	$129		$22.23
Shell Creek West Private	Private	5	6.33	6.33	3.1%	3.1%	0.141%	1	6.33	$22.23	$141	$141		$22.23
Shell Creek West Private	Private	6	6.25	6.25	3.0%	3.0%	0.139%	1	6.25	$22.23	$139	$139		$22.23
Shell Creek West Private	Private	7	6.51	6.51	3.2%	3.2%	0.145%	1	6.51	$22.23	$145	$145		$22.23
Shell Creek West Private	Private	8	4.56	4.56	2.2%	2.2%	0.101%	1	4.56	$22.23	$101	$101		$22.23
Shell Creek West Private	Private	9	70.15	70.15	34.0%	34.0%	1.560%	1	70.15	$22.23	$1,560	$1,560		$22.23
Shell Creek West Private	Private	10	33.02	33.02	16.0%	16.0%	0.734%	1	33.02	$22.23	$734	$734		$22.23
Shell Creek West Private	Private	11	7.68	7.68	3.7%	3.7%	0.171%	1	7.68	$22.23	$171	$171		$22.23
Shell Creek West Private	Private-ROW	12	0.05	0.05	0.0%		0.001%	0	0.00	$0.00	$0	$0		$0.00
Washington Loop Private	Private	1	4.83	4.83	3.2%	3.2%	0.108%	1	4.83	$7.15	$35	$35	$1,081	$7.15
Washington Loop Private	Private	2	2.33	2.33	1.5%	1.5%	0.052%	1	2.33	$7.15	$17	$17		$7.15
Washington Loop Private	Private	3	2.50	2.50	1.6%	1.6%	0.055%	1	2.50	$7.15	$18	$18		$7.15
Washington Loop Private	Private	4	2.51	2.51	1.7%	1.7%	0.056%	1	2.51	$7.15	$18	$18		$7.15
Washington Loop Private	Private	5	1.93	1.93	1.3%	1.3%	0.043%	1	1.93	$7.15	$14	$14		$7.15
Washington Loop Private	Private	6	2.35	2.35	1.6%	1.6%	0.052%	1	2.35	$7.15	$17	$17		$7.15
Washington Loop Private	Private	7	0.86	0.86	0.6%	0.6%	0.019%	1	0.86	$7.15	$6	$6		$7.15
Washington Loop Private	Private	8	2.40	2.40	1.6%	1.6%	0.053%	1	2.40	$7.15	$17	$17		$7.15
Washington Loop Private	Private	9	1.98	1.98	1.3%	1.3%	0.044%	1	1.98	$7.15	$14	$14		$7.15
Washington Loop Private	Private	10	2.27	2.27	1.5%	1.5%	0.051%	1	2.27	$7.15	$16	$16		$7.15
Washington Loop Private	Private	11	4.88	4.88	3.2%	3.2%	0.109%	1	4.88	$7.15	$35	$35		$7.15
Washington Loop Private	Private	12	2.35	2.35	1.6%	1.6%	0.052%	1	2.35	$7.15	$17	$17		$7.15
Washington Loop Private	Private	13	2.38	2.38	1.6%	1.6%	0.053%	1	2.38	$7.15	$17	$17		$7.15
Washington Loop Private	Private	14	1.52	1.52	1.0%	1.0%	0.034%	1	1.52	$7.15	$11	$11		$7.15
Washington Loop Private	Private	15	2.67	2.67	1.8%	1.8%	0.059%	1	2.67	$7.15	$19	$19		$7.15
Washington Loop Private	Private	16	1.18	1.18	0.8%	0.8%	0.026%	1	1.18	$7.15	$8	$8		$7.15
Washington Loop Private	Private	17	2.58	2.58	1.7%	1.7%	0.057%	1	2.58	$7.15	$18	$18		$7.15
Washington Loop Private	Private	18	2.44	2.44	1.6%	1.6%	0.054%	1	2.44	$7.15	$17	$17		$7.15
Washington Loop Private	Private	19	2.58	2.58	1.7%	1.7%	0.057%	1	2.58	$7.15	$18	$18		$7.15
Washington Loop Private	Private	20	4.05	4.05	2.7%	2.7%	0.090%	1	4.05	$7.15	$29	$29		$7.15
Washington Loop Private	Private	21	2.67	2.67	1.8%	1.8%	0.059%	1	2.67	$7.15	$19	$19		$7.15
Washington Loop Private	Private	22	3.12	3.12	2.1%	2.1%	0.069%	1	3.12	$7.15	$22	$22		$7.15
Washington Loop Private	Private	23	4.35	4.35	2.9%	2.9%	0.097%	1	4.35	$7.15	$31	$31		$7.15
Washington Loop Private	Private	24	2.67	2.67	1.8%	1.8%	0.059%	1	2.67	$7.15	$19	$19		$7.15
Washington Loop Private	Private	25	3.05	3.05	2.0%	2.0%	0.068%	1	3.05	$7.15	$22	$22		$7.15
Washington Loop Private	Private	26	2.60	2.60	1.7%	1.7%	0.058%	1	2.60	$7.15	$19	$19		$7.15
Washington Loop Private	Private	27	4.78	4.78	3.2%	3.2%	0.106%	1	4.78	$7.15	$34	$34		$7.15
Washington Loop Private	Private	28	2.89	2.89	1.9%	1.9%	0.064%	1	2.89	$7.15	$21	$21		$7.15
Washington Loop Private	Private	29	3.57	3.57	2.4%	2.4%	0.079%	1	3.57	$7.15	$26	$26		$7.15
Washington Loop Private	Private	30	2.79	2.79	1.8%	1.8%	0.062%	1	2.79	$7.15	$20	$20		$7.15
Washington Loop Private	Private	31	2.81	2.81	1.9%	1.9%	0.062%	1	2.81	$7.15	$20	$20		$7.15
Washington Loop Private	Private	32	2.42	2.42	1.6%	1.6%	0.054%	1	2.42	$7.15	$17	$17		$7.15
Washington Loop Private	Private	33	5.54	5.54	3.7%	3.7%	0.123%	1	5.54	$7.15	$40	$40		$7.15
Washington Loop Private	Private	34	2.79	2.79	1.8%	1.8%	0.062%	1	2.79	$7.15	$20	$20		$7.15
Washington Loop Private	Private	35	2.59	2.59	1.7%	1.7%	0.058%	1	2.59	$7.15	$18	$18		$7.15
Washington Loop Private	Private	36	2.44	2.44	1.6%	1.6%	0.054%	1	2.44	$7.15	$17	$17		$7.15
Washington Loop Private	Private	37	2.25	2.25	1.5%	1.5%	0.050%	1	2.25	$7.15	$16	$16		$7.15
Washington Loop Private	Private	38	2.55	2.55	1.7%	1.7%	0.057%	1	2.55	$7.15	$18	$18		$7.15
Washington Loop Private	Private	39	2.30	2.30	1.5%	1.5%	0.051%	1	2.30	$7.15	$16	$16		$7.15
Washington Loop Private	Private	40	3.51	3.51	2.3%	2.3%	0.078%	1	3.51	$7.15	$25	$25		$7.15
Washington Loop Private	Private	41	2.57	2.57	1.7%	1.7%	0.057%	1	2.57	$7.15	$18	$18		$7.15
Washington Loop Private	Private	42	8.25	8.25	5.5%	5.5%	0.183%	1	8.25	$7.15	$59	$59		$7.15
Washington Loop Private	Private	43	8.25	8.25	5.5%	5.5%	0.183%	1	8.25	$7.15	$59	$59		$7.15
Washington Loop Private	Private	44	0.07	0.07	0.0%	0.0%	0.002%	1	0.07	$7.15	$1	$1		$7.15
Washington Loop Private	Private	45	2.57	2.57	1.7%	1.7%	0.057%	1	2.57	$7.15	$18	$18		$7.15
Washington Loop Private	Private	46	2.14	2.14	1.4%	1.4%	0.048%	1	2.14	$7.15	$15	$15		$7.15
Washington Loop Private	Private	47	2.78	2.78	1.8%	1.8%	0.062%	1	2.78	$7.15	$20	$20		$7.15
Washington Loop Private	Private	48	0.67	0.67	0.4%	0.4%	0.015%	1	0.67	$7.15	$5	$5		$7.15
Washington Loop Private - Easement	Private	1	5.34	5.34	3.5%	3.5%	0.119%	1	5.34	$7.15	$38	$38		$7.15
Washington Loop Private - Easement	Private	2	2.44	2.44	1.6%	1.6%	0.054%	1	2.44	$7.15	$17	$17		$7.15
Washington Loop Private - Easement	Private	3	1.52	1.52	1.0%	1.0%	0.034%	1	1.52	$7.15	$11	$11		$7.15
Washington Loop Private - Easement	Private	4	2.39	2.39	1.6%	1.6%	0.053%	1	2.39	$7.15	$17	$17		$7.15
Washington Loop Private - Easement	Private-ROW	5	0.07	0.07	0.0%		0.001%	0	0.00	$0.00	$0	$0		$0.00
Amberjack Environmental Park	Public	--	102.00	102.00	100.0%	100.0%	2.269%	1	102.00	$6.91	$705	$705		$6.91
Rotunda Mitigation Area	Public	--	34.00	34.00	100.0%	100.0%	0.756%	1	34.00	$7.10	$242	$242		$7.10
Tippacanoe Environmental Park	Public	--	300.00	300.00	100.0%	100.0%	6.672%	1	300.00	$6.84	$2,053	$2,053		$6.84
Tippacanoe II Mitigation Area	Public	--	182.80	182.80	100.0%	100.0%	4.066%	1	182.80	$6.86	$1,255	$1,255		$6.86
San Casa Environmental Park	Public	--	66.90	66.90	100.0%	100.0%	1.488%	1	66.90	$6.96	$466	$466		$6.96
TOTAL	--	--	4,496.30	4,496.30	--	--	100.0%	300	4,411.4	$8.29	$36,562	$36,562	$31,842	$27.37
														$27.37
														$8.13
														$8.13

Charlotte County Scrub-Jay HCP - Economic Analysis

Plan Administration Costs (fixed costs & endowment) - Summary

Parameter	Total (Permit Term)	Annual Average (Permit Term)	Annual Average (Post Permit)
Management & Maintenance Costs	$1,950,000	$65,000	$65,000
Contingency	$195,000	$6,500	$6,500
Total Cost:	**$2,145,000**	**$71,500**	**$71,500**
Fee/acre (Development):	**$196.93**		
Annual cost/acre (Conservation):	--		

Charlotte County Scrub-Jay HCP - Economic Analysis	
Plan Administration Costs (fixed costs & endowment) - Worksheet	
Annual ADMIN Costs over permit period (Year 1-30)	*$65,000*
Annual ADMIN Costs post permit period (Year 30+)	*$65,000*
Annual ADMIN Costs - Startup (Year 0)	*$0*

Charlotte County Scrub-Jay HCP - Economic Analysis				
Habitat Development ("Take")				
Option #	**Fee Type**	**Value**	**Unit**	***Notes***
**	~~Regulated Area Lot - Development Fee (USFWS Review Area)~~	~~5,665.98~~	~~acres~~	~~*per GIS*~~
**	~~Regulated Area Lot - Development Fee (USFWS Review Area)~~	~~8,165.00~~	~~acres~~	~~*See e-mail from county (3-13-12)*~~
**	~~Take Area - Development Fee (Take Analysis)~~	~~3,056.00~~	~~acres~~	~~*See e-mail from county (2-27-12)*~~
~~1~~	~~Regulated Area Lot - Development Fee (USFWS Review Area)~~	~~5,746.62~~	~~acres~~	~~*Total acreage within USFWS Review Area on undeveloped lots, outside reserve; entire parcel*~~
2	Regulated Area Lot - Development Fee (Impact Area)		acres	*Impacted acreage within USFWS Review Area on undeveloped lots, outside reserve*
3	Regulated Area Lot - Development Fee (Entire Lot Acreage)		acres	*Total acreage of undeveloped lots within USFWS Review Area, outside reserve*
4	**Regulated Area Lot - Development Fee (Lot)**	**17,984**	**lots**	***Number of undeveloped lots within USFWS Review Area, outside reserve***
5	Historic Habitat - Development Fee (Undeveloped-Acreage)		acres	*Total acreage of undeveloped lots within historic habitat, outside reserve*
6	Historic Habitat - Development Fee (Undeveloped-Lots)		lots	*Total number of undeveloped lots within historic habitat, outside reserve*
7	Historic Habitat - Property Assessment (All Lots-Acreage)		acres	*Total acreage of all lots within historic habitat, outside reserve*
8	Historic Habitat - Property Assessment (All Lots-Lots)		lots	*Total number of lots within historic habitat, outside reserve*
9	Countywide Property Assessment (Acreage)		acres	*Total acreage in County, outside reserve*
10	Countywide Property Assessment (Lot)		lots	*Total number of lots in County, outside reserve*

Charlotte County Scrub-Jay HCP - Economic Analysis		
Habitat Development ("take" over time)		
Total number of residential lots projected for development (2010-2020)	11,675	
Total number of residential lots projected for development (2020-2030)	11,645	
Total number of residential lots projected for development (2030-2040)	10,485	
Total number of residential lots projected for development (permit term)	**33,805**	
Total number of undeveloped lots (USA)	108,255	*see EAR*
Total number of undeveloped RESIDENTIAL lots (USA)	102,124	*see EAR*
Proportion of development (residential lots) - over 30 years	**33.1%**	*applied to all lots*
Total number of SCRUBJAY lots	**17,984**	*assume all developed*

CHARLOTTE COUNTY HCP

Amount of Development ("Take") over Time

Land Use	Subject to "Take"	Total Lots Developed	*Acres Developed (Annual)*	Cumulative Total (Years)																													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	30+
Cumulative Total	--	17,984	*599.5*	599.5	1,198.9	1,798.4	2,397.9	2,997.3	3,596.8	4,196.3	4,795.7	5,395.2	5,994.7	6,594.1	7,193.6	7,793.1	8,392.5	8,992.0	9,591.5	10,190.9	10,790.4	11,389.9	11,989.3	12,588.8	13,188.3	13,787.7	14,387.2	14,986.7	15,586.1	16,185.6	16,785.1	17,384.5	17,984.0	17,984.0
% (Cumulative)	--	--	--	3.3%	6.7%	10.0%	13.3%	16.7%	20.0%	23.3%	26.7%	30.0%	33.3%	36.7%	40.0%	43.3%	46.7%	50.0%	53.3%	56.7%	60.0%	63.3%	66.7%	70.0%	73.3%	76.7%	80.0%	83.3%	86.7%	90.0%	93.3%	96.7%	100.0%	100.0%
Annual Total	--	--	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	599.5	0.0
% (Annual)	--	--	--	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	0.0%

Charlotte County Scrub-Jay HCP - Economic Analysis

Proposed Scrub-Jay Reserve ("Conservation")

Reserve Design Name	Values Sum of Parcel Acres Inside of Reserve Design	Sum of Parcel Acres Outside of Reserve Design	Sum of Full Parcel Acres
Biscayne Trust CE	**54.78**	**90.72**	**136.32**
Biscayne Trust Private	**20.59**	**0.79**	**20.12**
Burchers Tract CE	**310.64**	**351.58**	**661.90**
Deep Creek Public	**140.28**	**37.82**	**131.71**
Hathaway Park	**19.54**	**9.58**	**28.90**
Lee Branch Private	**138.29**	**0.00**	**138.29**
Prairie Creek Preserve	**1561.83**	**80.40**	**1638.44**
Prairie Creek Private	**640.71**	**5.63**	**646.66**
Prairie Creek West Private	**13.71**	**35.45**	**49.05**
Prairie Creek West Private (Large)	**138.72**	**199.79**	**333.59**
Shell Creek Delta	**46.81**	**56.87**	**103.68**
Shell Creek Preserve	**366.89**	**6.64**	**373.16**
Shell Creek West Private	**206.46**	**177.24**	**383.65**
Washington Loop Private	**139.58**	**1.73**	**142.82**
Washington Loop Private - Easement	**11.76**	**0.00**	**12.55**
Grand Total	**3810.60**	**1054.22**	**4800.86**
Amberjack Environmental Park	102.0	0.0	102.0
Rotunda Mitigation Area	34.0	0.0	34.0
Tippacanoe Environmental Park	300.0	0.0	300.0
Tippacanoe II Mitigation Area	182.8	0.0	182.8
San Casa Environmental Park	66.9	0.0	66.9
	4496.3		**5486.6**
Private	1336.04	**29.7%**	
Public	3160.26	**70.3%**	

CHARLOTTE COUNTY HCP

Amount of Land Acquired over Time

Property Name	Ownership*	Acres Preserved	Cumulative Total (Years)																														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	30+
Biscayne Trust CE	Public	136.32	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3	136.3
Biscayne Trust Private	Public	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
Burchers Tract CE	Public	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9	661.9
Deep Creek Public	Public	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7	131.7
Hathaway Park	Public	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9
Lee Branch Private	Private	138.3	6.9	13.8	20.7	27.7	34.6	41.5	48.4	55.3	62.2	69.1	72.6	76.1	79.5	83.0	86.4	89.9	93.3	96.8	100.3	103.7	107.2	110.6	114.1	117.5	121.0	124.5	127.9	131.4	134.8	138.3	138.3
Prairie Creek Preserve	Public	1638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4	1,638.4
Prairie Creek Private	Private	16.1	0.8	1.6	2.4	3.2	4.0	4.8	5.6	6.4	7.2	8.0	8.4	8.8	9.2	9.6	10.0	10.4	10.8	11.3	11.7	12.1	12.5	12.9	13.3	13.7	14.1	14.5	14.9	15.3	15.7	16.1	16.1
Prairie Creek Private	Private	630.6	31.5	63.1	94.6	126.1	157.6	189.2	220.7	252.2	283.8	315.3	331.1	346.8	362.6	378.4	394.1	409.9	425.6	441.4	457.2	472.9	488.7	504.5	520.2	536.0	551.8	567.5	583.3	599.1	614.8	630.6	630.6
Prairie Creek West Private	Private	49.1	2.5	4.9	7.4	9.8	12.3	14.7	17.2	19.6	22.1	24.5	25.8	27.0	28.2	29.4	30.7	31.9	33.1	34.3	35.6	36.8	38.0	39.2	40.5	41.7	42.9	44.1	45.4	46.6	47.8	49.1	49.1
Prairie Creek West Private (Large)	Private	333.6	16.7	33.4	50.0	66.7	83.4	100.1	116.8	133.4	150.1	166.8	175.1	183.5	191.8	200.2	208.5	216.8	225.2	233.5	241.9	250.2	258.5	266.9	275.2	283.6	291.9	300.2	308.6	316.9	325.2	333.6	333.6
Shell Creek Delta	Private	103.7	5.2	10.4	15.6	20.7	25.9	31.1	36.3	41.5	46.7	51.8	54.4	57.0	59.6	62.2	64.8	67.4	70.0	72.6	75.2	77.8	80.3	82.9	85.5	88.1	90.7	93.3	95.9	98.5	101.1	103.7	103.7
Shell Creek Preserve	Public	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2	373.2
Shell Creek West Private	Private	383.7	19.2	38.4	57.5	76.7	95.9	115.1	134.3	153.5	172.6	191.8	201.4	211.0	220.6	230.2	239.8	249.4	259.0	268.6	278.1	287.7	297.3	306.9	316.5	326.1	335.7	345.3	354.9	364.5	374.1	383.7	383.7
Washington Loop Private	Private	142.8	7.1	14.3	21.4	28.6	35.7	42.8	50.0	57.1	64.3	71.4	75.0	78.6	82.1	85.7	89.3	92.8	96.4	100.0	103.5	107.1	110.7	114.3	117.8	121.4	125.0	128.5	132.1	135.7	139.3	142.8	142.8
Washington Loop Private - Easement	Private	12.6	0.6	1.3	1.9	2.5	3.1	3.8	4.4	5.0	5.6	6.3	6.6	6.9	7.2	7.5	7.8	8.2	8.5	8.8	9.1	9.4	9.7	10.0	10.4	10.7	11.0	11.3	11.6	11.9	12.2	12.6	12.6
Amberjack Environmental Park	Public	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0
Rotunda Mitigation Area	Public	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
Tippacanoe Environmental Park	Public	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0
Tippacanoe II Mitigation Area	Public	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8
San Casa Environmental Park	Public	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9
Cumulative Total	--	**5,486.6**	3,766.8	3,857.3	3,947.8	4,038.3	4,128.8	4,219.3	4,309.9	4,400.4	4,490.9	4,581.4	4,626.7	4,671.9	4,717.2	4,762.4	4,807.7	4,853.0	4,898.2	4,943.5	4,988.7	5,034.0	5,079.2	5,124.5	5,169.8	5,215.0	5,260.3	5,305.5	5,350.8	5,396.0	5,441.3	5,486.6	5,486.6
Cumulative Total (Public-Out)	--	**3,676.3**	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3	3,676.3
Cumulative Total (Private-In)	--	**1,810.3**	90.5	181.0	271.5	362.1	452.6	543.1	633.6	724.1	814.6	905.1	950.4	995.7	1,040.9	1,086.2	1,131.4	1,176.7	1,222.0	1,267.2	1,312.5	1,357.7	1,403.0	1,448.2	1,493.5	1,538.8	1,584.0	1,629.3	1,674.5	1,719.8	1,765.0	1,810.3	1,810.3
% of Cumulative Managed Land (Private)																																	
Annual Total	--	--	3,766.8	90.5	90.5	90.5	90.5	90.5	90.5	90.5	90.5	90.5	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	0.0
Annual: % of Reserve Lands (ALL)	--	--	68.7%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.0%
Annual Total (Public)	--	--	3,676.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Annual: % Acquired Lands (Public)	--	--	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Annual Total (Private)	--	--	90.5	90.5	90.5	90.5	90.5	90.5	90.5	90.5	90.5	90.5	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3	0.0
Annual: % of Acquired Lands (Private)	--	--	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	0.0%

CHARLOTTE COUNTY HCP

Amount of Land Managed over Time

Property Name	Ownership*	Acres Managed	Cumulative Total (Years)																															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	30+
Biscayne Trust CE	Public	54.78	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8	54.8
Biscayne Trust Private	Public	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6
Burchers Tract CE	Public	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6	310.6
Deep Creek Public	Public	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3	140.3
Hathaway Park	Public	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
Lee Branch Private	Private	138.3	6.9	13.8	20.7	27.7	34.6	41.5	48.4	55.3	62.2	69.1	72.6	76.1	79.5	83.0	86.4	89.9	93.3	96.8	100.3	103.7	107.2	110.6	114.1	117.5	121.0	124.5	127.9	131.4	134.8	138.3	138.3
Prairie Creek Preserve	Public	1561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8	1,561.8
Prairie Creek Private - Easement	Private	15.5	0.8	1.5	2.3	3.1	3.9	4.6	5.4	6.2	7.0	7.7	8.1	8.5	8.9	9.3	9.7	10.1	10.5	10.8	11.2	11.6	12.0	12.4	12.8	13.2	13.6	13.9	14.3	14.7	15.1	15.5	15.5
Prairie Creek Private	Private	625.2	31.3	62.5	93.8	125.0	156.3	187.6	218.8	250.1	281.3	312.6	328.2	343.9	359.5	375.1	390.8	406.4	422.0	437.7	453.3	468.9	484.5	500.2	515.8	531.4	547.1	562.7	578.3	594.0	609.6	625.2	625.2
Prairie Creek West Private	Private	13.7	0.7	1.4	2.1	2.7	3.4	4.1	4.8	5.5	6.2	6.9	7.2	7.5	7.9	8.2	8.6	8.9	9.3	9.6	9.9	10.3	10.6	11.0	11.3	11.7	12.0	12.3	12.7	13.0	13.4	13.7	13.7
Prairie Creek West Private (Large)	Private	138.7	6.9	13.9	20.8	27.7	34.7	41.6	48.6	55.5	62.4	69.4	72.8	76.3	79.8	83.2	86.7	90.2	93.6	97.1	100.6	104.0	107.5	111.0	114.4	117.9	121.4	124.9	128.3	131.8	135.3	138.7	138.7
Shell Creek Delta	Private	46.8	2.3	4.7	7.0	9.4	11.7	14.0	16.4	18.7	21.1	23.4	24.6	25.7	26.9	28.1	29.3	30.4	31.6	32.8	33.9	35.1	36.3	37.4	38.6	39.8	41.0	42.1	43.3	44.5	45.6	46.8	46.8
Shell Creek Preserve	Public	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9	366.9
Shell Creek West Private	Private	206.5	10.3	20.6	31.0	41.3	51.6	61.9	72.3	82.6	92.9	103.2	108.4	113.6	118.7	123.9	129.0	134.2	139.4	144.5	149.7	154.8	160.0	165.2	170.3	175.5	180.7	185.8	191.0	196.1	201.3	206.5	206.5
Washington Loop Private	Private	139.6	7.0	14.0	20.9	27.9	34.9	41.9	48.9	55.8	62.8	69.8	73.3	76.8	80.3	83.7	87.2	90.7	94.2	97.7	101.2	104.7	108.2	111.7	115.1	118.6	122.1	125.6	129.1	132.6	136.1	139.6	139.6
Washington Loop Private - Easement	Private	11.8	0.6	1.2	1.8	2.4	2.9	3.5	4.1	4.7	5.3	5.9	6.2	6.5	6.8	7.1	7.4	7.6	7.9	8.2	8.5	8.8	9.1	9.4	9.7	10.0	10.3	10.6	10.9	11.2	11.5	11.8	11.8
Amberjack Environmental Park	Public	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0
Rotunda Mitigation Area	Public	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
Tippacanoe Environmental Park	Public	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0
Tippacanoe II Mitigation Area	Public	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8
San Casa Environmental Park	Public	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9	66.9
Cumulative Total (ALL)	--	**4,496.3**	**3,227.1**	**3,293.9**	**3,360.7**	**3,427.5**	**3,494.3**	**3,561.1**	**3,627.9**	**3,694.7**	**3,761.5**	**3,828.3**	**3,861.7**	**3,895.1**	**3,928.5**	**3,961.9**	**3,995.3**	**4,028.7**	**4,062.1**	**4,095.5**	**4,128.9**	**4,162.3**	**4,195.7**	**4,229.1**	**4,262.5**	**4,295.9**	**4,329.3**	**4,362.7**	**4,396.1**	**4,429.5**	**4,462.9**	**4,496.3**	**4,496.3**
Cumulative Total (Public-Out)	--	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**	**3,160.3**
Cumulative Total (Private-In)	--	**1,336.0**	**66.8**	**133.6**	**200.4**	**267.2**	**334.0**	**400.8**	**467.6**	**534.4**	**601.2**	**668.0**	**701.4**	**734.8**	**768.2**	**801.6**	**835.0**	**868.4**	**901.8**	**935.2**	**968.6**	**1,002.0**	**1,035.4**	**1,068.8**	**1,102.2**	**1,135.6**	**1,169.0**	**1,202.4**	**1,235.8**	**1,269.2**	**1,302.6**	**1,336.0**	**1,336.0**
% of Cumulative Managed Land (Private)	--	--	**0.3%**	**0.6%**	**0.8%**	**1.1%**	**1.4%**	**1.7%**	**1.9%**	**2.2%**	**2.5%**	**2.8%**	**2.9%**	**3.1%**	**3.2%**	**3.3%**	**3.5%**	**3.6%**	**3.8%**	**3.9%**	**4.0%**	**4.2%**	**4.3%**	**4.4%**	**4.6%**	**4.7%**	**4.9%**	**5.0%**	**5.1%**	**5.3%**	**5.4%**	**5.6%**	--
Annual Total	--	--	**3,227.1**	**66.8**	**66.8**	**66.8**	**66.8**	**66.8**	**66.8**	**66.8**	**66.8**	**66.8**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**0.0**
Annual: % of Reserve Lands (ALL)	--	--	**71.8%**	**1.5%**	**1.5%**	**1.5%**	**1.5%**	**1.5%**	**1.5%**	**1.5%**	**1.5%**	**1.5%**	**0.7%**	**0.7%**	**0.7%**	**0.7%**	**0.7%**	**0.7%**	**0.7%**	**0.7%**	**0.7%**	**0.7%**	**0.7%**	**0.7%**	**0.7%**	**0.7%**	**0.7%**	**0.7%**	**0.7%**	**0.7%**	**0.7%**	**0.7%**	**0.0%**
Annual Total (Public)	--	--	**3,160.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Annual: % of Acquired Lands (Public)	--	--	**100.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
Annual Total (Private)	--	--	**66.8**	**66.8**	**66.8**	**66.8**	**66.8**	**66.8**	**66.8**	**66.8**	**66.8**	**66.8**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**33.4**	**0.0**
Annual: % of Acquired Lands (Private)	--	--	**5.0%**	**5.0%**	**5.0%**	**5.0%**	**5.0%**	**5.0%**	**5.0%**	**5.0%**	**5.0%**	**5.0%**	**2.5%**	**2.5%**	**2.5%**	**2.5%**	**2.5%**	**2.5%**	**2.5%**	**2.5%**	**2.5%**	**2.5%**	**2.5%**	**2.5%**	**2.5%**	**2.5%**	**2.5%**	**2.5%**	**2.5%**	**2.5%**	**2.5%**	**2.5%**	**0.0%**

ALL Parcels affected by Reserve Design by Reserve Design Name, Account Number and Parcel Acreage			
Reserve Design Name	Values Sum of Parcel Acres Inside of Reserve Design	Sum of Parcel Acres Outside of Reserve Design	Sum of Full Parcel Acres
Biscayne Trust CE	**54.78**	**90.72**	**136.32**
Biscayne Trust Private	**20.59**	**0.79**	**20.12**
Burchers Tract CE	**310.64**	**351.58**	**661.90**
Deep Creek Public	**140.28**	**37.82**	**131.71**
Hathaway Park	**19.54**	**9.58**	**28.90**
Lee Branch Private	**138.29**	**0.00**	**138.29**
Prairie Creek Preserve	**1561.83**	**80.40**	**1638.44**
Prairie Creek Private	**640.71**	**5.63**	**646.66**
Prairie Creek West Private	**13.71**	**35.45**	**49.05**
Prairie Creek West Private (Large)	**138.72**	**199.79**	**333.59**
Shell Creek Delta	**46.81**	**56.87**	**103.68**
Shell Creek Preserve	**366.89**	**6.64**	**373.16**
Shell Creek West Private	**206.46**	**177.24**	**383.65**
Washington Loop Private	**139.58**	**1.73**	**142.82**
Washington Loop Private - Easement	**11.76**	**0.00**	**12.55**
Grand Total	**3810.60**	**1054.22**	**4800.86**
(blank)	84.9		
parcels	3725.7		
Additional Public Lands			
Amberjack Environmental Park	102.0	0.0	102.0
Rotunda Mitigation Area	34.0	0.0	34.0
Tippacanoe Environmental Park	300.0	0.0	300.0
Tippacanoe II Mitigation Area	182.8	0.0	182.8
San Casa Environmental Park	66.9	0.0	66.9

Reserve Design Properties (GIS)			
PropName	**Public**	**Metapop**	**Acres**
Biscayne Trust CE	CE	M7	**56.1**
Biscayne Trust Private	CE	M7	**19.2**
Burchers Tract CE	Yes	M7	**310.5**
Deep Creek Public	Yes	M7	**140.3**
Hathaway Park	Yes	M7	**19.5**
Lee Branch Private	No	M7	**138.3**
Prairie Creek Preserve	Yes	M7	**1561.8**
Prairie Creek West Private	No	M7	**13.7**
Prairie Creek West Private (Large)	No	M7	**138.7**
Shell Creek Delta	No	M7	**46.9**
Shell Creek Preserve	Yes	M7	**366.9**
Prairie Creek Private	No	M7	**5.1**
Prairie Creek Private	No	M7	**5.3**
Prairie Creek Private	No	M7	**15.5**
Prairie Creek Private	CE	M7	**10.4**
Prairie Creek Private	No	M7	**5.0**
Prairie Creek Private	No	M7	**5.2**
Prairie Creek Private	No	M7	**5.3**
Prairie Creek Private	No	M7	**19.9**
Prairie Creek Private	No	M7	**6.3**
Prairie Creek Private	No	M7	**10.2**
Prairie Creek Private	No	M7	**9.9**
Prairie Creek Private	No	M7	**10.2**
Prairie Creek Private	No	M7	**10.0**
Prairie Creek Private	No	M7	**5.1**
Prairie Creek Private	No	M7	**24.7**
Prairie Creek Private	No	M7	**5.5**
Prairie Creek Private	No	M7	**10.4**
Prairie Creek Private	No	M7	**15.6**
Prairie Creek Private	No	M7	**5.0**
Prairie Creek Private	No	M7	**5.2**
Prairie Creek Private	No	M7	**6.0**
Prairie Creek Private	No	M7	**10.3**
Prairie Creek Private	No	M7	**10.2**
Prairie Creek Private	No	M7	**10.0**
Prairie Creek Private	No	M7	**15.4**
Prairie Creek Private	No	M7	**5.0**
Prairie Creek Private	No	M7	**5.0**
Prairie Creek Private	No	M7	**5.0**
Prairie Creek Private	No	M7	**15.1**
Prairie Creek Private	No	M7	**9.7**
Prairie Creek Private	No	M7	**5.0**
Prairie Creek Private	No	M7	**5.0**
Prairie Creek Private	No	M7	**11.2**
Prairie Creek Private	No	M7	**5.0**
Prairie Creek Private	No	M7	**10.6**
Prairie Creek Private	No	M7	**20.4**
Prairie Creek Private	No	M7	**10.5**
Prairie Creek Private	No	M7	**15.1**
Prairie Creek Private	No	M7	**23.1**

PropName	Public	Metapop	Acres
Prairie Creek Private	No	M7	5.7
Prairie Creek Private	No	M7	21.4
Prairie Creek Private	No	M7	15.8
Prairie Creek Private	No	M7	13.6
Prairie Creek Private	No	M7	10.9
Prairie Creek Private	No	M7	6.2
Prairie Creek Private	No	M7	5.2
Prairie Creek Private	No	M7	6.4
Prairie Creek Private	No	M7	5.0
Prairie Creek Private	No	M7	5.2
Prairie Creek Private	No	M7	15.4
Prairie Creek Private	No	M7	5.1
Prairie Creek Private	No	M7	6.7
Prairie Creek Private	No	M7	17.6
Prairie Creek Private	No	M7	10.3
Prairie Creek Private	No	M7	4.9
Prairie Creek Private	CE	M7	5.1
Prairie Creek Private	No	M7	5.3
Prairie Creek Private	No	M7	16.7
Prairie Creek Private	No	M7	12.1
Prairie Creek Private	No	M7	15.0
Prairie Creek Private	No	M7	5.3
Prairie Creek Private	No	M7	8.7
Prairie Creek Private	No	M7	5.1
Prairie Creek Private	No	M7	5.1
Prairie Creek Private	No	M7	6.6
Prairie Creek Private	No	M7	6.8
Prairie Creek Private	No	M7	6.0
Shell Creek West Private	No	M7	136.0
Shell Creek West Private	No	M7	33.1
Shell Creek West Private	No	M7	37.4
Washington Loop Private	No	M7	10.8
Washington Loop Private	No	M7	0.7
Washington Loop Private	No	M7	6.1
Washington Loop Private	No	M7	19.5
Washington Loop Private	No	M7	12.6
Washington Loop Private	No	M7	15.2
Washington Loop Private	No	M7	4.8
Washington Loop Private	No	M7	14.2
Washington Loop Private	No	M7	7.6
Washington Loop Private	No	M7	3.9
Washington Loop Private	No	M7	23.6
Washington Loop Private	No	M7	16.5
Washington Loop Private	No	M7	4.4
Washington Loop Private - Easement	CE	M7	7.5
Washington Loop Private - Easement	CE	M7	4.1
		Total	*3810.6*
		Average	39.7
		In	*1336.2*
		In-Ave	*15.0*
		Out	*2474.4*
		Out-Ave	*353.5*

Charlotte County Scrub-Jay HCP - Economic Analysis

Alternative Funding Approaches: Summary

	1	2	3	4	5a	5b	6a	6b
	ad valorem	*ad valorem*	*ad valorem*	*w/ Prop Tax Reinstatement*	*per acre*	*per lot*	*per acre*	*per lot*
Funding Option:	**Property Tax**	**Property Tax (MSTU)**	**Property Tax (MSTU)**	**Property Tax (MSTU)**	**Assessment (MSBU)**	**Assessment (MSBU)**	**Assessment (MSBU)**	**Assessment (MSBU)**
Parameter:	**Countywide**	**Undeveloped in Habitat**	**All Properties in Habitat**	**Undeveloped in Habitat**	**Undeveloped in Habitat**	**Undeveloped in Habitat**	**All Properties in Habitat**	**All Properties in Habitat**
Taxable Value	$11,714,304,591	$73,571,947	$481,058,543	$147,143,894	--	--	--	--
Acres Affected	--	5,619	--	5,619	5,619	5,619	15,084	15,084
Lots Affected	--	17,984	--	17,984	17,984	17,984	21,027	21,027
Millage or Assessment	0.14	22.84	3.49	8.28	$299.07	$93.44	$111.41	$79.92
Time Period	30	30	30	30	30	30	30	30
Annual Revenue	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458	$1,680,458
Annual Cost (per $4,000 lot)	$0.57	$91.36	$13.97	$33.12	--	--	--	--
Annual Cost (per $100,000 home)	$14.35	--	$349.33	--	--	--	--	--
Annual Cost (per 0.25 acre lot)	--	--	--	--	$75	--	$28	--

Charlotte County Scrub-Jay HCP - Economic Analysis	
Alternative Funding Approaches	
COUNTYWIDE (Ad Valorem Tax): ALL PROPERTIES	
Funding Requirements	**$$$**
Required Funding: Total (Permit Period)	$38,373,596
Required Funding: Annual (Permit Period)	$1,279,120
Required Funding: Annual (Post-Permit)	$533,525
Required Funding: Endowment (Post-Permit)	$17,784,176
Required Funding: Permit + Endowment	$56,157,772
Total Amount to be Collected Annually	**$1,680,458**
Revenue/Funding Estimates	
Annual millage to cover permit & post-permit costs	**0.14**
Representative Home ($100,000)	$14.35

Charlotte County Scrub-Jay HCP - Economic Analysis	
Alternative Funding Approaches	
MSTU (Ad Valorem Tax): UNDEVELOPED IN HABITAT	
Funding Requirements	**$$$**
Required Funding: Total (Permit Period)	$38,373,596
Required Funding: Annual (Permit Period)	$1,279,120
Required Funding: Annual (Post-Permit)	$533,525
Required Funding: Endowment (Post-Permit)	$17,784,176
Required Funding: Permit + Endowment	$56,157,772
Total Amount to be Collected Annually	**$1,680,458**
Revenue/Funding Estimates	
Annual millage to cover permit & post-permit costs	**22.84**
Representative Lot ($4,000)	$91.36

Charlotte County Scrub-Jay HCP - Economic Analysis	
Alternative Funding Approaches	
MSTU (Ad Valorem Tax): ALL IN HABITAT	
Funding Requirements	**$$$**
Required Funding: Total (Permit Period)	$38,373,596
Required Funding: Annual (Permit Period)	$1,279,120
Required Funding: Annual (Post-Permit)	$533,525
Required Funding: Endowment (Post-Permit)	$17,784,176
Required Funding: Permit + Endowment	$56,157,772
Total Amount to be Collected Annually	**$1,680,458**
Revenue/Funding Estimates	
Annual millage to cover permit & post-permit costs	**3.49**
Representative Lot/House ($4,000/$100000)	$13.97

Charlotte County Scrub-Jay HCP - Economic Analysis	
Alternative Funding Approaches	
PROP TAX RE-INSTATEMENT (Ad Valorem Tax): UNDEVELOPED IN HABITAT	
Funding Requirements	**$$$**
Required Funding: Total (Permit Period)	$38,373,596
Required Funding: Annual (Permit Period)	$1,279,120
Required Funding: Annual (Post-Permit)	$533,525
Required Funding: Endowment (Post-Permit)	$17,784,176
Required Funding: Permit + Endowment	$56,157,772
Total Amount to be Collected Annually	**$1,680,458**
Revenue/Funding Estimates	
Reinstatement value	**$462,002**
Annual millage to cover permit & post-permit costs	**8.28**
Representative Lot/House ($4,000/$100000)	$33.12

Charlotte County Scrub-Jay HCP - Economic Analysis	
Alternative Funding Approaches	
MSBU (Assessment): UNDEVELOPED IN HABITAT (acres)	
Funding Requirements	**$$$**
Required Funding: Total (Permit Period)	$38,373,596
Required Funding: Annual (Permit Period)	$1,279,120
Required Funding: Annual (Post-Permit)	$533,525
Required Funding: Endowment (Post-Permit)	$17,784,176
Required Funding: Permit + Endowment	$56,157,772
Total Amount to be Collected Annually	**$1,680,458**
Revenue/Funding Estimates	
Annual assessment to cover permit & post-permit costs	**$299.07**
Representative Lot (0.25 acres)	$74.77

Charlotte County Scrub-Jay HCP - Economic Analysis	
Alternative Funding Approaches	
MSBU (Assessment): UNDEVELOPED IN HABITAT (lots)	
Funding Requirements	**$$$**
Required Funding: Total (Permit Period)	$38,373,596
Required Funding: Annual (Permit Period)	$1,279,120
Required Funding: Annual (Post-Permit)	$533,525
Required Funding: Endowment (Post-Permit)	$17,784,176
Required Funding: Permit + Endowment	$56,157,772
Total Amount to be Collected Annually	**$1,680,458**
Revenue/Funding Estimates	
Annual assessment to cover permit & post-permit costs	**$93.44**

Charlotte County Scrub-Jay HCP - Economic Analysis	
Alternative Funding Approaches	
MSBU (Assessment): ALL IN HABITAT (acres)	
Funding Requirements	**$$$**
Required Funding: Total (Permit Period)	$38,373,596
Required Funding: Annual (Permit Period)	$1,279,120
Required Funding: Annual (Post-Permit)	$533,525
Required Funding: Endowment (Post-Permit)	$17,784,176
Required Funding: Permit + Endowment	$56,157,772
Total Amount to be Collected Annually	**$1,680,458**
Revenue/Funding Estimates	
Annual assessment to cover permit & post-permit costs	**$111.41**
Representative Lot (0.25 acres)	$27.85

Charlotte County Scrub-Jay HCP - Economic Analysis	
Alternative Funding Approaches	
MSBU (Assessment): ALL IN HABITAT	
Funding Requirements	**$$$**
Required Funding: Total (Permit Period)	$38,373,596
Required Funding: Annual (Permit Period)	$1,279,120
Required Funding: Annual (Post-Permit)	$533,525
Required Funding: Endowment (Post-Permit)	$17,784,176
Required Funding: Permit + Endowment	$56,157,772
Total Amount to be Collected Annually	**$1,680,458**
Revenue/Funding Estimates	
Annual assessment to cover permit & post-permit costs	**$79.92**

Charlotte County Scrub-Jay HCP - Economic Analysis		
Alternative Funding Approaches		
ENVIRONMENTAL LANDS MILLAGE (Existing)	*** Not Sufficient*	
Funding Requirements	**$$$**	
Required Funding: Total (Permit Period)	$38,373,596	
Required Funding: Annual (Permit Period)	$1,279,120	
Required Funding: Annual (Post-Permit)	$533,525	
Required Funding: Endowment (Post-Permit)	$17,784,176	*end of 30 years*
Required Funding: Permit + Endowment	$56,157,772	*total (30 yr + endowment)*
Total Amount to be Collected Annually	**$1,680,458**	*years 1-30*
Revenue/Funding Estimates		
Revenue generation	**$585,715**	*all properties*
Annual millage	**0.050000**	*existing millage*
Representative Lot/House ($4,000/$100000)	$0.20	*annually*

Charlotte County Scrub-Jay HCP - Economic Analysis	
Alternative Funding Approaches	*** Not Sufficient*
PROP TAX RE-INSTATEMENT (Ad Valorem Tax) + ENV LAND MILLAGE (Ad Valorem Tax)	
Funding Requirements	**$$$**
Required Funding: Total (Permit Period)	$38,373,596
Required Funding: Annual (Permit Period)	$1,279,120
Required Funding: Annual (Post-Permit)	$533,525
Required Funding: Endowment (Post-Permit)	$17,784,176
Required Funding: Permit + Endowment	$56,157,772
Total Amount to be Collected Annually	**$1,680,458**
Revenue/Funding Estimates	
Reinstatement value	**$462,002**
Revenue generation (millage)	**$585,715**
Representative Lot/House ($4,000/$100000)	--

Charlotte County Scrub-Jay HCP - Economic Analysis	
Alternative Funding Approaches	
PROP TAX RE-INSTATEMENT (Ad Valorem Tax) + ENV LAND MILLAGE (Tax) + NEW MILLAGE (Tax)	
Funding Requirements	**$$$**
Required Funding: Total (Permit Period)	$38,373,596
Required Funding: Annual (Permit Period)	$1,279,120
Required Funding: Annual (Post-Permit)	$533,525
Required Funding: Endowment (Post-Permit)	$17,784,176
Required Funding: Permit + Endowment	$56,157,772
Total Amount to be Collected Annually	**$1,680,458**
Revenue/Funding Estimates	
Reinstatement value	**$462,002**
Revenue generation (millage)	**$585,715**
Annual millage to cover permit & post-permit costs	**4.30**
Representative Lot/House ($4,000/$100000)	--

Charlotte County Scrub-Jay HCP - Economic Analysis		
Alternative Funding Approaches		
PROP TAX RE-INSTATEMENT (Ad Valorem Tax) + FEE		
Funding Requirements	**$$$**	
Required Funding: Total (Permit Period)	$38,373,596	
Required Funding: Annual (Permit Period)	$1,279,120	
Required Funding: Annual (Post-Permit)	$533,525	
Required Funding: Endowment (Post-Permit)	$17,784,176	*end of 30 years*
Required Funding: Permit + Endowment	$56,157,772	*total (30 yr + endowment)*
Total Amount to be Collected Annually	**$1,680,458**	*years 1-30*
Revenue/Funding Estimates		
Reinstatement value	**$462,002**	*all undeveloped properties*
Fixed Fee/Lot (All)	**$2,033**	*fixed fee*
Representative Lot/House ($4,000/$100000)	--	*annually*

Charlotte County Scrub-Jay HCP - Economic Analysis	
Alternative Funding Approaches	
PROP TAX RE-INSTATEMENT (Ad Valorem Tax) + ENV LAND MILLAGE (Tax) + FEE	
Funding Requirements	**$$$**
Required Funding: Total (Permit Period)	$38,373,596
Required Funding: Annual (Permit Period)	$1,279,120
Required Funding: Annual (Post-Permit)	$533,525
Required Funding: Endowment (Post-Permit)	$17,784,176
Required Funding: Permit + Endowment	$56,157,772
Total Amount to be Collected Annually	**$1,680,458**
Revenue/Funding Estimates	
Reinstatement value	**$462,002**
Revenue generation (millage)	**$585,715**
Fixed Fee/Lot (All)	**$1,056**
Representative Lot/House ($4,000/$100000)	--