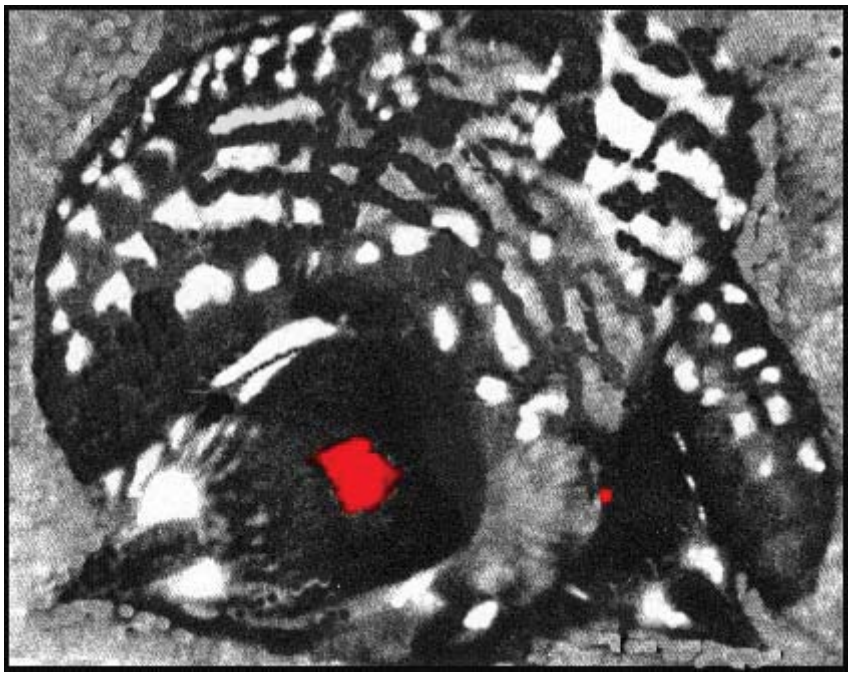
Attachment D

Red-Cockaded Woodpecker Management Plan

THE CURTIS H. STANTON ENERGY CENTER, RED-COCKADED WOODPECKERS HABITAT MANAGEMENT PLAN



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EXECUTIVE SUMMARY

The red-cockaded woodpecker (*Picoides borealis*), a state listed species of special concern and federally listed endangered species, was first observed on the proposed Curtis H. Stanton Energy Center (SEC site) in 1980. During the early 1980s, nine occupied clusters (roosting habitat) were found on the SEC site while 16 occupied clusters occurred in other areas north of the Bee Line Expressway. Presently, there are 13 occupied clusters remaining north of the Bee Line Expressway plus 10 other occupied clusters located on the TM-Ranch about 4 miles southeast of the SEC site. Six occupied clusters currently remain on the SEC site.

Orlando Utilities Commission (OUC) prepared and implemented a red-cockaded woodpecker management plan and monitoring program in 1981 to improve the chances of long-term survival of the species on the SEC site. The 1981 plan plus updates in the 1993 plan, consisted of both a regular prescribed burning program and monitoring activities studying red-cockaded woodpecker habitat use and demographics (DeLotelle and Guthrie and Black & Veatch, 1993 and DeLotelle and Epting 2000). In 1993 as part of the mitigation program for Unit II construction, the original 1981 Red-cockaded Woodpecker Management Plan was revised to incorporate new developments in management strategies for the mesic longleaf pine ecosystem (Black & Veatch and DeLotelle and Guthrie, Inc., 1992). The 1993 management plan contained most elements of the 1981 plan with additional plans for wetland restoration and planting of cypress trees (*Taxodium distichum*) in selected areas. Longleaf pine (*Pinus palustris*) was planted in selected upland areas for future foraging habitat. The revised monitoring plan of 1993 called for evaluating red-cockaded woodpecker survival, fledging success, and other demographic factors.

The following mitigation and enhancement plan is proposed to offset losses in mitigation areas from the gas pipeline installation in the southern utilities corridor and from the removal of planted pine along the northern transmission line corridor between the substation and Pope Road. OUC will be implementing additional measures above the practices outlined the 1981 and 1993 reports to aid in increasing the number of red-cockaded woodpecker clusters on the SEC site and ultimately to enhance the viability of the Orange County red-cockaded population. These actions include a cluster creation

project, exotic species removal, and bird translocation. Cluster creation will consist of constructing three artificial clusters each with four artificial cavities plus augmentation in each of six occupied clusters as needed. The artificial clusters will be developed in historic cluster sites and will have enhanced habitats after the removal of nuisance plants and mid-story shrubs. If natural dispersal is unsuccessful, bird translocations will be performed.

1.0 INTRODUCTION

As part of the Conditions of Unit I Site Certification Agreement (SCA), specifically conditions XXXI, Orlando Utilities Commission (OUC), Florida Municipal Power Agency (FMPA), and Kissimmee Utility Authority (KUA), agreed to manage approximately 2,000 acres of the Curtis H. Stanton Energy Center (SEC) for the benefit of the on-site, red-cockaded woodpeckers (*Picoides borealis*). These conditions were carried forward as a condition for the construction of Unit II. OUC prepared and implemented a management plan and monitoring program in 1981 and updated it in 1993, namely The Red-cockaded Woodpecker Management Plan, to improve the chances of long-term survival of the species on the SEC site (OUC, 1981 and 1993 update). In addition, OUC funded planting programs; as detailed in The Joint Agency Mitigation and Monitoring Plan (JAMMP), which were designed to mitigate wetland and upland impacts associated with the construction of the Unit II transmission line and alternate access road.

Since the development of these plans, advances have been made in the knowledge of on-site and regional red-cockaded woodpecker populations as a result of studies primarily supported by OUC. Other knowledge gained about the species requirements have led to changes in some management practices, e.g., the Red-cockaded Woodpecker (*Picoides borealis)* Recovery Plan: Second Edition, 2003. Accordingly, the 1981 and 1993 Red-cockaded Woodpecker Management Plan will be revised to reflect these new management practices.

This following update reflects recent changes in red-cockaded woodpecker management strategies and addresses the mitigation requirements of the Unit 2 Conditions of Certification (COC) as provided in the JAMMP. This plan will also detail compensation measures for the loss of the mitigation pine planting areas of longleaf pine both in the certified north/south, associated, facilities corridor and under the transmission line between the substation and Pope Road. These actions include:

(1) a statement of the habitat function and description provided for the managed area;

(2) a schedule of fire management utilizing a Florida State Certified Burn Specialist, that includes a description of burn conditions, burn frequency, and measures taken to avoid the spread of wildfire;

(3) measures to eradicate exotic vegetation from both wetlands and uplands;

(4) other enhancement activities such as ground cover enhancement, artificial cavity augmentation, and bird translocations; and

(5) persons and/or the company responsible for the management plan.

1.1 Overall Project History

Certification studies commencing in 1980 for the SEC site included the evaluation of endangered and threatened wildlife species. Several endangered and threatened wildlife species including the red-cockaded woodpecker occurred on-site and in surrounding habitats. During the initial field surveys, nine occupied clusters were observed on-site with an additional 16 occupied clusters located off-site in the northern area of the Big Econlockhatchee Basin (Big Econ). Prior to the initial SCA in 1982, red-cockaded woodpeckers were not known to occur in the area. In response to discussions with the Florida Fish and Wildlife Conservation Commission (FFWCC, formerly Florida Game and Fresh Water Fish Commission [FGFWFC]) and the U. S. Fish and Wildlife Service (FWS), a management plan and long-term monitoring program for red-cockaded woodpeckers were developed as part of the informal review for SEC I (DeLotelle and Newman 1981). Because of mitigation actions and new developments in management strategies for the mesic longleaf pine ecosystem, the original 1981 Red-cockaded Woodpecker Management Plan was revised in 1993 during the certification process for SEC II. On-site groups were studied continuously as part of the monitoring program with additional groups in surrounding areas studied during the certification process for SEC I & II and for other projects in the Big Econ basin.

1.2 Unit I History

OUC initiated discussions with the FGFWFC and FWS in 1980 to develop mitigation and management options that minimized impacts of Unit I construction on red-cockaded woodpeckers. OUC made major siting changes during the site design phase including both the 1) relocation of the make-up water supply pond and solid waste disposal area and 2) a complete rotation of the entire power block and associated facilities from a north to south orientation to an east-west alignment. These mitigation procedures were implemented to avoid cavity trees and to protect the higher quality pine habitat. Such actions resulted in increased cost; but, less impact on the red-cockaded woodpecker habitat.

In addition, the 1981 Red-cockaded Woodpecker Management Plan was developed in consultation with the FGFWFC and FWS as part of the Unit I SCA for the Florida Department of Environmental Regulation (FDER). The objectives of the 1981 management plan were to:

(1) identify the distribution and abundance of red-cockaded woodpeckers in the area;

(2) map and determine the status of existing clusters and cavity trees on-site as well as in the surrounding areas;

(3) map potential cluster sites and foraging habitats on-site;

(4) develop a fire management schedule for the mesic longleaf pine flatwoods ecosystem in the undeveloped portions of the site; and

(5) propose a long-term monitoring plan for the site's red-cockaded woodpeckers.

As stipulated in Condition XXXI for the Certification of Unit I, the Red-cockaded Woodpecker Management Plan will be implemented for the life of the facility on about 2,000 acres of longleaf pine flatwoods. The life of the SEC site can be expected to extend well into this century. Approximately, 1100 acres of the site was dedicated to power plant related activities, including additional Units II, III, and IV.

1.3 Unit II Project Description

Unit II at the SEC site involved the construction of an additional coal-fired, steam electric generating unit and associated facilities. Unit II required nine acres of previously cleared and graded land located immediately north of the SEC Unit I facility. Unit II also included a 14-mile long, 230 kV transmission line and a two-mile long, alternate access road. Both the transmission line and alternate access road were located in the certified north/south associated facilities corridor. The selected route was chosen specifically to have as little impact as possible on both upland and wetland communities. The transmission line runs south from the on-site substation, parallels the northern, eastern and southern side of the make-up water supply pond, extends south across a cleared area, and then proceeds southeasterly along the railroad spur within the certified associated facilities corridor. The alternate access road parallels the eastern side of the existing railroad from the southern edge of the power block near the coal handling facility to the Bee Line Expressway, about 2 miles to the south.

The alternate access road was constructed first and had minor impacts on red-cockaded woodpecker habitat (DeLotelle and Guthrie, Inc and Black & Veatch, 1993). Together, the transmission line and alternate access road impacted about 80 longleaf pine trees in red-cockaded woodpecker territories on the SEC site; however, none of the impacts were to cavity trees.

As a result of anticipated impacts from Unit II construction to uplands and wetlands, the JAMMP was developed to enhance wetland and upland areas in the managed area on the SEC site (Black and Veatch and DeLotelle and Guthrie, Inc., 1992). The plan called for extensive planting of longleaf pine in upland habitats, planting of slash pine (*P.elliotii*) in the associated facilities corridor, and planting of pond cypress (*Taxodium distichum*) in wetlands. Longleaf pines were to be planted in selected areas to promote flight corridors for passage across cleared transmission line/railroad corridors. Ditch filling, contouring, and other restoration efforts restored the historical hydroperiods of several wetland systems. Several dirt roads were maintained to improve access to the mitigation sites. These mitigation access roads were selected so as not to impact mitigation sites, cavity trees, or the flatwoods ecosystem and ran along existing woods roads. Monitoring of the mitigation activities specified in the JAMMP was performed annually by OUC.

1.4 Unit II Impacts and Further Habitat Loss

Mitigation lands for Unit II construction included planting areas for longleaf pine and pond cypress, as well as ditch plugging areas for wetland enhancement on the SEC site. Mitigation for red-cockaded woodpeckers in the form of pine tree planting occurred in several areas, including strips along the transmission line corridor to the north and the access corridor south of the main facility at the SEC site (Figure 1). These tree-planting areas were created to provide pine habitat for crossing the access corridor by red-cockaded woodpeckers and other wildlife. Several of these pine tree-planting areas were removed during the construction of a permitted gas pipeline along the southern access corridor and (see Figures 2 and 4) all planted pine trees under the transmission line in the northern corridor were removed or are planned for removal. In the north corridor, the planted trees had grown to a height where OUC viewed the failure of the transmission line as imminent and had OUC maintenance department remove, on an emergency basis, several patches of planted trees that were the greatest threat. OUC determined that all planted pines along the northern corridor are potential hazards to the transmission lines and are to be removed. These areas were planted as a result of mitigation for loss of natural pine habitat from the construction activities for Unit II. The following update and enhancement activities are proposed to offset losses in mitigation areas from the existing and pending removal of planted pine in both the gas pipeline and the northern transmission line corridors.

1.5 Land Management Perspective

During the early-to-late 1900's the SEC site was managed for cattle, timber, and hunting. During this period, the local landowners or lessees conducted winter prescribed burns, including the years of 1980 and 1982. OUC's fire management schedule for the SEC site was implemented after construction of Unit I and included control burns over the entire site continuing through 2004. Six controlled burns have been conducted during this monitoring period by OUC. Since the property was purchased by OUC, other activities in most of the management area have generally been restricted; thus, good conditions have been maintained for continued development of the longleaf pine ecosystem and enhancement of red-cockaded woodpecker habitat.

Although still a problem during fire activities, saw palmetto (*Serenoa repens*) seems to be less abundant and the wiregrass community more extensive than during pre-construction monitoring. As a result of the fire management practices, several good recruitment classes have occurred since 1982 and longleaf pine regeneration in the managed area is greater than prior to 1984. Many former sparsely treed areas now include a well established, younger-age class of longleaf pine. Other areas on-site still have a much-reduced density of longleaf pine from historical timber management practices. Habitat conditions on the SEC site appear to be similar to other non-disturbed portions of the Big Econ basin (Brown et al., 1989); however, the site includes a much greater percentage of older aged longleaf pine than most of the surrounding areas. The TM-Ranch, about eight miles to the southeast, is the obvious exception and includes many old longleaf pines and consequently a red-cockaded woodpecker population similar to the SEC site.

In addition to habitat management, numerous monitoring studies have been conducted on the SEC site since 1980. To date, the following studies have been conducted:

(1) reproductive studies, annually 1980-2004;
(2) area wide population monitoring studies in addition to the above in 1981, 1983, 1986, 1988, and 1995-2004;
(3) home range, habitat evaluation and use, and territory size studies in 1981-84 and 1986-87;
(4) population turnover studies, annually from 1980-2004; and
(5) cavity tree use studies, annually 1980-2004.
(6) population status in areas north of the Beeline Expressway was determined through 2004.

FIGURE 1. Location of Red-cockaded Woodpecker Clusters in East Orange County, OUC, Orlando, Florida, 2005

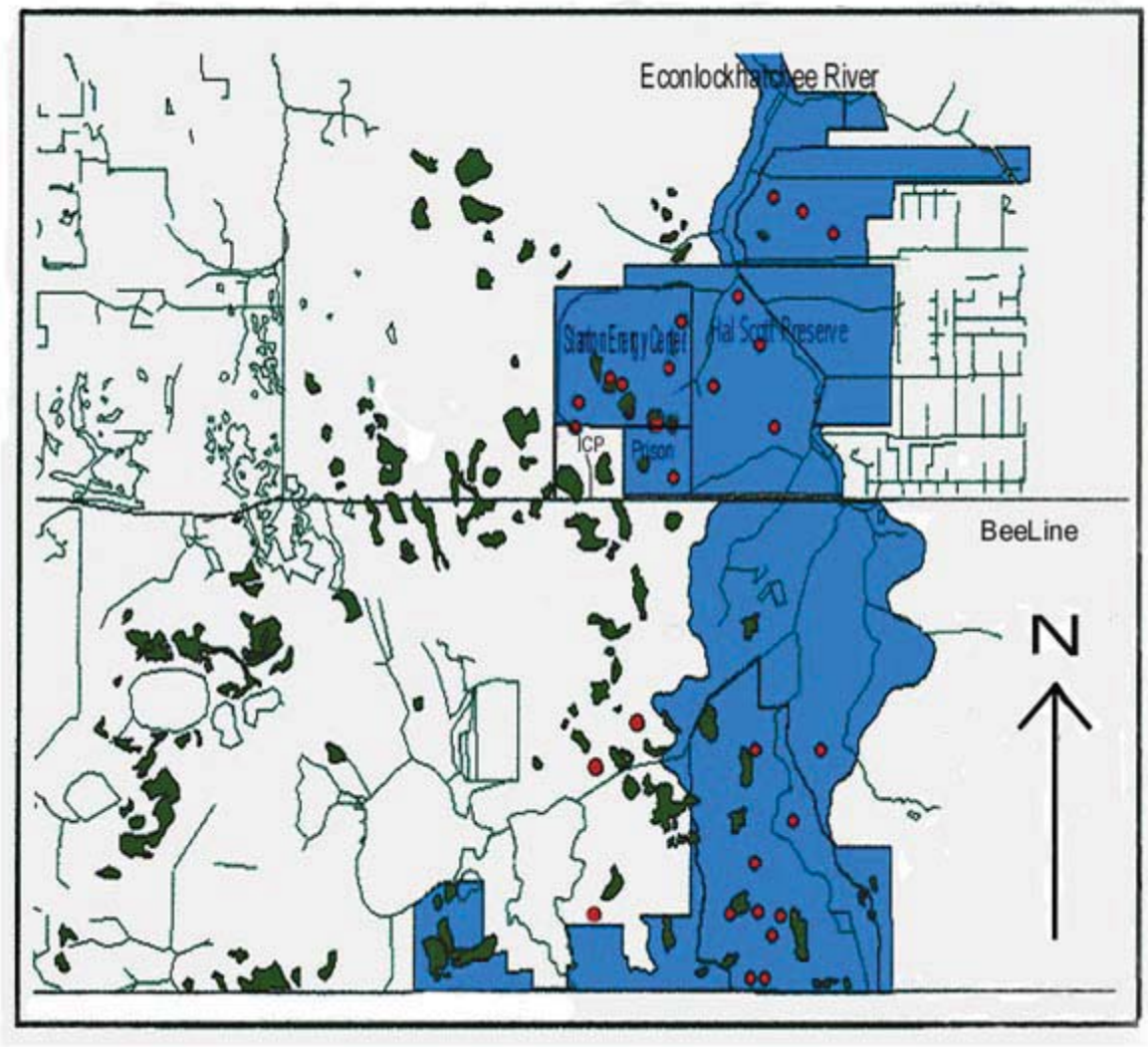
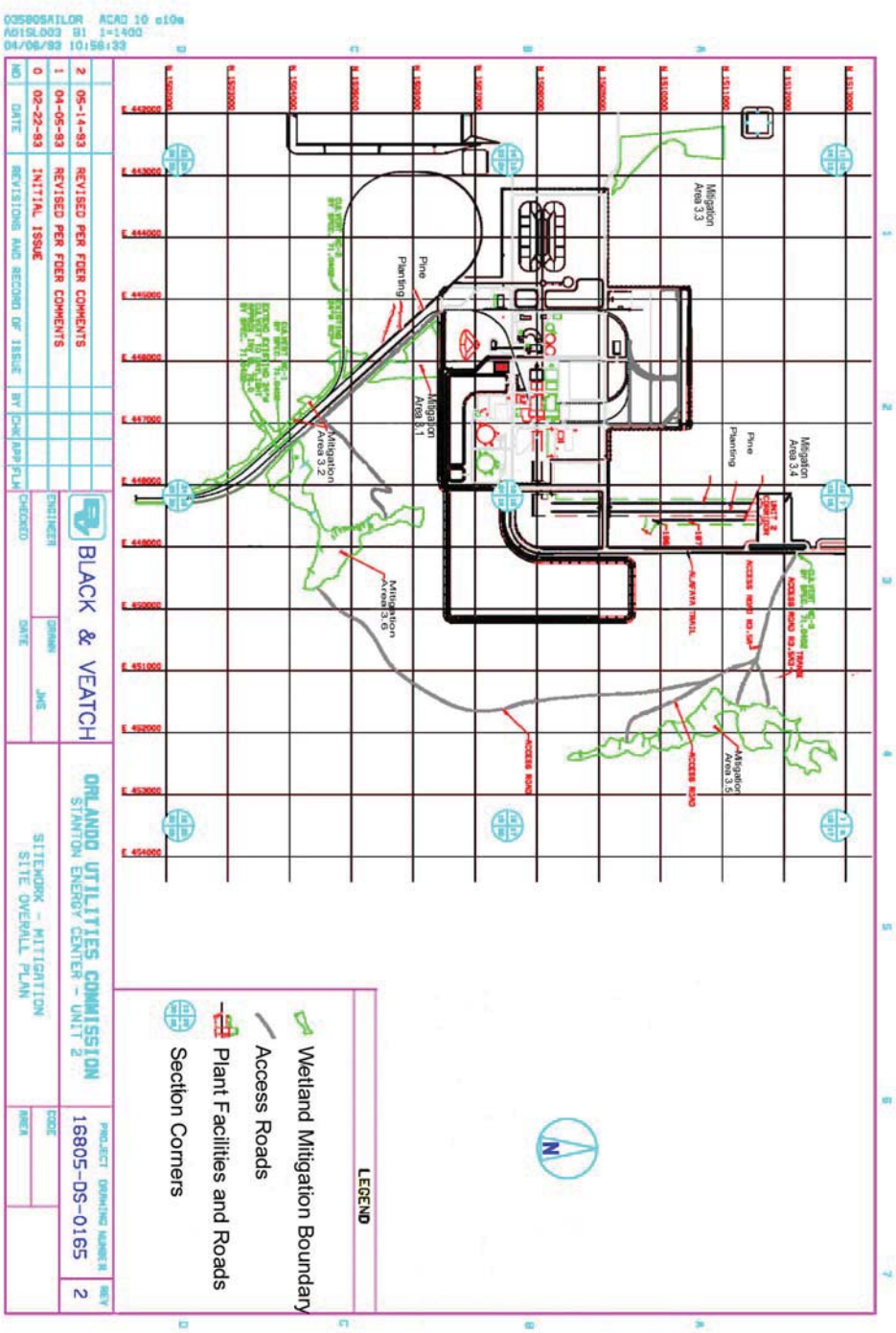


Figure 2. Location of Mitigation Areas and Pine Tree Planting Areas for Unit II Construction, SEC, OUC, Orlando, Florida, 2005



Data from these studies have contributed substantially to the knowledge of the biology and habitat requirements of the red-cockaded woodpecker. The findings and published literature from these studies have been used for development strategies on other projects in the area and by the FWS in the producing habitat protection guidelines for the red-cockaded woodpecker in the southeast United States and central Florida (See Red-cockaded Woodpecker Recovery Plan, 2003).

2.0 HABITAT AND POPULATION STATUS

The primary goal of the management and enhancement plan as described in Sections 3.0 and 4.0 of this report is to maintain and improve conditions capable of supporting red-cockaded woodpeckers on the SEC site. The following section describes the habitat within the red-cockaded woodpecker management area and provides a broad overview of the current population status on the SEC site in relation to the total red-cockaded woodpecker population in the area.

2.1 Habitat

Habitat within the red-cockaded woodpecker management area on the SEC site consists of mesic longleaf pine flatwoods, cypress domes and strands, bayheads, wet prairies and xeric oak scrub. Mesic longleaf pine flatwoods occur throughout north and central Florida southward to near Lake Okeechobee. Uplands within the management area have an overstory dominated by longleaf pine. The overstory in the wetter habitats often includes pond pine (*P. serotina*) and a few slash pines in scattered areas. The shrub layer in the flatwoods consists of saw palmetto, stagger bush (*Lyonia fruticosa*), fetterbush (*L.lucida*) and gallberry (*Ilex glabra*). The open pine canopy allows the development of a rich savannah-like ground cover of herbaceous species (Myers and Ewel, 1990) including wiregrass species (*Aristida stricta* and *A. spiciformis*), beakrush (*Rhynchospora fascicularis*), and bluestem (*Andropogon virginicus*) (DeLotelle and Guthrie 2000).

Longleaf pine density is generally low within the management area, averaging about 10,051 stems per territory (Table 1). Nesting home ranges contain a mean of 4,237 pine stems, with a mean diameter-at-breast-height (dbh) of 9 inches. Pine stands in territories average 50 stems/acre with a weighted mean age of 55 years. The average pine basal area per territory is 2,961 square feet, which includes about 3,401 stems with a minimal 9-inch, dbh. Tree heights reach up to 50 feet with those over 90 years-of-age averaging 38.4 feet. The most abundant age class (30-40 years) averages 31.5 feet in height. Although the data has been partially updated since 1980, no complete sampling of pine stand densities and age profiles has been conducted recently.

TABLE1. Population and Habitat Characteristics for Eleven Groups of Red-cockaded Woodpeckers on the 2,000-acre management area at the SEC site, Florida, 2005

Group ID	Group Size*	Mean Reproduction All Years	Mean Reproduction 2000-2004	N =Years	Pine Basal Area (FT^2)	Total Pine Stems**	Territory Size (Acres)
+A	2	1.33	0.00	3	3,551	14,709	383
+B	2	1.00	0.00	1	3,131	13,547	363
++C	3	0.80	0.00	4	2,195	8,818	251
++D	3	1.00	0.00	5	2,593	8,733	261
C/D	3	0.95	2.00	19	3,195	8,366	236
E	3	0.92	2.25	24	4,333	13,490	299
F	2	1.00	1.25	24	3,177	10,418	255
G	2	1.00	1.00	24	2,673	6,452	215
H	3	1.00	1.00	24	2,465	6,317	234
+I	3	1.30	0.00	9	3,778	10,961	239
#X	2	0.93	0.25	19	2,163	10,237	398
On-Site Average	2.55	1.02	1.38	14.3	3,023	10,211	285
Off-Site 13Groups	2.44	1.11	1.34	6.1 45 Group Years	-	-	-

* *Predominant group size during the breeding season for the study period.*
** *Includes all pine stems more than three inches in diameter at breast height in each territory.*
\+ *Territories were abandoned prior to the end of the study period.*
++ *Territories and groups combined during 1986.*
\# *Territory abandoned in 1981 and occupied again in 1986.*

2.2 Study Area

The OUC site is approximately 3,280 acres and is located 8.5 miles southeast of Orlando, Florida in the Floridian section of the Atlantic Coastal Plain. Approximately 1100 acres are dedicated to power generation and associated facilities while the remaining 2000 acres are set-aside for the RCW management area. Situated in eastern Orange County, the site is in the Big Econ Basin between the Little and Big Econ Rivers and south of U.S. Highway 50. The Big Econ Basin is approximately 950 square miles. The Big Econ flows from south to north and water quality is good while that of the Little Econ is poor (Brown *et al*. 1989). Surface drainage of the SEC site flows easterly toward the Big Econ via the Hart and Cowpen Branches and an unnamed tributary (Figure 3). These are head water streams to the Big Econ and have had portions of their drainage impacted by pre-SEC construction of swells, ditches, and fire lanes to promote more rapid drainage and to control both wild and prescription fires. Uplands

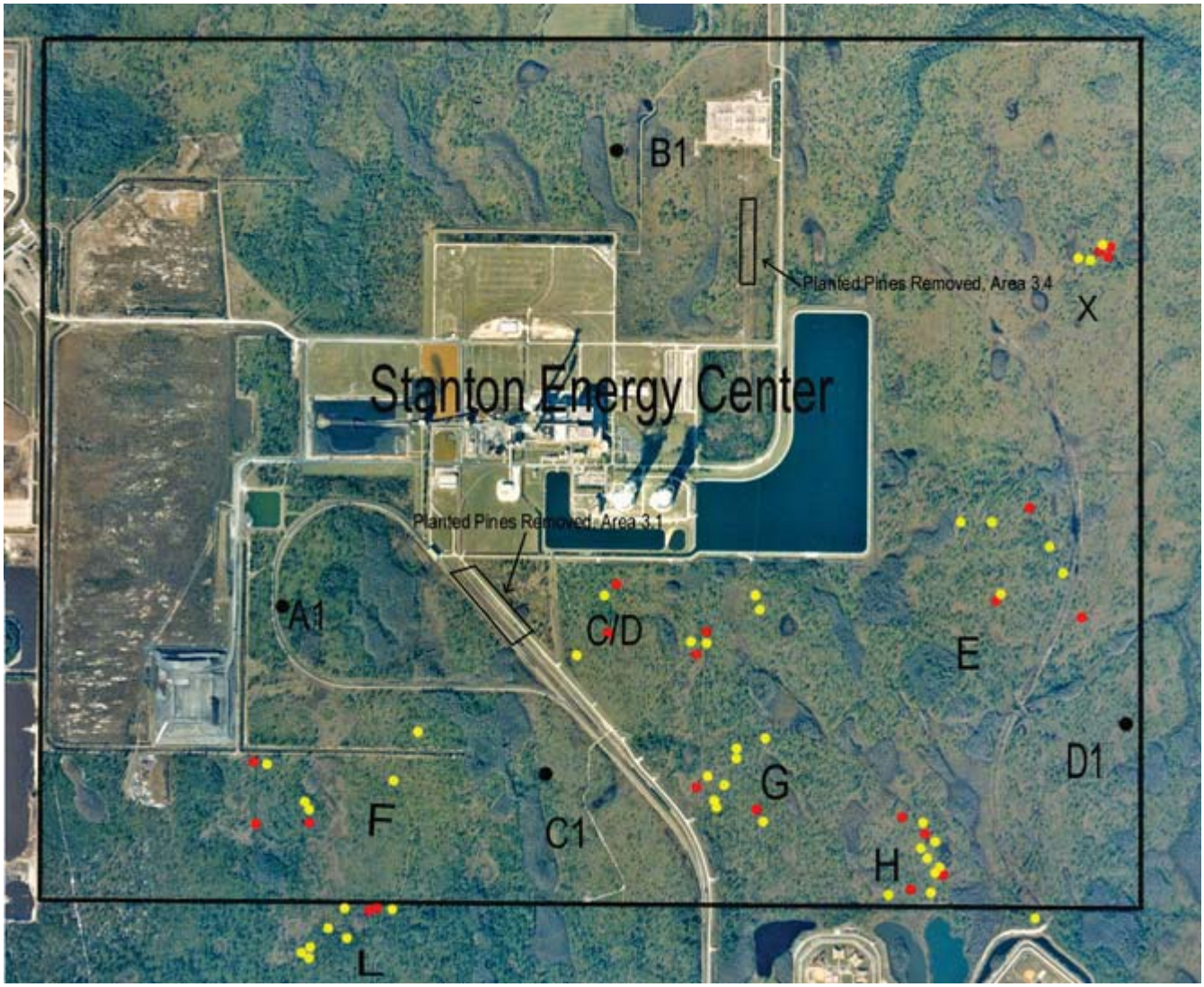
account for about 87 % and wetlands (Figure 4) about 13% of the 2000-acre red-cockaded woodpecker management area on the SEC site.

The 2000-acre management area on the SEC site occurs in the mesic longleaf pine flatwoods within the Big Econ Basin. Most central Florida flatwoods have lower pine densities than north Florida flatwoods (Shapiro 1983, DeLotelle *et al*. 1983, Bowman *et al*. 1997, Myers and Ewel 1990). Because of the flat topography and the underlying organic hardpan, these central Florida flatwoods often have standing water during most of the wet season. Numerous shallow depressions that retain much of the rainfall during the summer months are present. These interconnected depressions, aligned in a north-south direction provide natural drainage for the Basin during the wet season, although they are usually dry during the spring and fall. Hydroperiods of these depressions are sufficient to have allowed cypress (*Taxodium distichum var. nutans*) forests and wet prairie vegetation to develop. Scrubby flatwoods also occur in the Basin on slightly elevated ridges. These interspersed mesic longleaf pine and scrubby flatwoods along with scrub-oak communities are found in a southeasterly direction along an unnamed sand ridge from just past Yeehaw Junction down to within several miles of Fort Drum, Florida.

The over-story of these flatwoods consists almost entirely of longleaf pine. Many age classes are represented in the Econ Basin with several trees greater than 170 years of age. A few pond and slash pines occur near wetlands. The shrub layer includes saw palmetto, stagger bush, fetterbush, and gallberry. The open pine canopy promotes the development of a rich savannah-like ground cover of herbaceous species (Myers and Ewel, 1990) including wiregrass, lopsided Indian grass (*Sorghastrum secundum*), beakrush, and bluestem. The scrubby flatwoods includes a shrub layer of myrtle oak (*Quercus myrtifolia*), sand live oak (*Q. geminata*), and tarflower (*Befaria racemosa*) while the ground cover contains many of the same species as the pine flatwoods.

Figure 3. Aerial Photograph Showing Waterways on the SEC and Surrounding Areas, OUC, Orlando, Florida, 2005.

Figure 4. Aerial Photograph Showing Cluster and Artificial Cluster Locations and Major Vegetation types on the SEC and Surrounding Areas, OUC, Orlando, Florida, 2005.



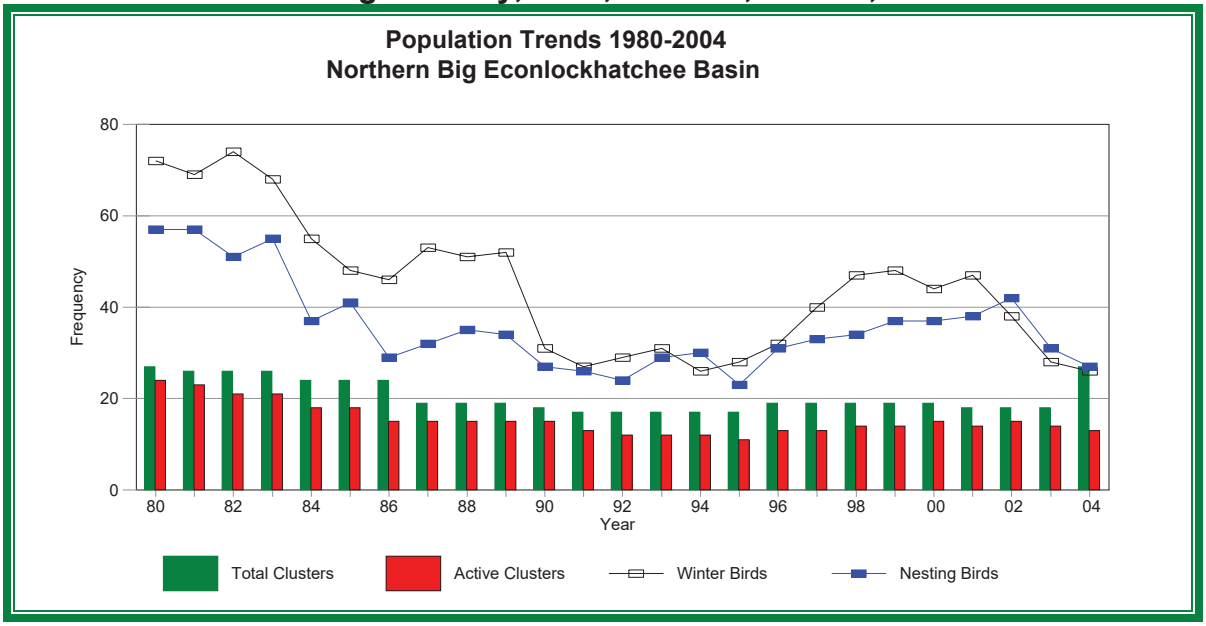
These central Florida flatwoods were historically used for timber, turpentine production, and cattle grazing (Myers and Ewel 1991). These activities had a profound and lasting affect on this ecosystem, mainly as a result of the alteration of natural fire regimes and removal of pine seed sources. Fires were set in the fall and winter to stimulate growth of herbaceous plants for the cattle. This fire schedule, used until the development of the SEC site and purchases of the Hal Scott Preserve by the St. Johns River Water Management District and Orange County, affected pine recruitment in two ways. First, fall and winter burns often destroyed the pine seeds before they germinated or killed the young seedlings prior to development of their fire-resistant grass stage. Second, pine seeds require bare soil to germinate; however, the fall and winter fires cleared the herbaceous ground cover when pines were not dropping seeds. These alterations apparently caused some areas to experience slow pine regeneration. One upland area in the northwest section of the SEC site has had little pine recruitment since 1969 and has maintained a very low pine density; however, this may be due to other agricultural and industrial activities on the site. In other sections, densities in unlogged areas ranged up to about 500 trees per acre near riparian areas with density generally reduced away from wetlands and in logged areas. Prior to power plant construction, winter burns were set during 2-to-3 year intervals for range management purposes.

2.3 Population Status

The core population north of the Bee Line Expressway, which includes the red-cockaded woodpeckers on the SEC site, declined from 25 occupied clusters in 1980 to 11 by 1995, increased to 15 by 2000, and declined to 13 occupied clusters by 2004 (Figure 5). On the SEC site only three clusters were abandoned during this period; a reduction from nine occupied clusters in 1980 to six occupied clusters in 1993. Of the eight clusters north of the Bee Line Expressway that were abandoned, five were clear-cut or the foraging habitat was eliminated, and three were abandoned. Three of the most recent abandonment's apparently resulted from demographic factors, namely low reproduction and high adult turnover. Excluding the recent addition of artificial clusters on the Hal Scott Preserve, the ratio of occupied to abandoned clusters in the entire core population north of the Beeline Expressway has declined from 92% in 1980 to 72% by 2004.

The number of red-cockaded woodpecker groups in the northern Basin (Figure 4) declined (54.4%) from the early 1980s through the mid-1990s, increased in the late 1990s, but has declined precipitously since 2001 (Figure 5). The midwinter population including adults, fledglings, floaters, and helpers, declined by 64% from 1982-1991, increased during the late 1990s, but likewise declined during the early 2000s. Territories in these down years primarily contained mostly the resident breeders. Reductions in the number of breeding groups occurred during most of these down years: in the mid-1980s, the early 1990s, and the early 2000s.

Figure 5. Population Trends in the Red-cockaded Woodpecker Population in Eastern Orange County, OUC, Orlando, Florida, 2005

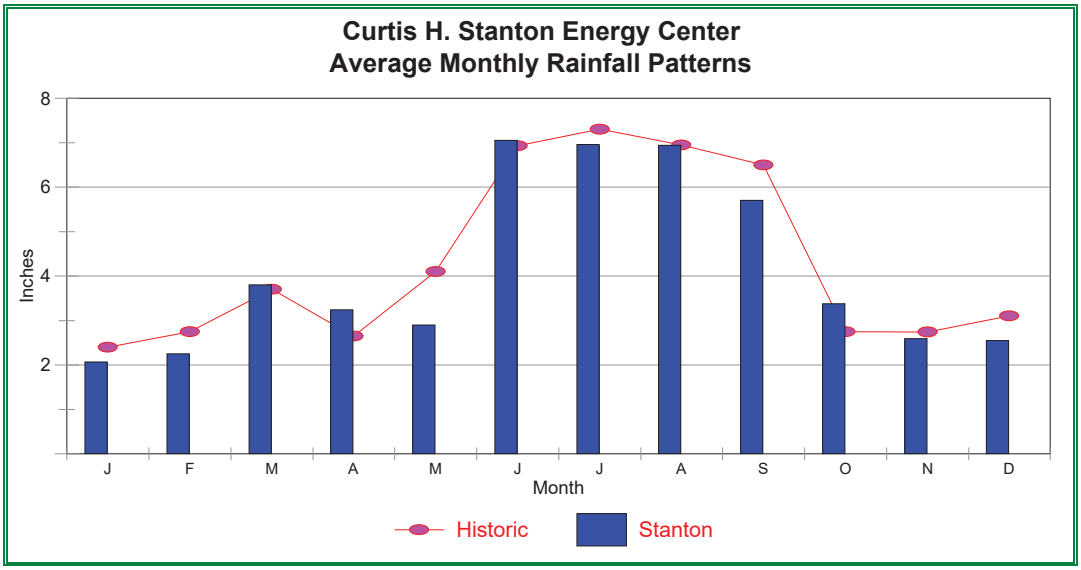


2.4 Weather

Central Florida has a humid, subtropical climate with an average rainfall of 51.2 inches per year. The interior, mid-peninsula of Florida often has more dry periods than north, south, or coastal areas (Jordan 1984). Yearly rainfall on the SEC site varied (range 37.4 to 64.5 inches per year) over the last 21 years averaging slightly less (50.03 inches) than the long-term yearly average. Ten of the 21 years were above the long-term average while 11 years were below historic averages. Slightly drier conditions (47.9 inches per year) existed from 1979 to 1990 while slightly wetter conditions

prevailed after 1990 (53.9 inches per year). Extremely dry years occurred in 1990 and 1993, and very wet years occurred in 1994 and 1997. More than half the annual rainfall (27.2 inches for the historic average and 27.0 inches for the SEC site) fell during the rainy season from June through September (Figure 6). Drought conditions often occurred during the early spring months (January through May, 14.5 inches of rain). Reviewing historic averages reveals the month of May was the most deficient in rainfall with April and October having the greatest surplus (Figure 6).

Figure 6. Summary of Average Monthly Rainfall on the SEC and Surrounding Areas, OUC, Orlando, Florida, 2005.



3.0 MANAGEMENT PRACTICES AND IMPLEMENTATION

3.1 Introduction

For the red-cockaded woodpeckers, restoration of good quality habitat is vital to the recovery of the species. Loss of habitat was primary among the original causes of decline. Generally, optimum habitat conditions for red-cockaded woodpeckers occur in open woodlands, which in the pine flatwoods of Central Florida equates to longleaf pine flatwoods/wire grass communities. The longleaf pine ecosystem is famous for its highly diverse groundcovers. In fact, this fire-dependent habitat contains nearly one quarter of all the plant species in North America. As the vegetation approaches the climax stage, the hardwood encroachment eventually results in the abandonment of clusters and population decline or extirpation. The longleaf pine ecosystem is a fire sub-climax stage maintained by regular fire intervals; frequent burning, regardless of the season, is paramount for continued maintenance of this community. Early to mid-growing season burning is optimum as it 1) promotes wiregrass, herbaceous flowering and seeding, and longleaf pine recruitment; 2) tends to decrease the abundance of hardwoods and shrub mid-story; and 3) has less damage to the herbaceous layer and soils than mechanical clearing. Late growing season (Oct. to Nov.) fire may have detrimental impacts on over-story pines and is not as effective in reducing mid-story rootstock or promoting native groundcovers as the early to mid-growing season burns. In fact, some research suggests that late dormant season (mid-Nov. to Jan.) burns may be more effective than late growing season burns in reducing hardwoods and restoring herbaceous groundcovers. When considering the establishment of the longleaf-wiregrass sere, it should be noted that as fuel loads accumulate, the intensity of the fire increases and optimum burning times are shifted towards the winter where cooler air temperatures and steadier weather patterns prevail thereby providing maximum fire control and minimal longleaf pine mortality.

This revision of the management procedures for the SEC site red-cockaded woodpecker management area is similar to the 1981 and 1993 management plans in that it focuses on protecting existing clusters and provides acceptable foraging areas within red-cockaded woodpecker habitats. The major activity necessary to promote a healthy red-cockaded woodpecker population is a burning program that maintains a vegetative structure of low grasses and herbaceous layer, little midstory, and a canopy

of longleaf pine. Exotic vegetation such as cogon grass (*Imperata cylindrica*) needs direct intervention for removal using herbicidal control. A species-specific control method will be developed to deal with the elimination of cogon grass and a report provided at the end of the second year of treatment. Patches with taller growth of saw palmetto will be controlled by mechanical means in selected areas and by a shortened burn rotation interval. A pine stand and habitat map will be developed based on aerial and field reconnaissance as described below. Following this assessment, an evaluation will be conducted every five years to assess all described habitat conditions and exotic species control. A yearly report on the red-cockaded woodpecker population and a five-year report will be provided to the agencies.

The habitat enhancement plan will be accomplished by implementing the following:

(1) a burning program with a goal of maintaining a sub-climax stage of vegetation consisting of a wiregrass and herbaceous understory, a diminished shrub midstory, and an open canopy of longleaf pine;

(2) an exotic species control program that consists of determining the distribution of the exotic encroachments and the ensuing eradication of the exotics by the application of applicable herbicide treatments; and

(3) a saw palmetto control program consisting of the roller chopping or mowing of areas with excessive growth of saw palmetto.

3.2 Timber Management Goals

Timber management practices described in the 1981 plan and the planting program, described in the JAMMP have allowed pine stem density to increase in many portions of the management area; however, some areas still have low stem counts. Pine regeneration via natural recruitment should substantially increase during the next 20 to 30 years.

The 2003 USFWS Red-cockaded Woodpecker Recovery Plan (p. 188) describes optimum habitat as having the following longleaf pine densities: 1) longleaf pine greater than or equal to 14” dbh should have a minimum of 20 ft^2/acre, 2) longleaf pine greater than or equal to 10” dbh and less than 14” dbh should have a maximum of 40 ft^2/acre,

and 3) longleaf pine less than 10” dbh should have a maximum of 10 ft^2/acre with less than 20 stems/acre. The burning program as detailed in this document, is intended to establish and maintain these densities for the longleaf pine-wiregrass community. Timber surveys will be performed on a 5-year period to assess the longleaf pine/wiregrass densities and determine the effectiveness of the burning program.

Criteria that are more applicable to central Florida are under review and development to reflect conditions of the region (Costa and DeLotelle, unpublished analysis). To meet central Florida standards or achieve the minimum managed stability criteria and manage toward the desired future conditions for red-cockaded woodpecker habitat within the property, i.e., central Florida habitats, management activities will be undertaken as follows.

(1) For the home range habitat, provide each group of red-cockaded woodpeckers a minimum of 3,000 ft^2 of pine basal area (BA), counting only those pine stands in suitable habitat that, for this standard only, have each of the following characteristics:

a) at least 2,000 ft^2 of BA in trees 9 in dbh or larger;

b) at least 1,000 ft^2 of BA in trees larger than four and less than nine inches dbh; and

c) open recruitment stands of pine. Dense stands of recruitment pine will be reduced should they become a problem; however, it is expected that the frequent burning program will naturally provide adequate thinning of small dbh pine.

(2) Provide a minimum of 75 acres of foraging habitat. This minimum requires at least 40 ft^2 of BA/acre to achieve a total of 3,000 ft^2 of BA; however, if the BA per acre is less than 40 ft^2, additional acreage/territory (foraging partition) will be required to achieve 3,000 ft^2 total BA with the caveat that no more than 300 acres/red-cockaded woodpecker group may be designated as foraging habitat.

(3) Pine stands that are suitable for foraging habitat must have all of the following characteristics:

a) longleaf pine with 2,000 ft^2 BA for trees with an 9 inch minimum dbh, i.e., at least 30 years old; however, up to 1,000 ft^2 of BA of the total stand may be in trees 4 to less than 9 inches dbh (20-29 years old).
b) an average pine BA of all 4-inch dbh and larger trees between 40 and 70 ft^2. Currently, stand BA in some areas of the south-central Florida Recovery Unit average less than 40 square feet of BA/acre in 4 to 9 dbh pines; with some as low as 10 ft^2 BA/acre. These low BA conditions are primarily a result of poor recruitment, i.e., few good seed crops and inadequate (frequency and season) prescribed burning programs. Even in good conditions, control fires may jump into the crown, which results in higher tree mortality than desired. During the past 15 years, several recruitment classes have become established, and sites with adequate prescribed burning stand BA are increasing throughout the region.
c) no hardwood midstory or if a hardwood midstory is present it is sparse and less than 7 feet in height: the midstory will be controlled by fire or mechanical means.
d) after the larger dbh class trees reach the optimum habitat levels as defined in the 2003 USFWS RCW Recovery Plan (p. 188), total stand BA above 100 ft^2/acre will be reduced to a minimum 70 ft^2/acre by the thinning of trees primarily with a dbh of 9 inches or less.
e) foraging habitat stands will be within 0.50 miles of the cluster center and preferably within 0.25 miles. Foraging habitat stands cannot be separated from one another by more than 200 feet of non-foraging habitat, e.g., rights-of-way, clear-cut or forest stands less than 30 years of age, hardwood dominated stands, agricultural fields, etc.
f) frequent prescribed burning of foraging habitat during the growing season will be applied. The development and protection of a herbaceous groundcover will facilitate the prescribed burning and will greatly benefit the red-cockaded woodpeckers.

The habitat characteristics that have been described, support a large meta-population of red-cockaded woodpeckers in the Big Econ Basin and additional isolated

populations throughout the central Florida area (DeLotelle *et al.* in press and Bowman *et al.* 1997). Research to date supports the designation of foraging habitat that will result in stable or increasing populations, as described above. The SEC site would be a further test of the applicability of these guidelines to expand existing populations with intensive cluster management. The RCW Recovery Plan stresses the importance of adequate stand structure. Pine stands cannot be considered suitable as foraging habitat unless they have an "open" character. A pine stand that is 20 years in age with open structure will qualify as suitable foraging habitat. If such a stand has not been prescribed burned or otherwise treated to control the hardwood mid-story and has not been thinned to a basal area of 70 ft^2/acre or less, it will not satisfy the "open" condition criterion. At present, dense stands of young pine and pine/hardwood do not occur on-site and thus are not an issue of concern. Stand quality, as measured by an open structure, is a critical factor in determining the suitability and use of foraging habitat.

The desired future condition for red-cockaded woodpeckers foraging habitat stands is for the 3,000 ft^2 BA to be composed of 9-inch dbh tree and larger. Management activities should be implemented to achieve this goal. Most sites will be capable of growing trees this size, at least at moderate stand densities, e. g., 30-60 ft^2 BA /acre. In addition to the longleaf pine stands, foraging studies indicate that cypress domes constitute an important habitat for on-site red-cockaded woodpeckers. Prior to the construction of Unit I at the SEC site, wildfires sporadically resulted in extensive burning in the cypress domes. These hot fires made some cypress domes unsuitable as foraging sites for extended periods; however, now that a controlled fire program is in effect and natural site drainage has been restored in selected areas, the detrimental effects of the hot cypress dome burning have been reduced. Measures to restore natural site drainage in selected areas were described in the 1993 JAMMP and are now complete.

This revised management plan is expected to provide conditions favorable to maintaining a mesic longleaf pine ecosystem and thereby provide optimum habitat conditions for the red-cockaded woodpeckers as well as other wildlife that is characteristic of this habitat type.

3.3 Red-cockaded Woodpecker Management Area

The Red-cockaded Woodpecker Management Area consists of approximately 2,000 acres of undeveloped lands on the SEC site. The management area is defined, as stipulated in the SEC Unit II Conditions of Certification, as all lands depicted on Figure 4.2 of the August 1981 Red-cockaded Woodpecker Management Plan, except for the area specifically identified as "construction impact of proposed Units I, II, III, and IV. Figure 7 of this plan is identical to Figure 4.2 of the August 1981 Red-cockaded Woodpecker Management Plan. The roads shown in Figure 7 will be maintained for dry and wet season travel along with the access road to the Hall Scott Preserve on the east side and the weather station on the south end of the SEC site. These roads are necessary for access and fire control.

The Red-cockaded Woodpecker Management Area will continue to be managed for the benefit of the red-cockaded woodpecker, in accordance with Condition XXXI of the SCA granted to OUC by the FDER Sitting Board on December 14, 1982. If additional uses of the management area are required for the operation of the power plant, these uses will be approved in accordance with the procedures identified in the Florida Power Plant Siting Act and by the FWS prior to their implementation.

3.4 Management Objectives

OUC will implement the management activities described in Section 3.2 to achieve the following objectives:

(1) prohibit unnecessary disturbances in areas managed for red-cockaded woodpeckers;

(2) protect all existing, both occupied and abandoned, and new cavity trees;

(3) protect clusters, including surrounding trees, to ensure future replacement cavity trees and to serve as a buffer zone to disturbances;

(4) ensure that each occupied cluster has at least four suitable roost cavities;

(5) where necessary, protect each nest cavity from climbing predators;

(6) provide for future clusters in the remaining forest stands through appropriate timber management

(7) maintain or improve foraging habitat through appropriate timber management and a controlled fire program;

(8) provide contiguous habitat between clusters and foraging habitat with habitat breaks no larger than presently exist;

(9) conduct a regular, prescribed burning program;

(10) maintain the perimeter firebreak system to control prescribed burns and to prevent the spread of wildfire;

(11) establish an exotic weed control program for the elimination of cogon grass, other exotic plant species, and possible future contamination by other exotic species;

(12) allow all previously disturbed areas (those associated with pre-construction activities) not scheduled for tree planting within the management area to reseed naturally with pine;

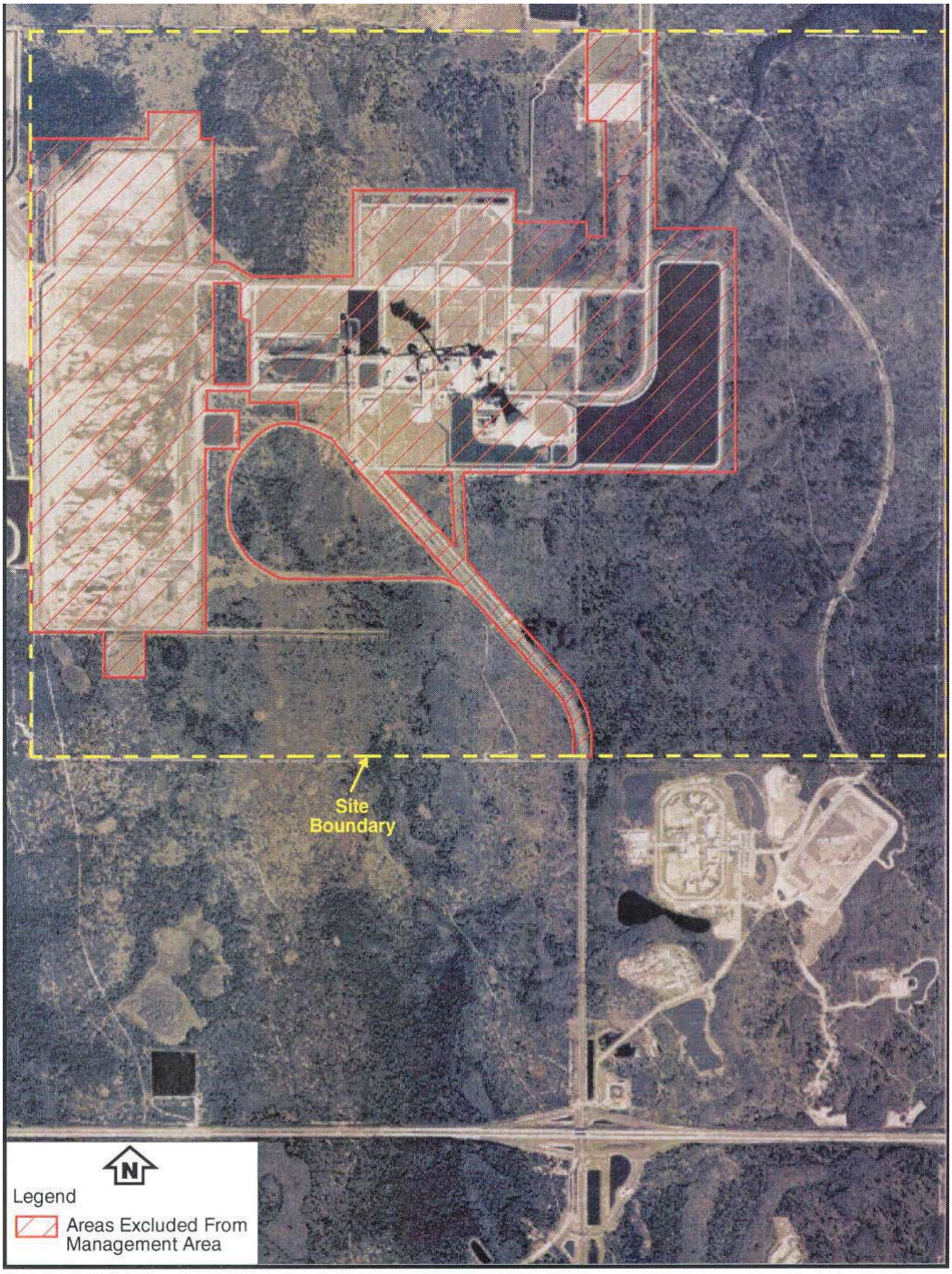
(13) conduct on-site monitoring of red-cockaded woodpecker survivorship, population status, and fledgling success; and

(14) establish an enhancement plan for providing ground cover improvement by reducing tall patches of saw palmetto growth.

3.5 Implementation

OUC will be responsible for implementing the management practices discussed below. Qualified biologists will be retained to monitor the red-cockaded woodpecker population in accordance with the 2003 Red-cockaded Woodpecker Recovery Plan and monitor the success of the management plan and practices.

Figure 7. The Red-cockaded Woodpecker Management Area and Projected Development Areas, including Units 3 and 4 for the SEC, OUC, Orlando, Florida, 2005.



CURTIS H. STANTON ENERGY CENTER
RED-COCKADED WOODPECKER MANAGEMENT AREA

3.5.1 Controlling Disturbance

Construction contractors will be briefed as required on their legal obligations under the Endangered Species Act and regulations of the FGFWFC. This briefing will include information on the limits of construction, activities required to comply with stated construction plans, and construction constraints as described in the Mitigation Plan Construction Constraints (Appendix E of the JAMMP). OUC or their consultant will monitor construction activities.

All cluster areas and buffer zones will be conspicuously marked prior to any construction. Cavity trees close to construction activities will be fenced and marked with endangered species posters. Where possible, a 200-foot buffer zone will be established around each cavity tree close to construction activities. Some cavity trees are located immediately adjacent to unimproved dirt roads that will be used during mitigation activities or population monitoring; no adverse impacts are expected to occur. There are no known construction activities expected to occur within 200 feet of any RCW clusters on the Stanton site.

3.5.2 Timber Control

No timber will be harvested within the management area, unless required for improving habitat for the red-cockaded woodpeckers. Pine trees will be allowed to reach senescence and die. Any harvesting will be approved by the FGFWFC and FWS prior to the harvest.

Potential replacement cavity trees and cluster sites, as well as younger pines within each cluster area will be retained. Young pines may be removed to keep cavities clear of obstruction. Currently all cavity trees are located in open stands of pine with relatively few hardwoods; thus, there is no immediate need for stand improvement thinning in cluster sites. Abandoned cavity trees and snags in the management area will be retained to provide roosting and nesting sites for kleptoparasites. The burning program outlined in this document should promote pine regeneration by natural recruitment.

3.5.3 Fire Management

The burning program that will be implemented on the red-cockaded woodpecker management area is outlined in this section. It includes a description of the schedule, frequency of burns, burn conditions, and means of controlling wildfire. Burns, which have been conducted every three to five years, occurred in the mid 1980s, 1990-91, 1993, 1998, and 2003.

3.5.3.1 Burn Schedule and Frequency. The red-cockaded woodpecker management area will be divided into areas and alternately burned on a two-year rotation to reduce saw palmetto growth and provide optimum habitat conditions. Since the seasonality of the burn has an impact on the vegetation, Table 2 is provided to indicate the burn season preference. Burning will usually be performed during the optimum season as shown in the Table 2; however, some intentional variation will occur and other factors, e.g., short and long-term weather conditions, fuel loading, etc., may dictate burns during seasons other than the optimum listed above. New pine planting areas or recruitment areas will be burned on the same schedule as the remaining portions of the management area. Burns will be by ground ignition, primarily using backing fires to minimize vegetation mortality; however, variable conditions may dictate flanking or in extreme cases, head firing techniques.

Table 2. Burn Preference According to Rank Order for Effects on Habitat Condition and Red-cockaded Woodpeckers, SEC, 2005.

Burn Season Rating	Rank	Months	Comments
Optimum	1	February to April	Wiregrass & longleaf pine response is best in spring
Preferred	2	May to June	RCW nesting season[1]
Satisfactory	3	July to September	High water and heat
Least Satisfactory	4	October to mid-November	High stress on longleaf pines
Special Conditions	N/A	Mid-November to January	Heavy fuel loads

Note: Burning during the nesting season requires additional clearing around the cavity trees.

3.5.3.2 Burn Conditions and Control of Wildfire. A Florida State Certified Burn Specialist will conduct prescribed burns. Two of the most important factors that ensure a successful cool summer burn are soil moisture and relative humidity. Fuel moisture is a function of relative humidity, rainfall, and temperature (Mobeley et al. 1978). Burns will not be conducted when soils and leaf litter are completely dry. When possible, burns will be conducted as soon as possible (one to three days) following a storm event, preferably one producing a 0.5 to 1 inch rainfall. Likewise, relative humidity should be moderate to high and not lower than 20 percent. A moderate breeze is also desired to prevent the fire from reaching the tree crown. After initiation of this frequent burning program, fuel loads should be sufficiently reduced such that a cooler and more controllable burn is more easily achieved.

A fire break of about 20 feet in width, completely encircling the red-cockaded woodpecker management area and adjacent to the SEC site perimeter fence, is presently maintained by OUC. This firebreak will be disked annually and immediately prior to any controlled burn. Other unimproved roads exist within the interior of the management area and may serve as additional firebreaks. Because of drainage concerns, plantings within the Riparian Habitat Protection Areas, described in the JAMMP, will not be protected with firebreaks. Other measures, such as backfires, may be used to prevent seedling mortality in these areas. All vegetation around cavity trees will be mowed to a height of no greater than 1 foot for a radial distance of 20 feet. If the control burn is set during the nesting season, the clearing will be for a radial distance of 50 feet. All clearing will be performed by hand or by a low impact mower towed with a rubber-tired tractor.

3.5.4 Exotic Vegetation Control

Herbicides and pesticides toxic to wildlife will not be used in any part of the red-cockaded woodpecker territories. Spot applications of an approved herbicide may be used in the areas of pine tree plantings or wetlands, if necessary, to remove or control exotic or undesired invasive species.

The extensive invasion of cogon grass will ultimately replace most native ground cover species. Cogon grass occurs initially as spots of 1 meter or more in size, but later may occupy much larger areas as the plant spreads throughout the herbaceous ground

layer. The species out competes most other herbaceous species and promotes very hot fires when burned. To eliminate this exotic species, a program will be instituted to delineate, map, and eradicate the plants with appropriate herbicides. To determine major areas of cogon grass, a qualified biologist will review a recent aerial photograph of the site and follow-up with a field examination to refine the locations of this invasive grass. A finial map will then be developed and a contractor will be retained to eliminate this species. The initial treatments during the first year will be made in the fall, if possible, with periodic treatments as needed. Inspections of each spot or area will be made to determine the necessity for retreatments during the second year. Annual inspections will occur until the species is eliminated; thereafter, re-inspections will be conducted every five years to further assess the success of the elimination plan. Retreatments will be conducted, if needed and a determination will be made as to the best assessment interval; however, the assessment interval will not be longer than every five years. At the end of the second year of treatment a report will be provided to the respective agencies. The five-year sampling and assessment report will include results and recommendation from the cogon grass evaluation.

Presently, to control cogon grass contractors will apply arsenal at 1% by volume from a low volume spray unit. This concentration is well under the max label rate of 6 pints per acre. In the thickest areas, 4 pints per acre max may be used. For the Chinese tallow and the Brazilian pepper (should it occur on-site), 79% high-grade oil, 20% Garlon 4, 1% Stalker will be used as a basal bark treatment.

3.5.5 Population Monitoring Studies

OUC will also continue the yearly red-cockaded woodpecker monitoring study using the guidelines established in the 2003 Red-cockaded Woodpecker Recovery Plan. Monitoring studies will include annual winter banding of all unbanded adults and juveniles that remain within the population. Annual inspections will also be made of nest trees each week during the nesting season to assess nesting and fledgling success. Nestlings will be banded at this time. Nest trees with low or insufficient resin flow will be wrapped with material to protect against climbing snakes. Population estimates will be determined for the winter and nesting season. Cavity trees and cavities will also be inspected to determine the number of suitable cavities in each

cluster. The location and status will be recorded using GPS coordinates. Based on these inspections, the consultant will determine the need for population enhancement translocations and the necessity for additional cavity inserts in these existing clusters. At least four usable cavities will be maintained in each cluster using artificial cavities, if necessary. Translocations of young birds to the site will be conducted as described below in Chapter 4.0.

3.5.6 Pine Habitat Condition Monitoring

An assessment of the habitat conditions on the entire site has not been made since the mid-1980s (DeLotelle et al 1987). Habitat conditions will be evaluated to determine pine stand age and densities across the management area using previously applied techniques (DeLotelle et al 1987, DeLotelle et al 1995, also see Hooper et al 1982). An aerial photograph will be used to determine new pine stands and will be compared to historic conditions (1980) of pine stands. Once the pine stands and other habitats are determined from aerial photographs for the SEC site, a field evaluation will be made. Data will be collected by placing one to five plots in each stand with the number of plots per stand based on the stand size. A 100 by 100 foot plot will be laid out to count all pine stems and take diameter measurements on 10% of the trees over three inches in diameter. Seedlings will be counted separately. Five increment cores will be taken in mature pines to evaluate age and ten-year growth of pines. This will be used to develop a report and pine stand map for the SEC site and provided to Florida Department of Environmental Protection (FDEP), USFWS, and FFWCC. This evaluation and report will be updated every five years and provided to these agencies.

3.5.7 Ground Cover Enhancement Plan

Overall, habitat conditions for the Red-cockaded Woodpecker have improved with the implementation of the fire management program and the addition of several recruitment classes of longleaf pine on the SEC site. While the ground cover on the SEC site is in reasonably good condition, it has deteriorated over the last 10-15 years compared to historic conditions. A healthy and extensive herbaceous ground cover is important for the support of the insect fauna. In order to maintain and improve conditions for red-cockaded woodpeckers several activities should be undertaken to enhance the ground cover conditions. The largest activity will be the establishment of an intensive fire program to maintain the seral longleaf pine and wiregrass community. Mechanical control of the saw palmetto will also be required, as the overgrowth and continued expansion of saw palmetto will diminish these aspects of the forest ecosystem.

The primary focus of the plan on mechanical control of palmetto growth will be to develop a map with the occurrence of problem areas, which will be treated as appropriate. These areas will be located on aerial photographs and followed-up with on-site inspections. All existing and artificial clusters will be inspected for palmetto growth. A map will be produced to denote each area that does not meet the criteria listed below and will then be used to evaluate the necessity of roller chopping the various pine habitats. It is recommended that an 18-inch diameter by 5.5 feet long roller chopper be used (Outcault, pers.comm. 2005). No tandem choppers will be used on-site. A heavy-duty bush hog may be employed in place of the roller chopper provided there are no stumps. The initial treatment could include roller chopping or bush hogging in selected areas followed by a fire interval of every two years to reduce the buildup of saw palmetto. A suggested route for roller chopping will be provided that will involve the least damage to grasses and other components of the ground cover.

Mechanical control should occur in the fall of the year with one small roller chop as described above. A bush hog operation or cutover with a large mower behind a tractor should be undertaken in cluster areas with problems. No treaded equipment will be allowed in any cavity tree areas. Roller chopping or bush hogging in the remaining areas may be employed to reduce palmetto growth and promote the herbaceous growth. This is best accomplished in the fall or winter when conditions are relatively dry

in the foraging habitat areas. The path of the roller chopper should be circular or rounded at the ends so as not to damage ground cover by plowing into topsoil. Sharp angle turns must not be used in ground cover areas. Once again, conditions must be dry to meet this objective.

3.5.8 Vegetation Delineation, Mapping, and Eradication

The various habitats essential for the red-cockaded woodpeckers will be surveyed to determine the extent of encroachment by undesirable vegetation. First, an inventory of the management area (review of aerial photographs followed by field verification) will be undertaken to determine the locations and extent of the areas that require corrective action. Although not a major problem at this point, any areas with popcorn tree (*Sapium sebiferum*) should also be noted for elimination. Once the location and extent of the various encroaching species is determined, elimination and suppressing measures will be implemented. The height of saw palmetto in the various habitats will be the determining factor for its suppression as outlined in Table 3 below.

a) Cavity Tree Cluster areas:

prior to initiating ground surveys, aerial photographs of all areas will be reviewed, and then cavity tree cluster areas will be verified in the field to determine the extent of exotics and saw palmetto. Problem areas will be mapped and corrective action noted.

b) Foraging areas:

an approach similar to that used in cavity tree cluster sites will be employed in foraging habitat areas as well. Areas with a number of dead pines will be of particular interest and will be investigated.

c) Wetland fringes in Upland Habitats:

wetland fringe areas, which often have particularly high growth of saw palmetto, will also be investigated. If the areas are not extensive, no corrective action will be undertaken but a few areas are expected to need improvement.

d) Remainder of Property:

the remainder of the flatwoods will be treated in a similar fashion to the wetland fringe areas above.

Table 3. Criteria for the Institution of Mechanical Control of Saw Palmetto in Red-cockaded Woodpecker Habitats on the SEC Site

AREA	Maximum Stem Growth of Palmetto Above Ground Surface	Treatment Method
Cluster Areas	1.5 feet	Hand or bush hog
Foraging Areas	1.5 to 2 feet	Roller chopping
Wetland Fringe	2 to 3 feet	Roller chopping or fire frequency
Remainder of Property	2 to 3 feet	Roller chopping or fire frequency

4.0 POPULATION ENHANCEMENTS AND CLUSTER CREATION

The east Orange County red-cockaded woodpecker population was one of four within Florida identified by the FGFWFC as needing a conservation plan to ensure further protection (Cox *et al*., 1995). The action described below will aid in increasing the number of groups on the SEC site and ultimately in enhancing the viability of the Orange County red-cockaded woodpecker population. This plan first includes a portion for the creation of a recruitment cluster followed by a translocation program with sub-adult birds. A comprehensive plan for the enhancement of foraging habitat was described in section 3.0 and will require a number of years to be successful. Other additional enhancement aspects of the management plan are intended to mitigate for losses of the planted pine trees associated with both the construction of the gas pipeline along the alternate access road corridor to the south and the transmission line maintenance operations in the corridor to the north between the substation and Pope road.

4.1 Cluster Creation for Recruitment of Sub-adults

Three cluster sites (A1, B1, and D1) will be provisioned each with four artificial cavities, in different segments of the population (Figure 1). Within each artificial cluster area, four cavity inserts will be installed in proximity to each other in trees ranging in age between 50 and 150 years and with a diameter of 14 inches or more (Table 4). These clusters will be inspected during seasonal surveys and any required maintenance will be performed. All recruitment cluster sites, except the C1 area, are abandoned clusters that were occupied by red-cockaded woodpeckers through the 1980s. These artificial cluster sites were selected based on the proximity of the surrounding groups of red-cockaded woodpeckers and the availability of potential cavity trees, i.e., those with diameters of 14 inches or more. Each cluster and the surrounding foraging habitat have been evaluated to determine if enough foraging resources were present to meet the needs of central Florida red-cockaded woodpeckers (See DeLotelle and Epting 1992 and DeLotelle et al. 1995, also see guidelines in Section 3.2). Additional artificial

cavities may be placed in any natural cluster that is deficient in usable cavities. Although four cluster sites are available only three were chosen: A1, B1, and D1, for artificial cavity augmentation.

Table 4. Artificial Cluster Sites for Cavity Inserts and Description of Surrounding Foraging Habitat, SEC, Orlando, Florida, 2003.

Cluster ID and Description	***Old Trees****	***Number of 60 to 80 Year Old Trees***	***Age/Density of Foraging Habitat***	***Number of Pines and Basal Area in 200 Acres***	***Management Needed in Cluster Areas***
A1 Artificial Site	Numerous old trees	6@14" dbh or larger trees	58 years & 59 per acre	12,400 pine trees 6,550 ft^2	Bush-hog near all cavity trees
B1 Artificial Site	14/ Many in 50 to 80 age class	12@14" dbh or larger trees	48 years & 82 per acre	13,400 pine trees 6,130 ft^2	Bush-hog near several cavity trees
C1 Abandoned Site	Numerous old trees	7@14" dbh or larger trees	39 years & 52 per acre	8,500 pine trees 3,682 ft^2	Hand clean around all cavity trees
D1 Abandoned Site	Numerous old trees	7@14" dbh or larger trees	41 years & 71 per acre	11,700 pine trees 5,082 ft^2	Bush-hog some pf cluster area, Hand clean remainder

**Old-remnant trees are easily identified by the presence of large flattop crown and few if any limbs on the bole of the tree. All trees exceed 100 years of age based on numerous increment core bores taken from these type trees in the Big Econ Basin.*

*** This is the primary age and size class of live pine trees used for artificial cavity inserts in the Big Econ Basin and other central Florida Flatwoods sites.*

4.2 Monitoring Activities.

Annual monitoring studies and reproductive success will be used to assess the status of the existing red-cockaded woodpeckers groups. These studies will continue over the life of the facility. The monitoring studies will include periodic inspections to determine if dispersing red-cockaded woodpeckers are using any of the artificial clusters as roosting sites. Artificial cavities will also be inspected to ensure that there are no leaks and to clean any undesired nest material. If solitary birds are found living

in these recruitment clusters, other red-cockaded woodpeckers of the opposite sex will be translocated to potentially form a new breeding group in these clusters.

It is anticipated the new dispersing birds that take residency in these artificial clusters will primarily be young males; thus, a young female would be translocated to these sites. The bird will be placed in the new cavity on the night of its capture or free-released if captured and released on the same morning. Other combinations of translocation activities over the intervening monitoring years may occur. No more than two birds from the surrounding area will be translocated in any one year. No translocations from surrounding groups will occur during years of low reproduction. The three artificial cluster sites and cavities will be visited at least twice during each nesting season to determine occupancy, reproductive status, and reproductive success. Cluster creation and occupation shall be considered a success when a pair of red-cockaded woodpeckers have occupied the site for one complete year or have reproduced successfully. Reproduction is successful when eggs, nestlings, or fledglings from the new group are observed.

4.3 Translocation Activities

If at the end of the first year, no dispersals have occurred into the three artificial clusters, attempts will be made to obtain birds for translocation from other populations of red-cockaded woodpeckers in the southeast by attending the translocation meeting in Tallahassee, Florida with the purpose of securing bird(s) for translocation. Birds to be translocated will be placed in artificial cavities, screened, and released in the morning. If a bird is obtained for translocation, monitoring will occur as detailed in Section 4.2.

4.4 Implementation Schedule for Artificial Cavity Installations

The following schedule for artificial cluster sites is proposed to implement the procedures outlined above. Recruitment clusters with inserts will be constructed in three locations as previously described. All shrubs, including palmetto and wax-myrtle (*Myrica cenifera),* will be mowed for a minimum radius of 50 feet around all cavity trees within the artificial sites and all dead limbs or other dying vegetation will be removed from the vicinity of these cavity trees to ensure a low flame height during control burns. The following activities should be performed:

(1) prescribed burns in these red-cockaded woodpeckers habitats should be conducted on a regular basis as in the remaining forest management fire schedule;

(2) monitoring of artificial cavities to determine their continued suitability as roost sites for red-cockaded woodpeckers;

(3) monitoring of remaining red-cockaded woodpeckers groups on the SEC site for reproduction and possible translocation of young-of-the-year;

(4) annual monitoring and translocation activities until successful occupation and reproduction in the artificial cluster sites has occurred; and

(5) inspection for debris, predators, or competitors of the roost cavities occupied by the breeding males and females prior to each year's inspections of artificial cavities during the spring.

5.0 REPORTS

The following reports will be provided for the duration of the plant. Copies will be furnished to each of the respective agencies as shown in Table 5.

Table 5 Report Schedule for Management Plan Activities for the next Five-Years and Beyond, Curtis H. Stanton Energy Center, 2005

Report Name	Frequency	Due Date	Duration	Comments
RCW monitoring	Annual	August 2005	Life of Plant	Demographics-reproduction, etc.
Exotic species Control	Annual[1]	July 2007	Two years, as needed	Success of control, reapplication
Habitat Survey	Five Year Intervals	March 2006	Updated Every 5 years	Comparison with historic data
Saw palmetto reduction	One-two year	July 2007	Two years, as needed	As needed
Five Monitoring	Every 5 years	August, 2010	Covers all data collected	Summary of all completed studies
Fish & Wildlife Annual Monitoring Report	Annually	January 31, each year	Life of Facility	Required

Notes:

A five-year summary report will cover red-cockaded woodpecker demographics, the status of exotic and nuisance plant or animal species, and pine habitat characteristics. This report will include a recommendation to maintain eradication of exotic species over the next five years.

1) Report frequency will be annual until exotics are eradicated; thereafter, frequency will be on a five-year interval.

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Updated Figure 7 - Curtis H. Stanton Energy Center
Red-Cockaded Woodpecker Management Area

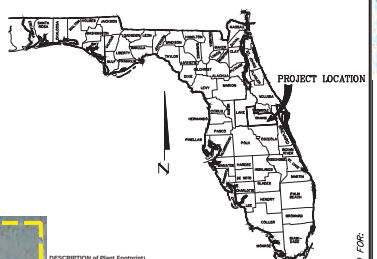
MAP OF RCW SET ASIDE HABITAT

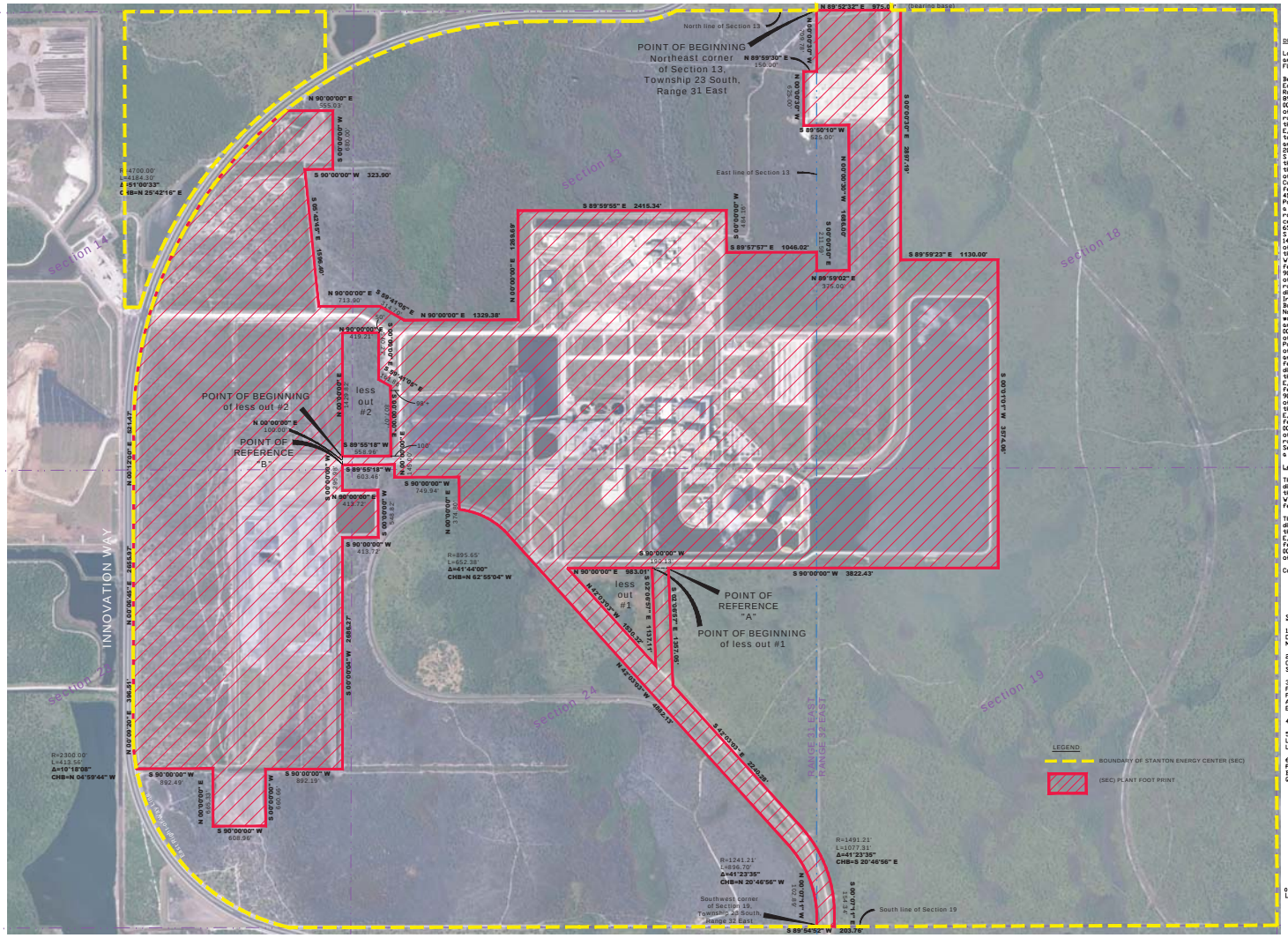
A PORTION OF

CURTIS H. STANTON ENERGY CENTER (SEC)

LOCATED IN

SECTIONS 13, 14, 23 & 24, TOWNSHIP 23 SOUTH, RANGE 31 EAST, and
SECTION 18 & 19, TOWNSHIP 23 SOUTH, RANGE 32 EAST
ORANGE COUNTY, FLORIDA





DESCRIPTION of Plant Footprint

Lands lying in Sections 13, 14, 23 & 24, Township 23 South, Range 31 East and Sections 18 & 19, Township 23 South, Range 32 East, Orange County, Florida, being more particularly described as Follows:

Begin at the Northeast corner of Section 13, Township 23 South, Range 31 East, also being the Northwest corner of Section 18, Township 23 South, Range 32 East; thence run along the North line of said Section 18, N 89°52'32" E, a distance of 975.00 Feet; thence leaving said North line, run S 00°00'30" E, a distance of 2897.19 Feet; thence run S89°59'23" E, a distance of 1130.00 Feet; thence run S 00°01'01" W, a distance of 3574.06 Feet; thence run S 90°00'00" W, a distance of 3822.43 Feet to a Point of Reference "A"; thence run S 82°56'57" E, a distance of 1057.05 Feet; thence run S 42°03'03" E, a distance of 2240.28 Feet to a Point of Curvature, of a curve concave to the Southwest, having a radius of 1491.21 Feet; thence run along the arc of said curve through a central angle of 41°23'35" and chord bearing S 20°46'56" E, a distance of 1077.31 Feet to a Point of Tangency thence run S 00°07'11" E, a distance of 154.34 Feet to the South line of said Section 19; the run along said South line, S 89°54'52" W, a distance of 203.76 Feet to the Southwest corner of said Section 19; thence run along the West line of said Section 19, N 00°07'11" W, a distance of 102.89 Feet to a Point of Curvature, of a curve concave to the Southwest, having a radius of 1241.21 Feet; thence run along the arc of said curve through a central angle of 41°23'35" and chord bearing N 20°46'56" W, a distance of 896.70 Feet to a Point of Tangency; thence run N 42°03'03" W, a distance of 4882.13 Feet to a Point of Curvature, of a curve concave to the Southwest, having a radius of 895.65 Feet; thence run along the arc of said curve through a central angle of 41°44'00" and chord bearing N 62°55'04" W, a distance of 652.38 Feet; thence run N 00°00'00" E, a distance of 374.80 Feet; thence run S 90°00'00" W, a distance 749.94 Feet; thence run N 00°00'00" E, a distance of 145.00 Feet; thence run S89°55'18" W, a distance of 603.46 Feet to a Point of Reference "B"; thence run S 00°00'00" W, a distance of 295.98 Feet; thence run N 90°00'00" E, a distance of 413.78 Feet; thence run S 00°00'00" W, a distance of 548.82 Feet; thence run S 90°00'00" W, a distance of 413.72 Feet; thence run S 00°00'04" W, a distance of 2686.27 Feet; thence run S 90°00'00" W, a distance of 892.19 Feet; thence run S 00°00'00" W, a distance of 660.66 Feet; thence run S 90°00'00" W, a distance of 608.96 Feet; thence run N 00°00'00" E, a distance of 665.33 Feet; thence run S 90°00'00" W, a distance of 892.49 Feet to a point on the East Right of Way Line of Innovation Way (aka Alafaya Trail extension) as recorded in Official Records Book 8964, at Page 3164, said point lying on a curve, concave to the Northeast, having a radius of 2300.00 Feet; thence run along said right of way line, along the arc of said curve through a central angle of 10°18'08" and chord bearing N 04°59'41" W, a distance of 413.36 Feet; thence run N 00°19'05" E, a distance of 396.51 Feet; thence run N 00°06'45" E, a distance of 2655.97 Feet; thence run N 00°12'00" E, a distance of 521.47 Feet to a Point of Curvature, of a curve concave to the Southeast, having a radius of 4700.00 Feet; thence run along the arc of said curve through a central angle of 51°00'33" and chord bearing N 25°42'16" E, a distance of 4184.30 Feet; thence leaving said East Right of Way Line, run N 90°00'00" E, a distance of 555.03 Feet; thence run S 00°00'00" W, a distance of 680.00 Feet; thence run S 90°00'00" W, a distance of 383.90 Feet; thence run S 05°42'45" E, a distance of 1596.40 Feet; thence run N 90°00'00" E, a distance of 713.90 Feet; thence run S 59°41'05" E, a distance of 314.70 Feet; thence run N 90°00'00" E, a distance of 1329.38 Feet; thence run N 00°00'00" E, a distance of 1269.69 Feet; thence run N 89°59'55" E, a distance of 2415.34 Feet; thence run S 00°00'00" W, a distance of 484.16 Feet; thence run S 89°57'57" E, a distance of 1046.02 Feet; thence run S 00°00'30" E, a distance of 211.59 Feet; thence run N 89°59'02" E, a distance of 375.00 Feet; thence run N 00°00'30" W, a distance of 1686.00 Feet; thence run S 89°59'10" W, a distance of 525.00 Feet; thence run N 00°00'30" W, a distance of 625.00 Feet; thence run N 89°59'30" E, a distance of 150.00 Feet to the East line of said Section 13; thence run along the East line of said Section 13, N 00°00'30" W, a distance of 709.78 Feet to the Point of Beginning

Less and Except:

Thence return to said Point of Reference "A", thence run S 90°00'00" W, a distance of 190.13 Feet to for the Point of Beginning of the "less out #1"; thence run S 42°03'03" E, a distance of 1137.11 Feet; thence run N 42°03'03" W, a distance of 1530.32 Feet; thence run N 90°00'00" E, a distance of 983.01 Feet to the Point of Beginning of the "less out #1".

Thence return to said Point of Reference "B", thence run N 00°00'00" E a distance of 100.00 Feet to for the Point of Beginning of the "less out #2"; thence run N 00°00'00" E, a distance of 1429.82 Feet; thence run N 00°00'00" E, a distance of 419.21 Feet; thence run S 00°00'00" E, a distance of 540.27 Feet; thence run S 89°55'05" E, a distance of 161.88 Feet; thence run S 00°00'00" E, a distance of 807.07 Feet; thence run S 89°55'18" W, a distance of 358.96 Feet to the Point of Beginning of the "less out #2".

Containing 1034 acres more or less.

SURVEYOR'S NOTES:

1) THIS MAP OF DESCRIPTION IS NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF THE SIGNING FLORIDA LICENSED SURVEYOR AND MAPPER.

2) THE CONFIGURATION OF THE LANDS DESCRIBED HEREON WAS PROVIDED BY THE CLIENT. DIMENSIONS PRIMARILY DEVELOPED BY SCALING AND PROTRACTING FROM SOURCE AERIAL IMAGERY.

3) THE BEARINGS AND DISTANCES SHOWN ON THIS SURVEY ARE RELATIVE TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, TRANSVERSE MERCATOR PROJECTION, FLORIDA EAST ZONE (FIXED 0901) NORTH AMERICAN DATUM OF 1983/2007 ADJUSTMENT WITH THE NORTH LINE OF SECTION 18, TOWNSHIP 23SOUTH, RANGE 31 EAST BEING N 89°52'32" E.

4) THIS IS NOT A BOUNDARY SURVEY.

5) THIS MAP OF DESCRIPTION DOES NOT ADDRESS THE IDENTIFICATION OR LOCATION OF JURISDICTIONAL WETLANDS OR SOVEREIGN LANDS (IF ANY) THAT MAY LIE WITHIN OR ADJACENT TO THE LANDS DESCRIBED.

6) SOURCE OF AERIAL IMAGERY: THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION, DIVISION OF STATE LANDS, BUREAU OF SURVEY AND MAPPING, LAND BOUNDARY INFORMATION SYSTEM WEBSITE, (labins.org), DIGITAL ORTHOGRAPHIC QUARTER QUAD, DATED 2008.

GRAPHIC SCALE 0 400 (IN FEET) 1 inch = 800 ft.

ROBERT M. JONES
FLORIDA PROFESSIONAL SURVEYOR AND MAPPER
LICENSE No. LS 4201

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REVISION	DATE
added less out #2	01/08/10
revised title & boundary	06/18/15

COUNTY: ORANGE | DWG. DATE: 08.15.09
Field Books: n/a | PHOTO DATE:
OPF. NO.: 63704080365 | DRAWN BY: P.E.W.
DWG. NAME: Bat-Cocksedi.dwg | CHECKED BY: R.M.J.
LAST DAY IN FIELD: n/a

PROJECT TITLE: MAP OF DESCRIPTION of a portion of CURTIS H. STANTON ENERGY CENTER SECTIONS 13, 14, 23 & 24, TOWNSHIP 23 SOUTH, RANGE 31 EAST, and SECTION 18 & 19, TOWNSHIP 23 SOUTH, RANGE 32 EAST ORANGE COUNTY, FLORIDA

SHEET NO. 1 OF 1