

***US Fish & Wildlife Service  
Florida Panther National Wildlife Refuge Complex***

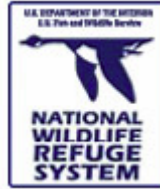
**Fire Management Plan**



Florida Panther National Wildlife Refuge  
3860 Tollgate Blvd Suite 300  
Naples, FL 34114

**2009**

**WILDLAND FIRE MANAGEMENT PLAN**  
**FLORIDA PANTHER NATIONAL WILDLIFE REFUGE**



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# CHAPTER 1 - INTRODUCTION

## ***1.1 Purpose and Need***

The purpose of this Fire Management Plan is to provide objectives and guidelines for managing the approximately 26,605 acres of fire maintained habitat on Florida Panther National Wildlife Refuge.

The plan is written to meet Department and Service requirements that every area with burnable vegetation must have an approved Fire Management (FMP) (620 DM 1.4). It complies with a Service requirement that Refuges review and/or revise FMPs at a minimum of five-year intervals or when significant changes are proposed, such as might occur if significant land use changes are made adjacent to FWS lands. (621 FW 2.3C-4)

The goal of wildland fire management is to plan and implement actions that help accomplish the mission of the National Wildlife Refuge System. That mission is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans. (095 FW 3.2)

This FMP identifies and integrates all wildland fire management and related activities within the context of an approved Comprehensive Conservation Plan (CCP). It defines a program to manage wildland fires and to assure that wildland fire management goals and components are coordinated.

## ***1.2 General Description of the Fire Management Plan Area***

The U.S. Fish and Wildlife Service took a major stride towards the recovery of the Florida panther on June 21, 1989, by purchasing 26,270 acres for the Florida Panther National Wildlife Refuge. The land was purchased from the Collier family of South Florida.

The purchase of the property culminated a five year acquisition effort. In April 1985, the U.S. Fish and Wildlife Service published an environmental assessment entitled *Fakahatchee Strand: A Florida Panther Habitat Preservation Proposal* which identified 88,000 acres of important panther habitat in Collier County surrounding the Fakahatchee Strand State Preserve. The document provided the legal basis for the U.S. Fish and Wildlife Service to begin efforts to acquire the refuge.

The Land and Water Conservation Fund (LWCF) provided \$10.2 million for the purchase. The fund is used to acquire lands for endangered species, interpretation, recreation and specifically authorized refuges. The LWCF receives money from taxes on motorboat fuels, the sale of surplus Federal real property and from outer continental shelf oil and gas leases.

The northern extension of the Fakahatchee Strand, the largest strand swamp in the Big Cypress region, dominates the central portion of the refuge. The swamp is characterized by a woodland forest of cypress trees and subtropical hardwoods. Its unique physical character creates a habitat which supports the greatest number of native orchids in North America. Surrounding the strands are other woodland habitats, such as wet prairies and cypress forests, and upland habitats including pine flatwoods, cabbage palm forests and hardwood hammocks.

The refuge area has long been known to be important to the Florida panther. Radio telemetry studies being conducted by the Florida Game and Fresh Water Fish Commission continue to document extensive use of the area by the endangered cats. The refuge forms the core of several cat home ranges and also functions as a travel corridor for animals traveling between the northern regions of Big Cypress National Preserve and the Fakahatchee Strand State Preserve. Several female panthers have had litters and raised kittens on the property in recent years.

The refuge lies north of I-75 (also known as Alligator Alley or SR 84), and between SR 29 to the east and the Golden Gate Estates to the west. The refuge shares common boundaries with Big Cypress National Preserve and the Fakahatchee Strand State Preserve. The prominent features of the refuge and adjacent lands include the Fakahatchee, Lucky Lake, Stumpy Lake, Mud Lake Strands, and the Okaloacoochee Slough. These cypress-dominated swamps are separated by forests of slash pine, saw palmetto and cabbage palm which grow in soils on slightly higher ridges underlain with cap rock. Interspersed throughout the refuge are mixed hardwood hammocks and wet prairies. The topography of the refuge is relatively flat, with elevations ranging from 12 to 16 feet above mean sea level. As much as 90 percent of the refuge is inundated to depths ranging from a few inches to more than three feet of water at the height of the rainy season.

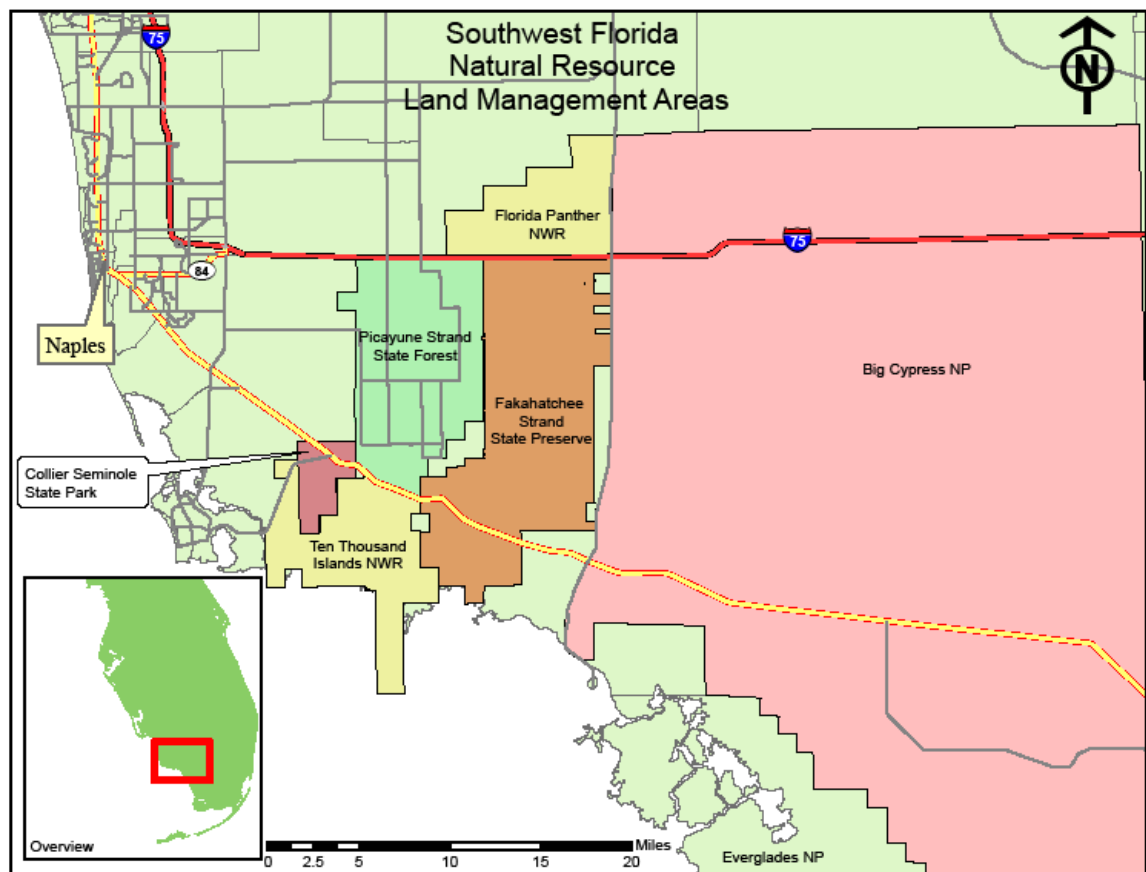


Figure 1: Florida Panther NWR vicinity map and surrounding public lands

## Florida Panther NWR

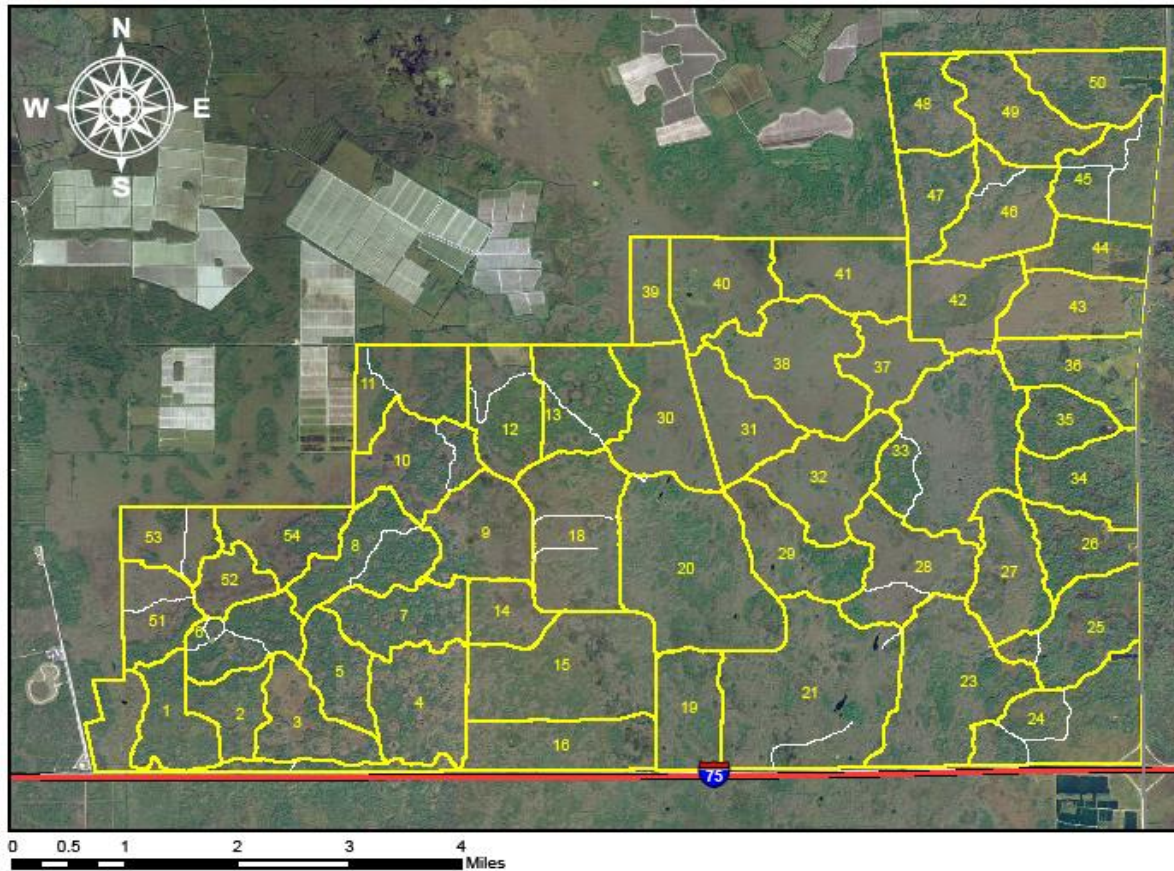


Figure 2 – Florida Panther NWR Aerial View with Burn Unit Numbers

### ***1.3 Significant Values to Protect***

The Florida Panther National Wildlife Refuge was established to conserve fish, wildlife and plants which are listed as threatened and/or endangered. As stated in the Service's 1995 "Florida Panther Recovery Plan" the refuge area has been determined to be essential to the survival of the Florida Panther and the refuge should enhance habitat conditions for the panther and the panther's prey species.

The 2000 Comprehensive Conservation Plan (p. 4) states the following: "The refuge's purpose has strong ties to the protection and recovery of the endangered Florida panther and its habitat. The Refuge manager will give the panther greater consideration than other refuge species in management operations..."

#### ***1.3.1 Threatened and Endangered Species (From Intra-Service Section 7 Consultation)***

- Florida Panther - Endangered
- Wood Stork - Endangered
- Bald Eagle - Threatened
- American Alligator - Threatened
- Florida Snail Kite - Endangered
- Eastern Indigo Snake - Threatened

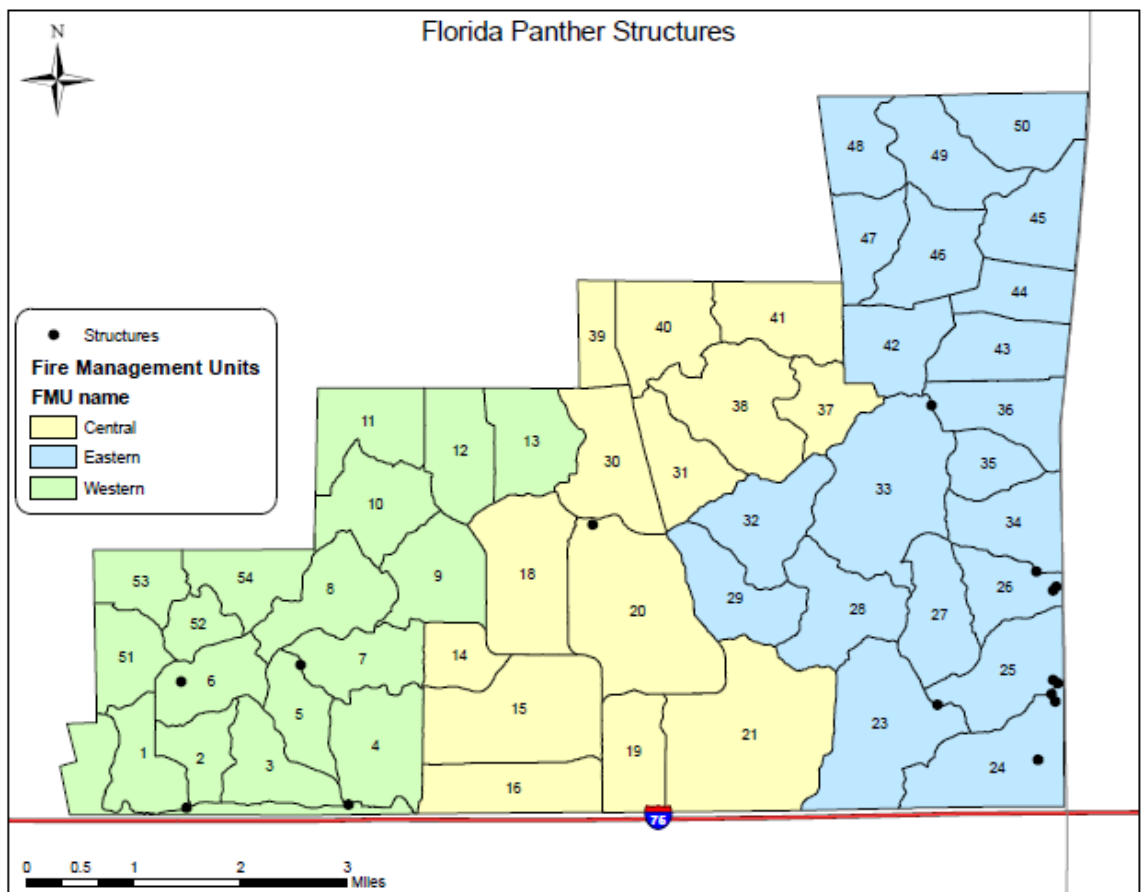
### 1.3.2 Refuge Structures and Development

- Roger Roth Work Center – pole barns, equipment, research trailer, pump house
- Helibase
- Bunkhouse and Intern house
- Refuge Environmental Education Center (located at the Hunt Club)
- Hunt Club storage structures, pole barns, equipment
- West side pole barns and equipment
- Nature Trail Kiosk located along Hwy 29

### 1.3.3 Private Structures and Development

- Communications tower (owned by Florida DOT) in Southeast corner of Refuge
- In-holdings adjacent to the Roger Roth Work Center and along Hwy 29
  - Scott and Weed Properties (five acres each)
- Fencing on north side of refuge along boundary
- Harley Davidson test track adjacent to west boundary of Refuge just north of I-75

Figure 3: Refuge Structures



# CHAPTER 2 - Policy, Land Management Planning, and Partnerships

## 2.1 Implementation of Fire Policy

### 2.1.1 Federal Wildland Fire Policy

The following guidelines will be used to provide consistent implementation of federal wildland fire policy. Further guidance is provided in the Federal Wildland Fire Management Fire Policy section of the Guidance for Implementation of Federal Wildland Fire Management Policy, Table 1.

- Wildland fire management agencies will use common standards for all aspects of their fire management programs to facilitate effective collaboration among cooperating agencies.
- Agencies and bureaus will review, update, and develop agreements that clarify the jurisdictional inter-relationships and define the roles and responsibilities among local, state, tribal and federal fire protection entities.
- Response to wildland fire will be coordinated across levels of government regardless of the jurisdiction at the ignition source.
- Fire management planning will be intergovernmental in scope and developed on a landscape scale.
- Wildland fire is a general term describing any non-structure fire that occurs in the wildland. Wildland fires are categorized into two distinct types:
  - Wildfires – Unplanned ignitions or prescribed fires that are declared wildfires.
  - Prescribed fires – Planned ignitions.
- A wildland fire may be concurrently managed for one or more objectives, and objectives can change as the fire spreads across the landscape. Objectives are affected by changes in the fuels, weather, topography, varying social understanding and tolerance, and involvement of other governmental jurisdictions having different missions and objectives.
- Management response to a wildland fire on federal land is based on objectives established in the applicable Land/Resource Management Plan and/or the Fire Management Plan.
- Initial action on human-caused wildfire will be to suppress the fire at the lowest cost with the fewest negative consequences with respect to firefighter and public safety.
- Managers will use a decision support process to guide and document wildfire management decisions. The process will provide situational assessment, analyze hazards and risk, define implementation actions, and document decisions and rationale for those decisions.

This FMP meets Federal Wildland Fire Management Policy by implementing and following these guiding principles:

- Firefighter and public safety is the first priority in every fire management activity.
- The role of wildland fire as an essential ecological process and natural change agent has been incorporated into the planning process. Federal agency land and resource management plans set the objectives for the use and desired future condition of the various public lands.
- Fire management plans, programs, and activities support local and resource management plans and their implementation.

- Sound risk management is a foundation for all fire management activities. Risks and uncertainties relating to fire management activities must be understood, analyzed, communicated, and managed as they relate to the cost of either doing or not doing an activity.
- Fire management programs and activities are economically viable, based upon values to be protected, costs, and land and resource management objectives.
- Fire management plans and activities are based on the best available science.
- Fire management plans and activities incorporate public health and environmental quality considerations.
- Federal, State, tribal, interagency, and international coordination and cooperation are essential.
- Standardization of policies and procedures among federal agencies is an ongoing objective.

### **2.1.2 National Fire Plan**

This FMP meets the direction in the National Fire Plan because it emphasizes the following primary goals of the 10 Year Comprehensive Strategy and Cohesive Strategy for Protecting People and Sustaining Natural Resources:

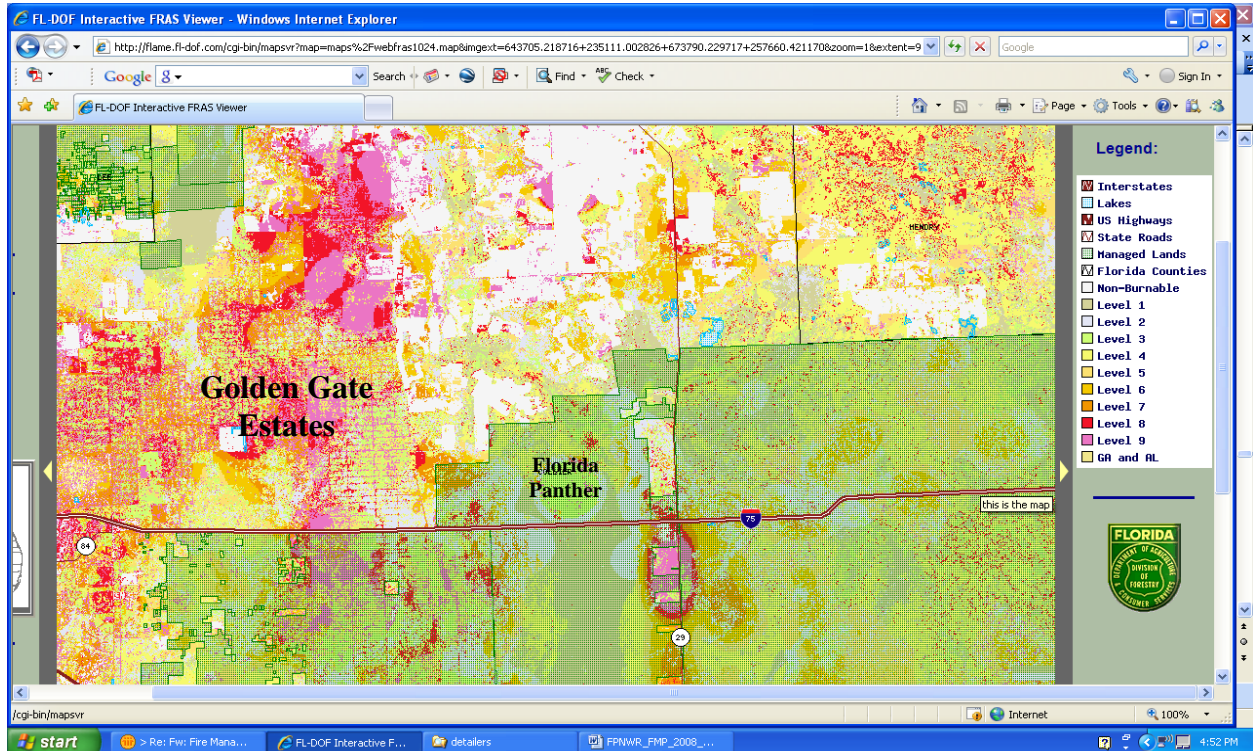
- Improving fire prevention and suppression
- Reducing hazardous fuels
- Restoring fire-adapted ecosystems
- Promoting community assistance

The Southern Wildfire Risk Assessment (<http://www.southernwildfirerisk.com>) is the cooperative effort of the Southern Area State Foresters in response to the National Fire Plan, 10-Year Comprehensive Strategy, and Cohesive Strategy for Protecting People and Sustaining National Resources to identify Communities at Risk (CAR) and Communities of Interest (COI) that might be influenced by wildland fire. These communities are identified in the NFPORS database and this process is the linkage to funding for a variety of cooperative projects within the Wildland Urban Interface. The three Communities at Risk identified for Collier County are all considered high risk and include:

- Golden Gate Estates (adjacent to the west boundary of the Refuge)
- Immokalee
- Lee Williams

The Florida Fire Risk Assessment (FRAS- <http://flame.fl-dof.com/risk>) which preceded the Southern Wildfire Risk Assessment identifies these high risk areas in red and pink on the map below. Golden Gate Estates is identified as the expansive subdivided area west of the Refuge.

Figure 4. Florida Fire Risk Assessment Map of the Golden Gate Estates - considered a Community at Risk (CAR)



### 2.1.3 Department of the Interior Policy

This FMP incorporates and adheres to DOI policy stated in 620 DM1 by giving full consideration to use wildland fire as a natural process and tool during the land management planning process and by providing for the following:

Wildland fires, whether on or adjacent to lands administered by the Department, which threaten life, improvements, or are determined to be a threat to natural and cultural resources or improvements under the Department's jurisdiction, will be considered emergencies and their suppression give priority over other Departmental programs.

Bureaus shall cooperate in the development of the interagency preparedness plans to ensure timely recognition of approaching critical wildland fire situations; to establish processes for analyzing situations and establishing priorities, and for implementing responses to these situations.

Bureaus will enforce rules and regulations concerning the unauthorized ignition of wildland fire, and aggressively pursue violations.

## 2.1.4 US Fish & Wildlife Service Fire Policy

By addressing the range of potential wildland fires and considering a full spectrum of tactical options (from monitoring to intensive management actions) for response to wildland fire in order to meet Fire Management Unit (FMU) objectives. This FMP meets Service Wildland Fire Policy, and is consistent with the Service Fire Management Handbook and the Interagency Standards for Fire and Fire Aviation Operations, which are supplemental policy. Agency specific authority and policy for this Fire Management Plan are noted in Appendix B.

This plan affirms these key elements of FWS fire policy (621FW 1):

- Firefighter and public safety is the first priority of the wildland fire management program and all associated activities.
- Only trained and qualified leaders and agency administrators will be responsible for, and conduct, wildland fire management duties and operations.
- Trained and certified employees will participate in the wildland fire management program as the situation requires, and non-certified employees will provide needed support as necessary.
- Fire management planning, preparedness, wildfire and prescribed fire operations, other hazardous fuel operations, monitoring, and research will be conducted on an interagency basis with involvement by all partners to the extent practicable.
- The responsible agency administrator has coordinated, reviewed, and approved this FMP to ensure consistency with approved land management plans, values to be protected, and natural and cultural resource management plans, and that it addresses public health issues related to smoke and air quality.
- Fire, as an ecological process, has been integrated into resource management plans and activities on a landscape scale, across agency boundaries, based upon the best available science.
- Wildland fire is used to meet identified resource management objectives and benefits when appropriate.
- Prescribed fire and other treatment types will be employed whenever they are the appropriate tool to reduce hazardous fuels and the associated risk of wildfire to human life, property, and cultural and natural resources and to manage our lands for habitats as mandated by statute, treaty, and other authorities.
- Response to wildland fire will consider firefighter and public safety, cost effectiveness, values to protect, and natural and cultural resource objectives.
- Staff members will work with local cooperators and the public to prevent unauthorized ignition of wildfires on our lands.
- Structural firefighting is not the functional responsibility of the Service. Service assistance in structure protection should only be performed on an emergency basis to save lives.
- Fire management policies and procedures for safety, training and equipment are mandatory. See 241 FW 7 (Safety Operations - Firefighting), 232 FW 6 (Firefighting Training), and 241 FW 3 (Personal Protective Equipment).
- The US Fish & Wildlife Service's Wildland Fire Management Program Strategic Plan 2006-2010 provides further strategic guidance tiered to the NFP and NFP 10-Year Comprehensive Strategy.

## **2.2 Land/Resource Management Planning**

### **2.2.1 Comprehensive Conservation Plan (CCP)**

The Florida Panther National Wildlife Refuge Comprehensive Conservation Plan (FPNWR CCP) is the primary document directing activities on the refuge. This document includes objectives and strategies to support the Refuge Management Goals. Those objectives and strategies relevant to fire and fuels management were taken directly from the CCP and are stated as follows:

- 1.1 Achieve and maintain vegetative conditions that are preferred by the Florida panther.
  - 1.1.2 Refine refuge prescribed fire program and other habitat management tools to achieve and maintain optimum vegetative conditions for panther habitation.
- 1.2 Achieve and maintain optimum prey densities for the Florida panther.
  - 1.2.1 Follow the approved Fire Management Plan and incorporate into the Habitat Management Plan to maintain/enhance deer habitat. Conduct mosaic burns within fire-evolved habitats, burning a minimum target goal of 25 percent of these habitats annually. Update the plan as new information becomes available. Use prescribed fire to achieve optimum availability and nutritional quality of native forage for deer by 2002.
- 2.3 By 2002, fully develop and implement a prescribed fire program to restore and maintain healthy fire dependent communities.
  - 2.3.1 Implement the 1998 Fire Management Plan with annual reviews and updates to incorporate applied research findings. (3.2 related)
  - 2.3.2 Develop fire prescriptions and techniques to enhance prairie orchids and protect the fire sensitive epiphytic orchids.
- 3.2 Conduct prescribed fire research and evaluations on the refuge to improve management of natural resources.
  - 3.2.1 Determine panther response to prescribed fire management through ongoing funded research with US Geological Survey, Biological Resource Division, University of Tennessee. By the end of 2001, obtain results and incorporate findings into the Fire Management Plan. (completed)
  - 3.2.2 Continue fire research on the effects of burning frequency, seasonality, and spatial distribution on the refuge's pine flatwoods, hammocks, cypress, mixed swamp, and wet prairie systems. (ongoing)
  - 3.2.3 Obtain funding by the year 2000 to investigate the influence of prescribed fire on the growth and fruiting of saw palmetto (*Senora repens*). By 2004, evaluate findings and amend the Fire Management Plan, as necessary. (completed, results inconclusive)
  - 3.2.4 By 2008, obtain funding to investigate the impacts of prescribed fire on reptile populations through the use of radio-telemetry or other methods. (to be completed in the future)
  - 3.2.5 Evaluate research results from the University of Florida Deer Forage Study. Utilize these and other existing data to amend the Fire Management Plan to guide the frequency, placement, and number of winter versus summer mosaic burns. (research completed, evaluation of results pending)

- 3.4 Implement monitoring programs to assess ongoing management practices on the refuge.  
(fire effects program established)
- 3.4.2 Continually monitor and evaluate prey responses to the refuge burning program.  
(under development)

### **2.2.2 Other Associated Plans**

- Habitat Management Plan: Currently under development by refuge staff and will be tiered to the CCP.
- Community Wildfire Protection Plan (CWPP): A CWPP is currently under development by the State Division of Forestry for the Golden Gate Estates subdivision located west of the refuge. A CWPP is an interagency, community developed plan to address wildland fire risk and actions on a community level. In the CWPP planning process, wildland-urban interface (WUI) areas can be designated for a community based on fire history and surrounding fuels. The CWPP also lays out actions for agency and community partners to carry out in order to address the community's wildland fire risk. Plans are designed to be reviewed and updated on a regular basis. CWPPs should be closely linked to the FMP in regards to Service involvement and accomplishment of FMP objectives. As CWPPs are developed for communities surrounding the Complex refuges, they will be added as an appendix to the FMP or the area Interagency Annual Operating Plan, whichever is more appropriate.

### **2.2.3 Compliance with Regulatory Acts**

Compliance with the National Environmental Policy Act (NEPA), the Endangered Species Act of 1973 (ESA), the National Historic Preservation Act of 1966 (NHPA) and the Archeological Resources Protection Act of 1979 (ARPA) was accomplished by the completion of an Environmental Assessment (EA) for the Draft Comprehensive Conservation Plan, which was completed for the Refuge in November, 1998. After a public comment period, which ended on December 21, 1998, the Acting Regional Director signed a Finding of No Significant Impact (FONSI), which is in official files at the refuge headquarters. The CCP was finalized in March, 2000. The Agency Administrator has determined that the activities envisioned in this Fire Management Plan are similar in scope and effect as those covered by the EA and therefore a new EA is not needed.

In conjunction with the EA completed as part of the CCP process, the refuge requested an Intra-Service Section 7 Biological Assessment from Ecological Services (ES), which was completed and signed on March 1, 2000. The ES Supervisor concurred with the refuge that actions authorized by the CCP would not have adverse effect, this includes the fire management activities outlined in the CCP.

## **2.3 Partnerships**

This Fire Management Plan was developed with the cooperation of internal refuge staff including the refuge biologist, refuge manager, prescribed fire specialist and project leader. Informal reviews of the document were conducted by fire managers at the Loxahatchee NWR and Everglades National Park. Fire Danger rating indices that drive the step-up plan and preparedness levels were

discussed with fire managers from the neighboring National Parks and the local Florida Division of Forestry District to ensure consistency among agencies.

During the development of this plan, professionals outside the fire program were contacted for input and advice. The draft plan was reviewed by the refuge biologist, prescribed fire specialist, refuge manager and project leader.

### ***2.3.1 Local Partnerships***

The Florida Panther National Wildlife Refuge associates locally with various interests including the “Friends of the Florida Panther Refuge”, Fakahatchee Strand State Preserve, Collier-Seminole State Park, Rookery Bay National Estuarine Research Reserve, and the Southwest Florida Water Management District. Partnerships with local fire departments (county, city and volunteer) include Golden Gate, Ochopee, North Naples and Corkscrew Fire Departments. Activities with these cooperators include education and outreach, conducting fire training and refresher courses and providing wildland fire equipment.

### ***2.3.2 Agency Partnerships***

The refuge cooperates with many different agencies in the course of managing fire. Refuge fire equipment and personnel are often shared with local agencies and cooperators for training, prescribed fire implementation as well as wildland fire response. The refuge, either independently or under blanket agreements from the Service, has agreements with Fakahatchee Strand State Preserve, Big Cypress National Preserve, Everglades National Park, BIA Seminole Reservation, and the Florida Division of Forestry. Copies of these agreements are located in Appendix I. Contact with the Florida Division of Forestry is also necessary for obtaining prescribed burning permits. The Florida Panther NWR along with Big Cypress National Preserve, Everglades National Park, Loxahatchee NWR and the BIA Seminole Reservation are part of the South Florida Fire Planning Unit (FPU) as it relates to Fire Program Analysis (FPA).

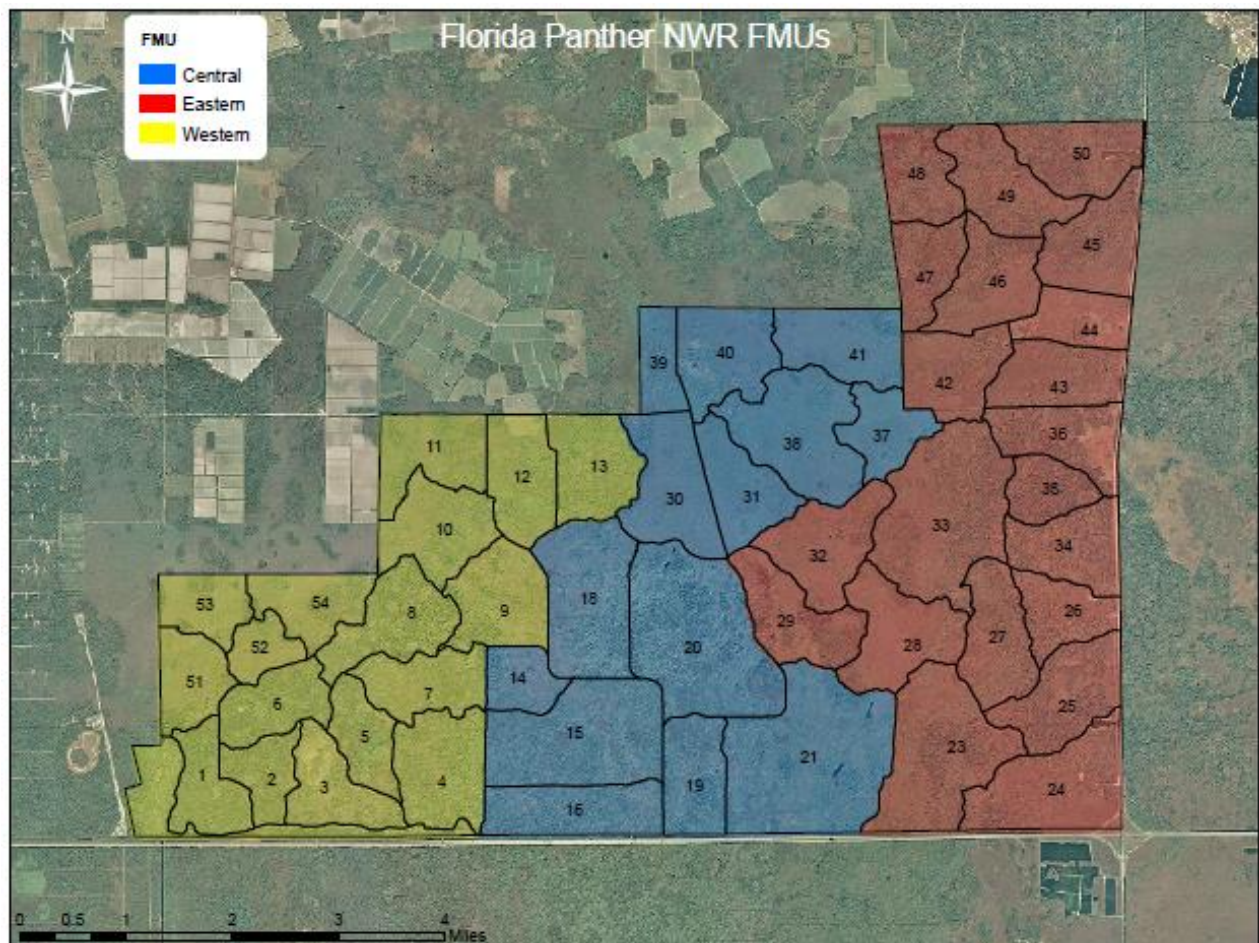
## CHAPTER 3 – Fire Management Unit Characteristics

### 3.1 *Area-wide Management Considerations*

Both the refuge management goals and fire management objectives of this plan will guide activities across the refuge and in all fire management units (see chapter 1, page 3). The refuge is divided into three Fire Management Units: Eastern, Central and Western. Currently, the CCP is the only approved management document available to provide guidance for the fire management program.

Implementing the CCP as it is proposed over its 15-year lifespan will result in refuge lands being protected, maintained, restored, and enhanced for the Florida Panther; resident wildlife; and other threatened, endangered, and imperiled species. Certain goals, objectives, standards, guidelines, desired conditions and constraints are general in nature and apply to all three fire management units on the refuge, these are described below.

Figure 5: Fire Management Units and Burn Units



### **3.1.1 Refuge Management Goals**

These goals are taken directly from the FPNWR Comprehensive Conservation Plan.

1. Provide optimum habitat conditions for the Florida panther.
2. Restore and conserve the natural diversity, abundance, and ecological function of refuge flora and fauna.
3. Conduct research, monitoring and evaluations to improve management of flora and fauna on the refuge and within the South Florida Ecosystem.
4. Provide opportunities for compatible public use in accordance with the National Wildlife Refuge System Improvement Act of 1997.
5. Develop and implement outreach and education programs that will promote conservation and provide an understanding and appreciation of the Florida panther, fish and wildlife ecology, and human influence on ecosystems of south Florida.
6. Promote interagency and private landowner cooperation for the protection and management of natural and cultural resources within southwest Florida.
7. Protect refuge cultural resources in accordance with federal and state historic preservation legislation and regulations.

### **3.1.2 Fire Management Objectives**

1. Conduct all fire management activities to minimize risks to firefighters and the public and ensure safety is the highest priority
2. Reduce and maintain fuels at nonhazardous levels to provide for public and firefighter health and safety and to protect habitats critical to endangered species, migratory birds, and ecosystem integrity as stated in the FPNWR Comprehensive Conservation Plan.
3. Develop and implement procedures to adequately monitor and analyze data on fire effects and apply this knowledge to the management of the refuge's resources.
4. Prevent the further spread of invasive plants.
5. Promote an interagency approach to managing fires on an ecosystem basis.
6. Promote public understanding of refuge fire management programs and objectives.
7. Encourage research to advance the understanding of fire behavior effects, ecology, and management
8. Provide assistance to local, state and federal fire management agencies with refuge fire equipment and personnel when requested
9. Contain costs while conducting all fire management activities to insure all goals are being met at the least cost to the USFWS.

Certain constraints are common to all FMU's and they include:

- Retardants and foams will not be used within 300 feet of any wetland or water body and must be approved by the project leader or designee.
- Ground disturbed by suppression activities will be minimized as much as possible when life and property are not threatened. Use of heavy equipment must be approved by the Refuge Manager or Project Leader except in cases of immediate threat to life, property or safety of firefighters and the public. Any disturbed areas will be rehabilitated to minimize invasion by exotic vegetation.

### Cost Effectiveness:

Maximizing the cost effectiveness of any fire operation is the responsibility of all involved, including those that authorize, direct, or implement those operations. Cost effectiveness is the most economical use of the resources necessary to accomplish project/incident objectives. Accomplishing these objectives safely and efficiently will not be sacrificed for the sole purpose of “cost saving”. Care will be taken to ensure that expenditures are commensurate with values to be protected. Many factors outside of the biophysical environment may influence spending decision, including those of the social, political, and economic realms.

The Wildland Fire Decision Support System (WFDSS) or other required wildfire decision support tool will be used for analysis of integrated risk and cost management.

### 3.1.3. Characteristics Common to All FMU's

Fire management units on the FPNWR were designated by an interdisciplinary team of fire and resource specialists. The FMU's individual characteristics will be explained later in the chapter. Of primary importance in their designation was variation in vegetation and its response to fire and flammability. Also considered was potential impact from smoke and threat to WUI or structures within the refuge. Due to the relative small size of the refuge and flat terrain, all of the fire management units will have similar climatic impacts. This includes temperature, humidity, and winds. Fuel moistures will stay relatively constant across the refuge, varying only depending on plant species.

#### 3.1.3.1 Habitat Types/Vegetation

Table1. Refuge acreage by habitat type (see figure 5 below for map of habitat by soil type)

Description	Acres	Percent
Hardwood Hammock	1556	6
Pine Forests	5740	22
Cypress Wet Prairies	903	3
Mixed Swamp	9935	38
Cypress Domes	392	2
Cypress Forests	7216	27
Lakes and Ponds	69	0
Disturbed Area	579	2
<b>Total Acreage</b>	<b>26,605</b>	<b>100</b>

#### Pine Forests

South Florida Slash , *Pinus elliottii* var. *densa*, pine makes up 100% of the pine population on the refuge. These forests occupy 5740 acres or 22% of habitat within the refuge (Preston, 1991). The most common understory species found in flatwoods are saw palmetto, *Serenoa repens*, and gallberry, *Ilex glabra*. Additional species can include wax myrtle, *Myrica cerifera*, fetterbush, *Lyonia* spp., and scrub oaks, *Quercus* spp.

Pine forests are situated on slightly elevated land with soils generally of sands with exposed bedrock. These pines may be seasonally inundated for short periods during periodic heavy precipitation. The pine forest is considered a sub-climax plant community maintained by fire that will succeed to a mixed hardwood forest in the absence of fire (Duever, et al, 1986).

Fire frequency or fire return interval is a prime consideration when managing fire in the pine forest. In the absence of, or with too long a fire interval, the vegetation will succeed to mixed hardwood forest i.e., live oak (Robbins & Meyers. 1992).

Fire intervals for a 10 year period of record were estimated by Snyder (1991). A one or two year fire interval in pine forest will tend to favor fire tolerant understory species, such as palmetto, resulting in an overstory of mature scattered slash pine with little or no regeneration. The loss of the pine overstory and /or regeneration caused by hot fires impedes pine regeneration since seed sources are lost and seedlings are destroyed. The FPNWR will use a 4-8 year fire interval in order to sustain a healthy pine overstory and wildlife habitat.

#### Hardwood Hammock Forests

On the refuge, hammock forests occupy about 1556 acres or 6% of the habitat and usually are developed on elevated sites in the absence of fire. Fire protection occurs when the hammocks are "surrounded by deep water or in areas of dense vegetation that retain high humidity and soil moisture".

Hardwood hammock forests on FPNWR include over 300 species of both tropical and temperate plants (Long, 1974). Generally, they are dominated by overstory species of laurel oak, *Quercus lauriflora*, water oak, *Q. nigra*, and live oak, *Q. virginiana*. Cabbage palm, *Sabal palmetto*, is also common. Woody growth within the interior of these hammocks is typically dense with 75-90 percent canopy cover. The interior floor is sparsely covered with moisture and shade tolerant plants. Hardwood hammocks also provide the appropriate soil requirements and microclimate for tropical species such as gumbo limbo, *Bursera simarouba*, and royal palm, *Roystonea elata*. Many hammocks have a perimeter composed of a shrub zone where more dense vegetation is dominant (Duever et al; 1975, 1986).

The most controlling factor in the developing of a hardwood hammock is the substrate. Hammocks on the refuge seem to occur in areas of elevated sites (limestone outcrops) with a deep sand layer. During severe drought, fire does destroy these hammocks through the consumption of the organic soil and root systems.

Hammocks are considered to be a climax community (Davis, 1943; Craighead, 1971) that is characterized by diverse woody flora. It is also important to note that many rare and state listed endangered plants and animals are found in this habitat.

#### Cypress Forests

Preston (1994) stated that bald cypress forests, *Taxodium distichum*, occupy 7086 acres or 27% within the refuge. Wade, et al; (1980) indicated that although cypress occupies seasonally flooded sites, evidence indicates that bald cypress is a fire-dependent species.

Prior to logging in the 1940's and 50's throughout the refuge, cypress was the major overstory species. Other trees were considered sub canopy species. The understory of these swamps included a variety of ferns, aquatic plants, saplings of the overstory species and grasses (Duever et al, 1986). The Fakahatchee Strand's unique habitat type supports a profuse population of rare plant species, including the largest concentration and the greatest diversity of native orchids in North America.

Human activities in the recent past, including drainage, logging and dry season burning, have severely altered the cypress habitats. Drainage or drainage-induced drought, along with severe fire has killed cypress, permitting the invasion of monospecific forests of willow and melaleuca in the Golden Gate Estates, west of the refuge.

Fire has a key role in perpetuating cypress forests by removing competing understory species. Severe fire can also exclude cypress communities by maintaining successional species at earlier serial stages.

#### Cypress Domes

Preston (1994) has identified Cypress domes on the refuge to occupy 392 acres or 2% of habitat. These cypress areas are usually round in shape and occur in depressions in the bedrock associated with deeper soils and peat accumulation. Higher soil fertility and extended hydroperiods promote the growth of large trees surrounding the central portion of the dome; the trees decreasing in height and diameter as the soils become shallow away from the dome's center. Cypress domes are often open at the center with a pond, aquatic plants, willow thicket, pop ash or pond apple. Domes will generally not burn except in severe drought periods.

#### Cypress Prairies

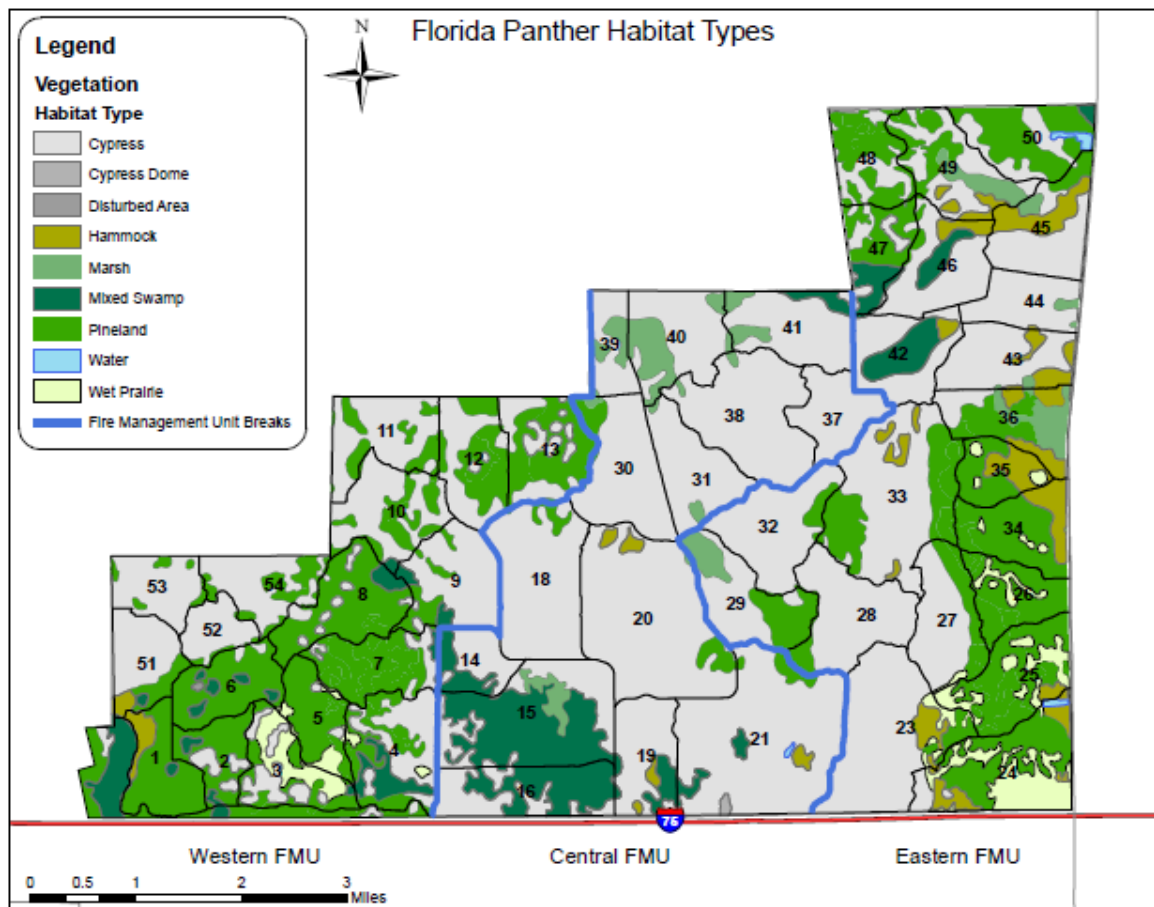
Cypress prairies are characterized by dwarf cypress growing in prairie vegetation. Preston (1994) identified 903 acres or 3% of this habitat occupied on the refuge. Craighead (1971) stated that in cypress prairies "Fire rarely destroy these trees as there is not sufficient organic matter to maintain a hot fire". Fire return intervals are estimated to be 24 years (Snyder. 1991).

#### Prairies, Marshes and Sloughs

The prairies, marshes, sloughs and pond plant communities are dominated by herbaceous vegetation that grow along a hydroperiod gradient from seasonally to almost permanently flooded. Both the wet and dry prairies have a relatively short mixed grass-sedge flora. Drier prairies have low, scrubby saw palmettos and clumps of wire grass, *Aristida spp.* Common grasses include broomsedge, *Andropogon spp.*, lopsided Indian grass, *Sorghastrum secundum*, festal grass, *Setaria gracilis*, and chalky bluestem, *Andropogon capillipes*. Other common herbaceous plants include white marsh pink, *Sabatia brevifolia*, milkworts, *Polygala spp.*, button snakeroot, *Eryngium aromaticum*, liatris, *Liatris spp.*, goldenrod, *Solidago spp.*, and rabbit tobacco, *Pterocaulon pycnostachyum*. Wax myrtle and gallberry are common pioneering species into prairie habitats. In wet prairies, which are more numerous on the refuge than dry prairies, the dominant species are maidencane, *Panicum hemitomon*, sand cordgrass, *Spartina bakeri*, beak rush, *Rhynchospora spp.*, muhly grass, *Muhlenbergia filipes*, love grass, *Eragrostis spp.*, and other grasses, sedges and rushes. Wetter prairies that are underlain by marl or rock frequently grow sawgrass, *Cladium jamaicense*, and spikerush, St. John's wort, *Hypericum spp.*, yellow-eyed grass, *Xyris spp.*, marsh pink, *Sabatia stellaris*,

gerardia, *Agalinis spp.*, coreopsis, *Coreopsis spp.*, and terrestrial orchids. Bladderworts, *Utricularia spp.*, and floating heart, *Nymphoides aquatica*, are frequent components during the wet season flora. Marsh vegetation is extremely varied, but a given site is usually dominated by one or two species. Among the most common are pickerel weed, *Pontederia spp.*, arrowhead, *Sagittaria spp.*, sawgrass, fire flag, *Thalia geniculata*, cattail, *Typha spp.*, and bulrush, *Scirpus spp.* Other grasses, sedges, and rushes are often abundant. Common species found in ponds include bladderwort, white water lily, *Nymphaea odorata*, and water lettuce, *Pistia stratiotes* (Duever et al., 1986). Long (1974) reported a total of 110 species from marshlands, 172 from wet prairie communities, and 69 species from dry prairies. Preston identified 69 acres or 1 % of open water ponds on the refuge.

Figure 6 – Habitats as Defined by Soil



### 3.1.3.2 Climate

The FPNWR is influenced by both tropical and temperate climates. It is characterized by hot, humid summers and mild, dry winters.

Temperature:

- Mean annual temperature is 74° F and mean monthly temperatures range from a January low of 57° F at Immokalee, to an August high of 83° F at US 41 and Forty Mile Bend. The record low for the region was recorded at 25° F in Fort Myers (Bradley, 1972). The record high was 100° F, also in Fort Myers.

Humidity:

- The average midday minimum relative humidity ranges from around 50 percent during the spring dry season, to about 60 percent during the summer wet season. Average nighttime maximum relative humidity ranges from 85 to 100 percent throughout the year.

#### Rainfall:

- Average annual rainfall for the region is 54 inches, although from year to year, the actual amount is quite variable. Mean average monthly rainfall ranges from an April low of 0.06 inch to a high of 11.3 inches in September. During the wet season, generally from May through October, tropical weather patterns cause frequent, characteristically intense, localized thunderstorms. Approximately two-thirds of the annual rainfall occurs during this period (approximately 36 inches). Fort Myers averages 16 thunderstorms in June, 23 in July, 21 in August, and 14 in September. In most other months there are from one to four thunderstorms. Temperate weather is dominant during the winter months (November through April), when rains are usually associated with the passage of frontal systems and rainfall from these systems is distributed relatively uniformly over South Florida.

#### Wind:

- Prevailing winds in the region are from the southeast and east. Summer winds are influenced by conventional forces inland and the land-and-sea-breeze effect near the coast. Highest average winds (8-10 mph) occur during the late winter and early spring. Generally, winds are sufficient to disperse smoke from fires (Duever et al., 1986).

#### Variations in Weather:

Extremes in weather conditions are also important in fire management. Precipitation, or the lack thereof, can be the most critical weather aspect in fire management in south Florida. The average annual rainfall on the refuge is about 55 inches, but this varies considerably for example, in 1995 the total rainfall was 81.25 inches, twenty six inches over the annual average. This variance is compounded by the sporadic nature of rain events.

Winds are another important consideration. There are changes throughout the day, such as sea breezes and erratic winds around thunderstorms. High winds, above 20 miles per hour at the twenty foot level, are common in the winter and spring months, with occasional days with 35 to 40 mph winds. High winds are also associated with large tropical systems in the summer. Several days of calm winds and stagnant air can occur in summer months when subsiding air is entrenched over the central Florida area.

Although rare, temperature extremes range from the occasional dips to the low 20's to highs near 100°. Relative humidity can be as low as 25% immediately after the passage of cold fronts. During these periods, humidity recovers only into the mid to upper 80% range at night when normal humidity recovery would be near 100%.

Because of its importance in fire management, lightning deserves a special mention. Florida has the highest number of thunderstorm days in the United States (USDA, 1941). Research at Kennedy Space Center shows that within cloud and cloud-to-ground discharges average 2.4 per minute per storm, with a maximum rate of 30.6 discharges per minute recorded during a storm on July 14, 1980 (NASA, 1984).

### 3.1.3.3 Air Quality

The refuge lies within a designated class II area under the Clean Air Act. As such, the air quality degradation from prescribed burning is considered to be temporary and minor as long as the burn is conducted under the best weather conditions to maximize pollutant dispersal. Impacts are also to be minimized on adjoining highway corridors and surrounding communities.

### 3.1.3.4 Cultural Resources

An archaeological survey was performed on the refuge in 1990. The results were reported in *The Archaeological and Historical Conservancy, Inc. Report #22*. There has been little archaeological work in or on the refuge. USGS topographic maps of the refuge proper show four archeological sites identified. To date, no comprehensive archaeological assessment has been conducted on the refuge area.

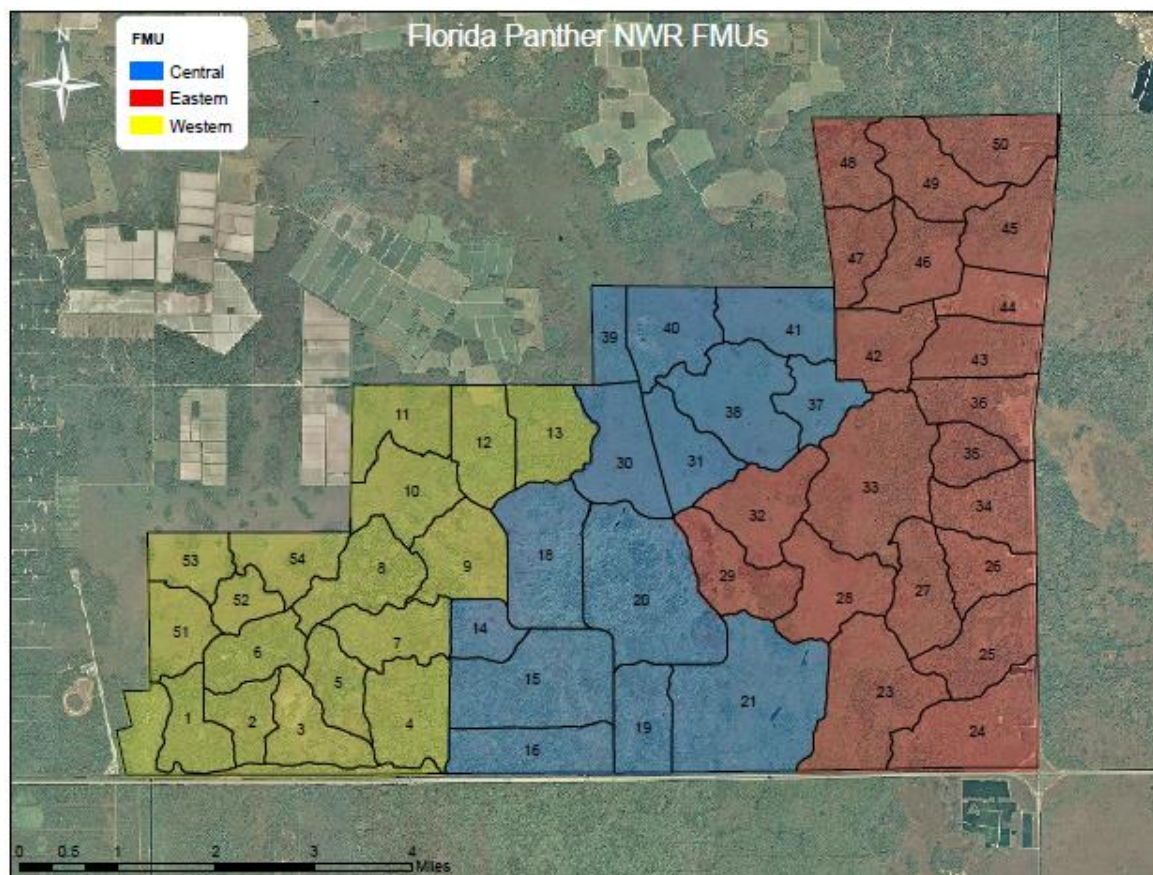
## 3.2 Fire Management Unit – Specific Descriptions

The FPNWR has been divided into three Fire Management Units (FMU) designated East, Central, and West. The East and West FMUs have similar vegetation dominated by South Florida Slash Pine (*Pinus elliottii* var. *densa*) interspersed with hammock forests. The Central FMU is dominated by Cypress and hardwoods and is interspersed with cypress domes and a few small pine forest uplands.

Table 2: Fire Management Units

<i>FMU Name</i>	<i>Response Issues</i>	<i>Response Strategy</i>	<i>Total Acres</i>	<i>Scott and Burgan Fuel Models (FBPS)</i>
<i>East</i>	<i>WUI, Smoke</i>	<i>Full Range of Response</i>	<i>10,698</i>	<i>SH4, GR3 (7, 3)</i>
<i>West</i>	<i>WUI, Smoke</i>	<i>Full Range of Response</i>	<i>6,911</i>	<i>SH4, GR3 (7, 3)</i>
<i>Central</i>	<i>Healthy Ecosystems, Access</i>	<i>Full Range of Response</i>	<i>8,674</i>	<i>TL2 (8/9)</i>

Figure 7: Fire Management Units and Burn Units



### 3.2.1 Eastern FMU

#### 3.2.1.1 General Description

The Eastern FMU is 10,698 acres in size and is adjacent to state highway 29 and I-75. Big Cypress National Preserve is adjacent to the refuge to the east and this FMU along state highway 29.

#### 3.2.1.2 Fire Management Guidance – Eastern FMU

The Eastern FMU contains the majority of the Refuge infrastructure. Fire management strategic objectives include protecting refuge structures and equipment as well as maintaining optimum habitat for the Florida Panther and related plant and animal species.

The Fuels Management objectives for the pine and palmetto compartments are twofold: fuels management and maintenance of the ecosystem. These two objectives are complimentary in that without regular fire understory vegetation can produce fire behavior that can exceed the tolerance of the slash pine overstory. This in turn can lead to a less vegetatively diverse pineland that is less than optimum for the Florida Panther and associated wildlife. Regular burning also allows unplanned fires to be controlled with minimum effort and ground disturbance. Burning under conditions that result in a mosaic burn pattern, with 50 - 75% of the area burned, meets both of these objectives. This approach leaves unburned areas that provide food and cover for wildlife, while the burned portions reduce fuels and lower the intensity of wildfires.

The pine stands are interspersed with many cypress domes and strands of various sizes. These features are associated with lower elevations and organic soils that often hold water until the end of the dry season, forming effective natural barriers to fire spread most of the year.

### **3.2.1.3 Fuel Models – Eastern FMU**

FUEL MODELS: The forty fuel models developed by Scott and Burgan (General Technical Report RMRS-GTR-153 June, 2005) do an adequate job representing fuel load and fire behavior at the Florida Panther NWR. The predominate fuel models found in the Eastern FMU are highlighted in gray below:

<b>Scott &amp; Burgan Models</b>	<b>Habitat Type</b>	<b>Description</b>	<b>Corresponding FBPS Model</b>
TL2 – Timber Litter (182)	Hammock, Cypress	Low load broadleaf litter	8 or 9 – Hardwood litter
SH4 – Shrub (144)	Pine Forests	Low to moderate load humid climate timber shrub	7 – Southern rough
GR3 – Grass (103)	Wet Prairie, Marsh	Low load, very coarse, humid climate grass – live fuels present (dynamic)	3 – Tall Grass

FIRE BEHAVIOR: Under normal conditions, rates of spread would be expected to be between ten and twenty chains per hour in the pine stands and slightly higher in the treeless flatwoods. Flame lengths of six to eight feet are common, and, in the taller palmettos, ten to fifteen feet would be expected.

In extreme conditions, rates of spread of thirty to fifty chains per hour are common, and much greater rates of spread have been observed. Twenty to twenty five foot flames are the rule, and, if some taller palmetto or brush, such as wax myrtle, is present twenty five to thirty foot flames are a real possibility. This is accompanied by both short and long range spotting which can increase rates of spread dramatically. Spotting is especially bad when cabbage palms are found in critical areas, such as along fire lines. The fire brands produced by the palm's broad leaves can travel several hundred feet with only moderate winds. When conditions are dry and windy, fires in the pine and palmetto flatwoods can jump four lane divided highways with little trouble.

### **3.2.1.4 Fuel Treatment and Wildfire History – Eastern FMU**

See Appendix P for complete listing of fuel treatment and wildfire history.

### **3.2.1.5 Values to be protected – Eastern FMU**

The refuge work center, helibase, and bunkhouse are located in this FMU. There are future plans for construction of an environmental education center within the FMU at the old hunt club site to begin during the fiscal year 2009. Below are the estimates of Refuge Real Property that is located within this FMU

Table 3 - Refuge Real Property

<b>Description</b>	<b>Replacement Cost</b>
Refuge Work Center	\$ 1,550,000
Environmental Education Center	\$200,000
Helibase	\$120,000
Bunkhouse/Intern House	\$550,000
Refuge Visitor Trail	\$75,000
<b>Total</b>	<b>\$2,495,000</b>

#### ***3.2.1.6 Safety Considerations Specific to the Eastern FMU***

Smoke is a major issue in this FMU due to potential impacts to Hwy 29 and parts of I-75 and must be considered during prescribed burns and/or wildfire activity. Care must be taken when working around the structures on the east side of the FMU as there are some piles of trash hidden under overgrown vegetation as well as around the private in-holdings. Firefighters will engage in perimeter control along property boundaries surrounding the private in-holdings. Any fire that involves structures or trash piles with the in-holding area will not be engaged unless it will compromise the safety of the suppression operation. Powerlines run along Hwy 29 and could pose a safety issue to aircraft utilizing the Helibase.

### **3.2.2 Central FMU**

#### ***3.2.2.1 General Description***

The Central FMU covers 8,674 acres (see Figure 6). The Central FMU is dominated by dense Cypress strand, specifically the north end of the Fakahatchee Strand, and is interspersed with cypress domes and hardwood hammocks. There are a few isolated pine stands and some cypress prairie found in the northern portion of the FMU. Private land is located on the northern boundary and is dominated by grazing lands. Fire spread into or out of this area has low potential due to low flammability of the fuels. This FMU has the lowest elevation, and is the wettest and least burnable of the FMU's.

### **3.2.2.2 Fire Management Guidance – Central FMU**

**CYPRESS:** The strategic objective in the cypress areas is to keep fire activity to a level low enough to prevent detrimental impacts to them, while controlling smoke impacts to surrounding roads. Extensive ground fire that consumes the organic soil layer is not desirable, while low intensity fire that top-kills the hardwood understory is permissible as long as the organic layer is not consumed. These Cypress areas will not be excluded from prescribed fire treatment when found adjacent to upland areas, but will be allowed to burn at the same time as the rest of the compartment where there is a receptive fuel bed. Fire will not be actively introduced beyond the transition areas with uplands. The few wildfires that ignite in Cypress fuels generally go out on their own due to the higher live fuel moistures and less flammable vegetation. Any unplanned ignitions that do not go out under natural conditions will require a management response that will be determined after review with refuge and resource management taking into consideration location of the fire and impacts to firefighter and public safety.

**HARDWOODS:** The strategic objective in the hardwood hammocks is to keep fire activity to a level low enough to prevent mortality in the hardwoods. Active prescribed fire treatments are not conducted in these hammocks, but prescribed fire activity on the upland margins will not be prevented from entering the hammocks as a rule. The few wildfires that ignite in the hammocks will be suppressed under a management response that accounts for firefighter and public safety. Under normal climatological conditions, wildfires generally do not spread in the hammocks due to shading and live fuel moisture conditions.

### **3.2.2.3 Fuel Models – Central FMU**

**FUEL MODELS:** The forty fuel models developed by Scott and Burgan (General Technical Report RMRS-GTR-153 June, 2005) do an adequate job representing fuel load and fire behavior at the Florida Panther NWR. The predominate fuel models found in the Central FMU are highlighted in gray below:

<b>Scott &amp; Burgan Models</b>	<b>Habitat Type</b>	<b>Description</b>	<b>Corresponding FBPS Model</b>
TL2 – Timber Litter (182)	Hammock, Cypress	Low load broadleaf litter	8 or 9 – Hardwood litter
SH4 – Shrub (144)	Pine Forests	Low to moderate load humid climate timber shrub	7 – Southern rough
GR3 – Grass (103)	Wet Prairie, Marsh	Low load, very coarse, humid climate grass – live fuels present (dynamic)	3 – Tall Grass

**FIRE BEHAVIOR:** When fires burn under normal conditions in the cypress and hardwood hammocks, rates of spread are slow (one to two chains per hour), and flames seldom exceed one to two feet in length. The most significant result of fire is the burning of the duff layer and into the organic layer which will kill many feeder roots, and could eventually cause mortality in the mature trees.

#### **3.2.2.4 Fuel Treatment and Wildfire History – Central FMU**

See Appendix P for complete listing of fuel treatment and wildfire history.

#### **3.2.2.5 Values to be protected – Central FMU**

Smoke is of minimum concern in an average year when moisture levels are normal, but fires during an abnormally dry or drought season can burn into the ground fuels in the cypress strands and domes as well as the hardwood hammocks. This ground fire can be resistant to control and could potentially damage rare orchid habitat as well as create long durations of smoke in the area. Allowing fires to burn under these conditions will be avoided.

#### **3.2.2.6 Safety Considerations Specific to the Central FMU**

Few safety considerations exist in the Central FMU, there are no developed areas and much of the FMU is relatively moist and unfavorable for fire spread compared to the other two FMU's. Dense cypress and hardwood vegetation is adjacent to I-75, so there are few smoke concerns as this part of the FMU is not actively treated with prescribed fire. The greatest safety consideration is travel through the FMU as it is generally the wettest portion of the Refuge and equipment can easily become stuck except in the driest time of the year. Smoldering fire adjacent to I-75 could cause smoke concerns so unplanned ignitions in these areas will be suppressed.

### **3.2.3 Western FMU**

#### **3.2.3.1 General Description**

The Western FMU totals 6,911 acres and occupies the west third of the refuge. It is bounded on two sides by private land, and I-75 to the south. The majority of the wildland urban interface located near the Florida Panther Refuge is associated with this FMU. The Golden Gate Estates community is one mile west of the boundary and a Harley Davidson Company test track is adjacent to the west boundary of the refuge. There is a high probability that future growth of the interface will occur north and west of the refuge proximate to this FMU.

#### **3.2.3.2 Fire Management Guidance - Western FMU**

The strategic objectives for the pine and palmetto compartments are similar to the Eastern FMU: hazard fuels management and maintenance of the ecosystem. This FMU is generally the driest of the three due to drainage from the canals and ditches in the area. The compartments located adjacent to I-75 have heavy fuel loads due to Cabbage Palm encroachment as a result of altered hydrology. Mechanical removal of the Cabbage Palm is ongoing, but fire behavior must be moderated to reduce impacts to the pine overstory. Prescribed fire treatments under higher moisture regimes can reduce fire intensity in areas that have a predominate Cabbage Palm understory. This approach will leave some unburned areas that provide food and cover for wildlife, while the burned portions reduce fuels and lower the intensity of wildfires. Unplanned ignitions will be managed under a management response emphasizing firefighter and public safety. Primary concern during fire season is an unplanned ignition in this area with strong prevailing east winds that could threaten the western boundary of the refuge, aggressive suppression action would be taken under these circumstances. Unplanned ignitions that start within the "buffer strip" located in between the southern edge of the Western FMU and the canal adjacent to I-75 will be suppressed using a response that will minimize smoke impacts to I-75.

### **3.2.3.3 Fuel Models – Western FMU**

FUEL MODELS: The forty fuel models developed by Scott and Burgan (General Technical Report RMRS-GTR-153 June, 2005) do an adequate job representing fuel load and fire behavior at the Florida Panther NWR. The predominate fuel models found in the Western FMU are highlighted in gray below:

<b>Scott &amp; Burgan Models</b>	<b>Habitat Type</b>	<b>Description</b>	<b>Corresponding FBPS Model</b>
TL2 – Timber Litter (182)	Hammock, Cypress	Low load broadleaf litter	8 or 9 – Hardwood litter
SH4 – Shrub (144)	Pine Forests	Low to moderate load humid climate timber shrub	7 – Southern rough
GR3 – Grass (103)	Wet Prairie, Marsh	Low load, very coarse, humid climate grass – live fuels present (dynamic)	3 – Tall Grass

FIRE BEHAVIOR: Under normal conditions, rates of spread would be expected to be between ten and twenty chains per hour in the pine stands and slightly higher in the treeless flatwoods. Flame lengths of six to eight feet are common, and, in the taller palmettos, ten to fifteen feet would be expected.

In extreme conditions, rates of spread of thirty to fifty chains per hour are common, and much greater rates of spread have been observed. Twenty to twenty five foot flames are the rule, and, if some taller palmetto or brush, such as wax myrtle, is present twenty five to thirty foot flames are a real possibility. This is accompanied by both short and long range spotting which can increase rates of spread dramatically. Spotting is especially bad when cabbage palms are found in critical areas, such as along fire lines. The fire brands produced by the palm's broad leaves can travel several hundred feet with only moderate winds. When conditions are dry and windy, fires in the pine and palmetto flatwoods can jump four lane divided highways with little trouble.

### **3.2.3.4 Fuel Treatment and Wildfire History – Western FMU**

See Appendix P for complete listing of fuel treatment and wildfire history.

#### ***3.2.3.5 Values to be protected – Western FMU***

There are two pole barns located in the Western FMU just north and east of the entrance from I-75. Equipment is stored in these pole barns and must be protected from unplanned ignitions. There are no other Refuge structures located in this FMU. The Golden Gate Estates community is one mile west of the boundary and a Harley Davidson Company test track is adjacent to the west boundary of the refuge, neighboring this FMU. All unplanned ignitions that occur in this FMU must be considered potential threats to the urban interface areas to the west of the FMU and refuge boundary and will be managed to mitigate risk to firefighters and the public.

#### ***3.2.3.6 Safety Considerations Specific to the Western FMU***

Smoke is a major issue in this FMU due to potential impacts to I-75 and the WUI areas to the west. Mitigating measures, such as contacting the highway patrol and the county sheriff and posting smoke signs will be taken if smoke impacts the highway.

# CHAPTER 4 – WILDLAND FIRE OPERATIONAL GUIDANCE

## 4.1 Response to Wildland Fire

### ***Wildland Fire Management Options***

This section outlines the scope of fire management options that will be implemented across all Fire Management Units on the Florida Panther NWR. All fire management decisions and responses will adhere to policy found in Chapters 10 – 18 of the Interagency Standards for Fire and Fire Aviation Operations (NFES 2724), hereafter referred to as the Red Book, and Guidance for Implementation of Federal Wildland Fire Management Policy.

### **Objectives**

As noted in the introduction to this plan, the primary objectives for fire management on the refuge is to provide optimum habitat conditions for the Florida panther while protecting life and property, both within and outside the refuge. Fire personnel will be expected to understand the impacts of prescribed fire and suppression activities on other plant and animal species as well as the critical importance of managing smoke during all fire management operations. Initial action is required for every wildfire on or threatening the refuge. Response to wildfires, both human and lightning caused, will range from aggressive direct or indirect attack, to a less impacting confinement strategy and can include surveillance and monitoring to ensure the fire spread will be limited to areas designated by consultation between the fire management staff and the Refuge administrators. Fire control lines may consist of roads, trails or natural barriers (such as wetlands), foam or water lines, or masticated, disked, bladed or plowed lines. Ground disturbance will be the exception and will only take place with refuge management approval, except in the case of immediate threat to life or property. The incident commander has full authority to select the response based on line officer delegation, values at risk, predicted weather, seasonal fire danger conditions, resources available, resource damage potential, and total wildland fire situation.

### **Strategy**

The strategy for fire managers to reach the refuge management goals and fire management objectives is threefold;

- 1) Preparedness: Activities and actions in preparation for fire management activities
- 2) Fuels Management: Management of refuge resources and treatment of hazardous fuels with prescribed fire and mechanical treatment.
- 3) Wildfire Response: Initial and extended attack wildfires either on or off the refuge
  - Management activities will include extensive use of prescribed fire to reduce hazardous fuels in the urban interface. Prescribed fire will also help in maintaining and restoring habitat for T&E species.
  - During wildfire suppression, fire managers will limit ground disturbing line construction. Fire retardant should only be used in the most aggressive suppression tactics with refuge management approval and should not be used in or near waterways and swamps. All fires, including prescribed fires, will

trigger the need for monitoring smoke along the I-75 and state road 29 corridors and the interface areas.

- Structural fire suppression is the responsibility of local governments. Refuge fire resources may assist with exterior structural protection activities under the formal Fire Protection Agreements that specify mutual responsibilities, including funding (*Red Book* 01-3)

#### **4.1.1 Direction for Response to Wildland Fire**

Evaluation and selection of a response to a wildfire will include consideration of risks to public and firefighter safety, threats to the values to protect, costs of various mitigation strategies and tactics, and potential resource benefits.

Wildfires will be staffed or monitored during active burning periods as needed to ensure that appropriate mitigation actions can be made to protect values threatened. All wildfires will be supervised by a qualified incident commander (IC) responsible to:

- Assess the fire situation and make a report to dispatch (or refuge management) as soon as practical
- Use guidance in this FMP or a delegation of authority to determine and implement an appropriate management response
- Determine organization, resource needs, strategy and tactics
- Brief incoming and assigned resources on the incident organization, strategy and tactics, weather and fire behavior, Lookouts, Communications, Escape Routes, Safety zones and radio frequencies
- Order resources needed for the response through the designated dispatch office
- Manage the incident until relieved or the incident is under control

The FMP and a delegation of authority can provide a general strategy to an IC, who has discretion to select and implement appropriate tactics within the limits described for the FMU's, including when and where to use minimum suppression tactics (MIST) unless otherwise specified. All resources, including mutual aid resources, will report to the IC (in person or by radio) and receive an assignment prior to tactical deployment. Table 4 illustrates a cross-section of suppression responses, strategies, and tactics available.

The Guidance for Implementation of Federal Wildland Fire Management Policy provides the following direction in responding to wildland fires:

- A wildland fire may be concurrently managed for one or more objectives, and objectives can change as the fire spreads across the landscape. Objectives are affected by changes in the fuels, weather, topography, varying social understanding and tolerance, and involvement of other governmental jurisdictions having different missions and objectives.
- Management response to a wildland fire on federal land is based on objectives established in the applicable Land/Resource Management Plan and/or the Fire Management Plan.
- Initial action on human-caused wildfire will be to suppress the fire at the lowest cost with the fewest negative consequences with respect to firefighter and public safety.
- Managers will use a decision support process to guide and document wildfire management decisions. The process will provide situational assessment, analyze hazards and risk, define implementation actions, and document decisions and rationale for those decisions.

Table 4: Situations, strategy and tactics in response to wildland fire.

Potential situation	Potential strategy	Potential tactics
Unplanned ignition on Refuge lands which does not threaten life, natural or cultural resources or property values.	If FMU objectives allow, evaluate fire for confinement strategy. If not, identify area where fire might be expected to remain with limited or partial perimeter control.	<ol style="list-style-type: none"> <li>1. Monitor fire spread and intensity.</li> <li>2. Identify management action points and tactical actions at those points. Prepare to respond as needed.</li> <li>3. Keep Public informed.</li> <li>4. Patrol and surveillance.</li> </ol>
Wildfire burning onto Service lands with no immediate threat to human life and no high value resources to protect.	Suppression strategy with effective cost management in line with values to protect. Protect values as needed by point protection or partial perimeter control.	<ol style="list-style-type: none"> <li>1. Monitor fire spread and intensity.</li> <li>2. Use natural and constructed barriers to keep fire within a planned boundary. As needed, construct, burnout, and hold direct and indirect line.</li> <li>3. Assess need for mop-up inside fire edge.</li> <li>3. Patrol and surveillance.</li> </ol>
<ol style="list-style-type: none"> <li>1. Wildfire that threatens life, property or sensitive resources.</li> <li>2. Extreme fire behavior observed or expected.</li> </ol>	Protect values threatened. Where safe, attack full fire perimeter aggressively to keep fire small. Burn out to closest barrier or firebreak.	<ol style="list-style-type: none"> <li>1. Continually monitor advance of fire edge as possible.</li> <li>2. Deploy forces to protect values.</li> <li>3. Use air and ground attack where safe and effective.</li> <li>4. Plan for extended attack.</li> </ol>

### Interagency Operations

The Florida Panther NWR works closely with the Florida Division of Forestry, Fakahatchee Strand State Preserve, Collier-Seminole State Park, Big Cypress National Preserve, Everglades National Park the BIA Seminole Reservation as well as the local structural fire departments. Resources from each of these partners are generally available to assist with initial attack and fire management in general on the refuge. If an unplanned ignition occurs on the refuge and assistance in implementing a response is necessary, the above partners will be contacted to provide support if available. Likewise if a neighboring partner requires assistance from the refuge, resources will be dispatched ensuring there is adequate fire protection remaining at the refuge. The decision to dispatch resources will be made by the FMO or designee when the request is received.

Agreements are in place with the federal agencies through the Interagency Agreement for Fire Management, which can be found in Chapter 40 of the National Mobilization Guide (<http://www.nifc.gov/nicc/mobguide/CHAPTER40.pdf>). An operating plan that outlines mutual aid, training and prescribed fire support with the Florida Division of Forestry- Caloosahatchee District is updated annually and can be found in Appendix J. Additionally, a blanket agreement between the Service and the Florida Division of Forestry is in place through the Master Cooperative Wildland Fire Management And Stafford Act Response Agreement.

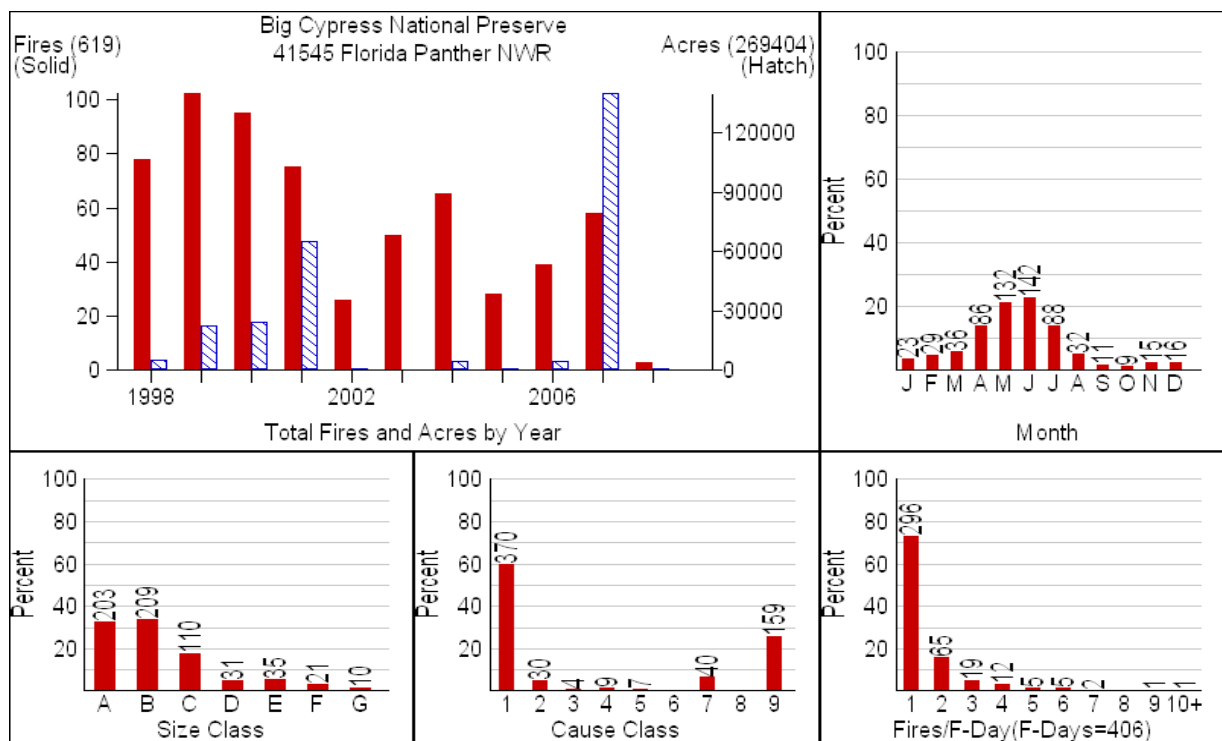
Since the other state agencies (Fakahatchee, Collier-Seminole, etc) fall under the protection of the Florida Division of Forestry, any response to incidents located on these properties is coordinated through the DOF dispatch office and is covered through the above state agreements.

## 4.1.2 Fire Occurrence

The ten year fire history (1998 – 2008) for the Florida Panther NWR includes approximately 50 fires both naturally and human caused that occurred on the Refuge proper. The figure below shows fire occurrence across the Florida Panther NWR, the Big Cypress National Preserve and adjacent land under the protection of the Florida Division of Forestry. Because of the low fire occurrence on the refuge it is informative and necessary to use this larger data set to understand the frequency, seasonality, size and cause of fires on public land in Southwest Florida.

From this information it is evident that the majority of unplanned ignitions occur between April and July, but can occur during any month of the year with somewhere between 20 and 100 fires per year. Most fires fall into the A – C class size and are generally caused by lightning.

Figure 8: Ten year fire occurrence - Florida Panther NWR, Big Cypress National Preserve, State Land



### Size Classes:

- A...0.1-0.25 acres
- B...0.25-9.9 acres
- C...10.0-99.9 acres
- D...100.0-299.9 acres
- E...300.0-999.9 acres
- F...1000.0-4999.9 acres
- G...5000+acres

### Cause Classes:

- 1...Lightning
- 2...Camp Fire
- 3...Smoking
- 4...Debris Burning
- 5...Incendiary
- 6...Equipment Use
- 7...Railroads
- 8...Children
- 9...Miscellaneous

### 4.1.3 Preparedness

Chapter 10 of the Red Book will be used as the primary direction for preparedness on FPNWR.

#### 4.1.3.1 Readiness

Seasonal readiness activities will generally follow the table shown in the example table:

Table 5: Annual Refuge Fire Management Readiness Activities

<b>Activities – Complete before end of month</b>	<b>J</b>	<b>F</b>	<b>M</b>	<b>A</b>	<b>M</b>	<b>J</b>	<b>J</b>	<b>A</b>	<b>S</b>	<b>O</b>	<b>N</b>	<b>D</b>
Update Interagency Fire Agreements/AOP's	X											
End of Season Fire Equipment Maintenance						X						
Inventory Fire Equipment and Cache											X	
Complete Training Analysis										X		
Annual Refresher Training	X											
Annual Fitness Testing	X											
Pre-Season Equipment Preparation										X		
Weigh Equipment to verify GVW Compliance										X		
Prescribed Fire Plan Preparation						X	X	X				
Review and Update Fire Management Plan											X	
Prepare Pre-season Risk Analysis	X											
Weather Station Maintenance and Calibration												X

#### 4.1.3.2 Fire Season

The wildfire season at FPNWR is generally February through July when fuel moistures are low enough to be receptive to lightning strikes and human ignitions, but the Southwest Florida area in general can experience wildfires during any month of the year. During the dry season, generally beginning in February, unplanned ignitions become more prevalent; and by April and May indices increase to their maximums as fuels are most susceptible and the occurrence of lightning is more likely. The designated fire season, as recognized by the Florida Division of Forestry, is normally, but not limited to, February 1 to July 31, with the peak months being May and June. Prescribed fire activities at FPNWR can occur throughout the year, but the majority of burns occur from November through June or July depending on soil moisture and water levels.

#### 4.1.3.3 NFDRS and Remote Automatic Weather Stations (RAWS):

There are two RAWS stations located on the Refuge - Panther East (86405) is approximately 1.5 miles west of the work center and the Panther West station (86406) is located on the west side of the refuge at the helispot. Both weather stations are maintained by the Prescribed Fire Specialist annually with sensors being switched out in January of each year.

Fire danger ratings for FPNWR are based on both of the Panther RAWS coupled with historical weather data from the Miles City station (86401) located across highway 29 in the Northwest corner of Big Cypress National Preserve.

#### **4.1.3.4 Fire Cache and other supplies**

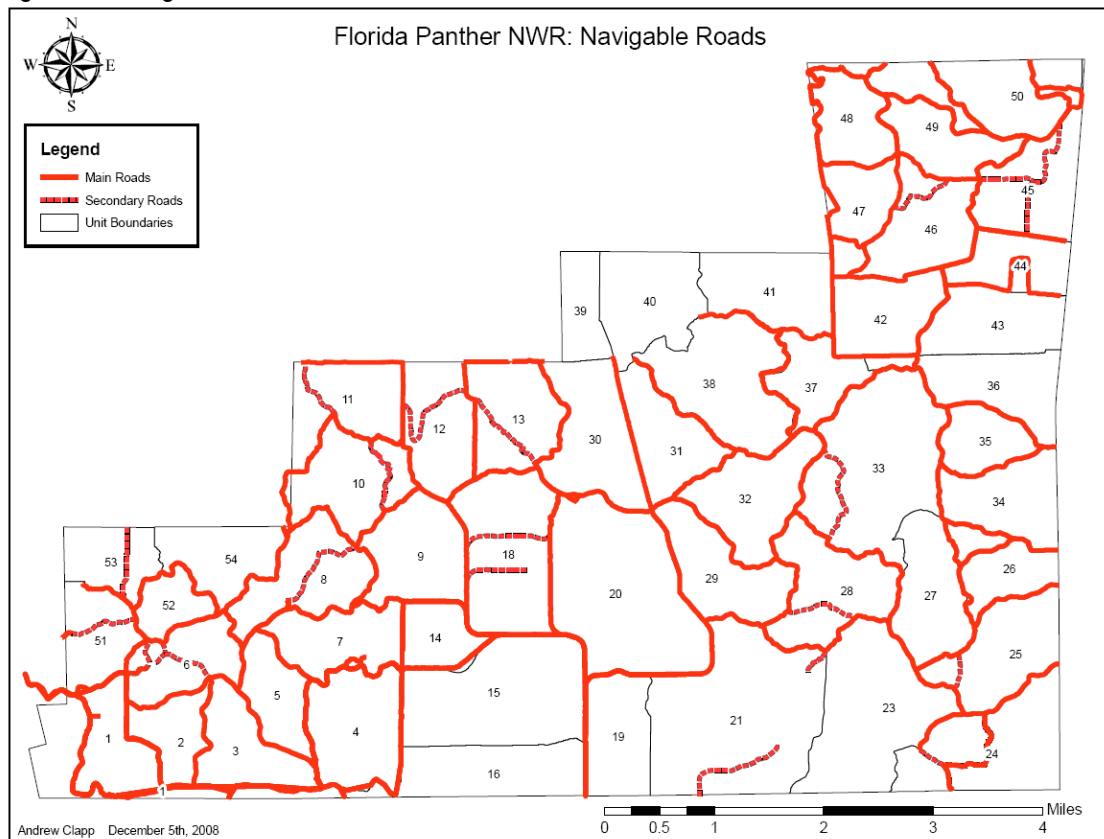
The main fire cache is located at the Roger Roth Work Center and a smaller cache with supplies for helicopter operations is located at the helibase. Fire cache inventory is monitored by the Supervisory Forestry Technician or designee who arranges for any needed rehabilitation or replacement. The fire cache items and quantities are based on a typical 20 person cache, but some supply numbers and items have been modified for local use. The inventory and stocking level is kept on a computer data base (Appendix G). Cache items have a bench stock level of 20% below Normal Unit Strength (NUS) and when supplies reach this point, replacement equipment is ordered.

#### **4.1.3.4 Fire Breaks**

The refuge is broken down into 52 compartments (burn units) which for the most part have access on at least three sides by an established system of roads and trails (fire lines) (Figure 8). A typical line is maintained at 15 – 25 feet wide, but none of the lines are wide enough to stop a major fire run, rather they are designed to provide access for prescribed burning and for burn-out operations in the event of a wildfire. The compartment boundaries vary from well established dirt roads that can support a two wheel drive vehicle to single track trail only suitable to an ATV or a hand-line. In some places there are no established fire breaks and the compartment boundaries are defined by natural vegetation changes from pine to cypress strand.

Maintenance on the accessible roads and trails is restricted to mowing, grading and trimming of the overhanging vegetation. A typical line is maintained with either an eight foot bush hog mower or a 15 foot batwing mower. Some of the roads and trails can only be maintained in the dry season as they become inundated with water during the summer months. A map of the maintenance equipment (mower/tractor size) needed for each compartment boundary is found in Appendix C.

Figure 9: Navigable Roads



#### 4.1.3.5 Training

Chapter 13 of the Redbook and the Wildland and Prescribed Fire Qualification System Guide (PMS 310-1) will be used as the primary direction for training and qualifications on FPNWR.

All personnel participating in wildland fire suppression activities must meet the basic requirements for a firefighter type two (FFT2). Required training includes S-130, S-190, I-100, L-180 a field based fireline construction exercise, and the successful completion of the Arduous level work capacity test. The online version of this basic training is available and approved for use, however when practical it is preferred that the student attend the 32 hour classroom training with NWCG qualified instructors. For prescribed burning activities the minimum training requirements include S-130, S190, I-100 and L-180 as well as a moderate level work capacity test. Individuals participating on prescribed burns at the moderate level prescribed burn crew member (RXCM) may not participate in suppression actions should the prescribed burn be converted to a wildfire. These individuals must disengage from fire suppression activities and depart the fireline.

Refuge staff engaged in wildfire or prescribed fire operations must meet NWCG annual standards for currency by successfully completing the following:

- Annual Safety Refresher: The intent of annual fireline safety refresher training is to focus line going personnel on operations and decision making issues related to fireline and all-hazard incident safety. Refresher training will ensure firefighters have information regarding current initiatives, the upcoming fire season, and any

policy/guidance changes. Refresher training is provided in order to recognize and mitigate risk, maintain safe and effective practices, and to reduce accidents and near misses.

- Annual revisions to the Wildland Fire Safety Training Annual Refresher (WFSTAR) website are generally posted by the end of January and can be found at the WFSTAR website at <http://www.nifc.gov/wfstar/index.htm>.
- Refer to the Wildland Fire Qualification System Guide (PMS 310-1) at <http://www.nwcg.gov/pms/docs/PMS310-1.pdf> for positions that require Annual Fireline Safety Refresher Training.
- Work Capacity Test: at the appropriate fitness level commensurate with fire qualifications, to include any required medical qualification standards (annual physical for seasonal and permanent employees or Health Screening Questionnaire for AD hires)

Refuge fire personnel are encouraged to participate and attend fire training in areas of Operations, Planning, Logistics, Command, Finance, and Ecosystem Management. In order to maintain high readiness standards, employees who function in any fire position must stay informed of the latest information, technology, tactical and safety concepts, therefore, training must be thorough and ongoing. Not only is structured classroom training and local fire experience beneficial for gaining knowledge, but it is also important that employees receive “on the job” training by participating in interagency fire assignments or details off-station. Training will be available that will elevate personnel to National Interagency Incident Management System (NIIMS) positions that will meet not only local Refuge needs, but also those of the fire district, region and the national needs of the Service and interagency fire community.

Due to the complexities and workloads that wildfire and prescribed fire operations impose on the Refuge, it is necessary that non-fire funded staff support fire management activities in relation to their qualifications, either on the fireline or in logistical or financial management activities.

Service personnel who may become involved in emergency response activities, including wildland fire, are required to meet minimum training requirements established by the Department of Homeland Security in order to be NIMS compliant. Information regarding specific position requirements is outlined in Service NIMS required training memorandum from the Director dated December 5, 2008 and the DOI Bulletin dated May 31, 2007.

#### **4.1.3.7 Annual Operating Plans (AOP)**

An annual operating plan is in place with the Florida Division of Forestry. The refuge AOP will identify mutual aid zones and authorities, detection and notification procedures, incident command procedures, fire suppression resources, personnel qualifications, communication considerations, suppression procedures and criteria for interagency prescribed fire support.

The FMO or designee will organize and update the Annual Operating Plan (AOP) in January of each year to ensure coordination and cooperation between the agencies. Fire organization information (names, phone numbers and equipment lists) will be updated and then the plan will

be forwarded to the Division of Forestry Center Manager in Ft. Myers to receive their updates. The plan will be signed by the DOF Center Manager and the Refuge Manager or Project Leader, copies will be placed at the Helibase and Roth Work Center and the original kept on file in the main refuge office.

#### **4.1.3.8 Emergency Pre-suppression**

During the fire season there may be short-term weather events and increased human activity that increases fire danger beyond what may be expected for the season. These types of events cannot be planned or budgeted for and may call for lengthening the duty day, extending the work week, or detailing extra resources to meet the anticipated fire danger. The Project Leader in discussion with the FMO has authority to make this determination with notification to the Regional Fire Management Coordinator. Limitations on utilizing emergency pre-suppression funds are listed in section 1.6 of the FWS Fire Management Handbook. If Emergency Pre-suppression continues for more than 2 – 3 days, management will consider submitting a severity request to cover costs for additional staffing and equipment.

#### **4.1.3.9 Step-Up Plan (Appendix F)**

The Refuge Step-Up plan was developed after analyzing historic NFDRS indices and weather data at both the Miles City RAWS located in the Northwest corner of Big Cypress National Preserve and the local RAWS on the Panther Refuge. Breakpoints were compared with other South Florida refuges (Loxahatchee and National Key Deer Refuge) and National Parks (Everglades and Big Cypress) to ensure consistency across the area. Fire history was considered using fire occurrence from the FPNWR, the Big Cypress National Preserve and adjacent lands under Division of Forestry protection. Energy Release Component (ERC-G) and Burning Index (BI-G) were analyzed with historic large fires (200 acres or greater) to determine time periods with large fire potential. Historic Lightning Activity Levels (LAL) were added to the matrix to determine breakpoints for staffing classes.

#### **4.1.3.10 Severity Funding and Requests**

Severity is an escalated pre-suppression authorization which is justified by abnormal fire potential. This funding is actually an authorization to spend against a set limit, rather than an actual transfer of funds. The criterion for severity authorization is defined in Chapter 10 of the FWS Fire Management Handbook as follows:

1. When unusual weather and fire conditions result in the occurrence or substantial threat of occurrence, of wildfires with significant damage potential before or after the normal fire season identified in the refuge Fire Management Plan.
2. Weather conditions during the fire season result in a period of fire severity which is, or is anticipated to be, substantially higher than that which normally occurred during the base period used in fire program planning.

On FPNWR, triggers for requesting severity funding authorization can include, but are not limited to, ERC and BI above the 97<sup>th</sup> percentile for extended periods coupled with increased initial attack activity in the area. Other contributing factors could include a

shortage of staffing due to vacancies or increased requests from cooperators for initial attack support. Any severity requests will follow the template outlined in *Chapter 10 of the Redbook* along with any required Regional worksheets. Examples of previous severity requests are available at the Helibase dispatch office.

#### **4.1.3.11 Morning Briefing and Equipment Checklist**

Every morning during fire season (generally beginning after the Annual Refresher and Work Capacity Test are completed in January) refuge fire staff will assemble for daily morning briefings to discuss pertinent fire management information and assignments for the day. This morning briefing will be mandatory during the refuge's fire season. Topics will include weather forecast, staffing levels, preparedness levels, safety (6 minutes for safety), duties for the day, equipment maintenance issues, and potential fire behavior. On mornings when the refuge is determined to be at staffing level 4 or 5, additional assignments for initial attack will be made.

Critical fire equipment used in either wildland fire suppression or prescribed burning operations, will be checked, maintained, and restocked every morning during fire season. If serious discrepancies are found, the effected equipment will be considered Out of Service by the direction of the Supervisory Forestry Technician or designee, until corrections are made. If this occurs during high to extreme fire danger (staffing class 4 or 5) the FMO will be notified so that he/she may inform cooperators of equipment shortages.

#### **4.1.4 Detection Capabilities**

Aerial fire detection on USFWS property in Florida is provided through a statewide memorandum of understanding with the Florida Division of Forestry. Detection on FPNWR is provided for through the annual operating plan with the Caloosahatchee District of DOF. The Division of Forestry provides aerial detection generally beginning in February or when local fire activity begins to increase. If Forestry detects any unplanned ignitions with their aircraft the FPNWR dispatch office is notified either directly by the aircraft or through the Caloosahatchee District Fire Dispatch office.

During fire season, particularly following any lightning activity, refuge fire personnel will make regular patrols to the I-75 overpass. This overpass provides an excellent view of the refuge and surrounding public land and serves as a "lookout" for smoke detection. Maps of lightning strike coordinates are compiled for daily use and are used to reference areas within the refuge that may have potential fire starts. Coordinates of lightning strikes are monitored from the I-75 overpass or are investigated on the ground if deemed necessary by the FMO or designee.

Since the refuge is closed to the public, patrols for arson within the refuge boundaries are not necessary. Arson could occur along any of the boundaries adjacent to private landownership, but historically this has not been a problem. If problems develop, regular patrols will be conducted or contact will be made with DOF to assist with aerial detection along the refuge boundary.

#### **4.1.5 Dispatch and Initial Attack Operations**

Initial action is required for every wildfire on or threatening the refuge. When a fire is reported a qualified Incident Commander (IC Type 4 or 5) will be dispatched by the FMO or designee to the fire to provide a thorough size-up. The size-up will include the following information:

- Fire size and character
- Spread potential
- Values at risk
- Fuels and fire behavior
- Additional resources needed for containment
- Potential tactics and strategies

The FMO or designee will contact the refuge management staff (Refuge Manager and/or Project Leader or designee) with the size-up information to recommend and determine the response. This communication may take place simultaneously with Initial Attack operations. It will be the responsibility of the IC to determine the type and number of additional resources that are required to take the appropriate action. An individual will be assigned to staff the dispatch office to provide radio communication, logistical support and weather updates.

Incident Commanders (IC) have the authority to respond to wildfires with a full range of suppression strategies between aggressive direct or indirect attack, to less impacting confinement strategy and can include surveillance and monitoring to ensure the fire spread will be limited to designated areas. When evaluating the initial response, the IC and fire management staff will consider risks to public and firefighter safety, values at risk, and the cost of various strategies and tactics.

#### ***4.1.6 Extended Attack and Large Fire Management***

Historically most of the unplanned ignitions on the FPNWR have been contained within the first burning period, however, with the fuels and weather conditions that can develop at FPNWR, it is very possible that fires could escape initial attack and move into the extended attack phase. If a fire escapes initial attack and it is determined that it will not be contained within the second operational period, a wildfire complexity analysis (appendices F & G in the *Redbook*) and a Wildfire Situation Analysis (WFSa) or Wildland Fire Decision Support System (WFDSS) analysis will be completed. It will be the responsibility of the FMO or designee and the Project Leader to ensure that these tasks are completed in a timely fashion. Requests for additional resources will be determined during the initial attack phase by the IC and should not be delayed by the preparation of the WFSa/WFDSS. The complexity analysis will determine the level of management that is required to respond to the situation.

In the event that a Type 1, 2 or 3 Incident Management Team is ordered, the Agency Administrator (Project Leader or Refuge Manager) is responsible for providing an initial briefing, Delegation of Authority to the team, and team performance appraisal (see Chapter 11 of the *Redbook*). The *Redbook* also provides direction for “Agency Administrator Representative” and “Resource Advisor” responsibilities.

Should a wildland fire become an extended attack incident where interagency personnel are requested through the mobilization system only NWCG qualified wildland fire personnel may respond. No exceptions from “Arduous” fitness levels are allowed for personnel hired as primary firefighters.

Minimum Impact Suppression: Minimum impact suppression is the goal of the refuge so long as suppression objectives can be met. **However, the refuge will not compromise firefighter safety.** If conditions warrant, tractor plow units, dozers and other ground disturbing equipment and suppression tactics are permitted.

#### **4.1.7 Aviation Operations**

The Refuge fire management staff primarily uses rotary wing aviation resources for wildfire suppression, prescribed fire operations and detection purposes (*Refuge Aviation Plan* is located at the Helibase). During wildfire suppression and prescribed fire operations, helicopters are used for water delivery, crew transport, and aerial ignition, as well as providing an aerial platform for the Incident Commander or Burn Boss to monitor fire activity and direct resources. Fixed wing aircraft use is limited to communicating with the Florida Division of Forestry or Big Cypress National Preserve detection plane during over-flights.

At present, the refuge has a permanent helibase located at (26° 11' 13.81" N / 81° 20' 58.37" W) and a temporary helispot at (26° 10' 17.37" N / 81° 28' 43.23" W) (Appendix C).

All aviation operations on the Refuge shall be conducted in accordance with U.S. Fish and Wildlife Service and DOI National Business Center – Aviation Management Directorate guidelines, regional policy, Interagency Helicopter Operations Guide (IHOG) and the Refuge Aviation Plan. All aircraft used on the Refuge shall be currently carded in accordance with AMD and NWCG regulations and policies. All personnel involved in aviation operations for wildfire and prescribed fire operations shall carry current NWCG qualifications appropriate to their position, as demonstrated by a current and valid incident qualifications card ("red card"). All Refuge personnel regularly involved in aviation operations by virtue of their position in the organization shall meet all applicable U.S. Fish and Wildlife Service, U.S. Department of the Interior, AMD and NWCG safety and awareness training requirements, and shall maintain currency as needed.

#### **4.1.8 Reviews and Investigations**

Reviews and investigations are used by wildland fire and aviation managers to assess and improve the effectiveness and safety of organizational operations. Brief descriptions of various reviews and associated procedures and requirements, including those for serious wildland fire accidents, entrapments, and fire trespass are listed in the corresponding *Red Book* chapter.

Incident Commanders, Single Resource Bosses and Burn Bosses will ensure After Action Reviews (AAR) take place at the end of each shift of a wildfire or prescribed burn and that any significant issues that arise are brought to the attention of the FMO or Agency Administrator. If circumstances are such that it is not practical to conduct an AAR at the end of a shift, an AAR will be conducted at the earliest possible time with as many of the participants included as possible. A formal review of significant initial attack and extended attack operations (those that threaten life or property or are multijurisdictional) will be made by Agency and cooperator personnel as needed. The purpose of these reviews will be to address safety, organizational, operational, fiscal, and resource management issues with regards to the wildfire.

#### **4.1.9 Reports**

Each wildfire action requires the submission of an Individual Fire Report, submitted via the Fire Management Information System (FMIS). An FMIS report is required regardless of who takes action. When FWS fire staff take or assist in initial attack off FWS lands, the agency with jurisdiction will file a report. The refuge must also file a report to document the FWS support action and to support potential billing to non-federal entities for trespass fires. The following types of fires must be reported within 10 days of a fire being declared out:

- All wildfires on FWS and FWS-protected lands

- Wildfires threatening FWS land on which we take action
- All escaped prescribed fire, where a wildfire declaration is made
- All false alarms

It is the responsibility of the Incident Commander to provide the information necessary to complete the fire report, and the Fire Management Officers job to ensure they are entered into the system. The Dispatcher will complete the actual data entry for all wildfire information into FMIS. The refuge prescribed fire specialist will complete the data entry for all prescribed fires.

Other reports that are required include:

- *ICS-209* for extended attack fires (over 100 acres) will be submitted daily through the 209 system on the internet by the dispatch office
- *Close of Business (COB)* report (forwarded to the Florida Interagency Coordination System in Tallahassee, FL). This COB will be submitted by the dispatch office and will include information for fires that occur on the Refuge property (fire size, status, start date, discovery time and resources assigned).

## **4.2 Hazardous Fuels Management**

### **4.2.1 *Prescribed Fire Program for Hazardous Fuels and Habitats***

Prescribed fire planning and operations will follow the standards and policies in the *Interagency Prescribed Fire Planning and Implementation Procedures Guide*, *FWS Fire Management Handbook* and the *Redbook*.

#### **Program Rationale and Desired Future Condition**

The prescribed fire program on Florida Panther National Wildlife Refuge must support the mission of the overall fire management program, which in turn, must support the objectives of the refuge. These goals have been defined in detail previously in this plan, and fall into two categories; habitat management and fuels management. Prescribed fires will maintain the refuge's fire adapted plant communities, maximize the productivity of these communities, and reduce fuel loading which will, in turn, reduce wildfire hazard. The kind of vegetative communities that exist on the FPNWR evolved as a direct result of: topography, hydro period, soils, climate, and fire. Plant species that survive fires do so because of special features and characteristics they possess. Plant species lacking these characteristics are eliminated from frequently burned areas and their distribution is confined to areas where fires are less likely to occur, such as in hammocks and deeper water swamps.

Fires keep the biotic community dynamic and diversified, thereby attracting and holding the diversity and abundance of plants and wildlife that currently exist on the refuge (see references 4.2.1.3). The cessation of prescribed burning and suppression of wildfire would cause most of the pinelands to evolve beyond fire subclimax ecosystems, gradually into mesic mixed hardwood and palm hammock habitats.

Impact on Florida Panthers: The variety and interspersed nature of the habitats on the refuge are important factors contributing to the heavy use of the area by panthers. Prescribed fire will maintain the existing sub-climax vegetative stages and increase the carrying capacity for important panther prey species such as white-tailed deer, wild hogs and turkey. Implementing

regular prescribed fire treatments can also aid in the management of unplanned ignitions which can impact the fire intolerant hammocks that provide cover for the panther and their prey species.

Other Endangered Species: Prescribed fire maintains habitats by preventing climax forest species from becoming dominant in sub-climax vegetative types. Maintenance of sub-climax habitats is considered critical for wood storks, which depend on swamps, marshes, and prairies for roosting, nesting, and feeding. Maintenance of an open understory in pine flatwoods by regular prescribed burning can benefit species which prefer such habitats including the bald eagle which utilizes open areas with tall trees for roosting and nesting.

#### **4.2.1.1. Program Overview**

The majority of the 26,605 acres of the Refuge can be considered burnable, with only a few exceptions found in the deepest parts of the largest cypress strands. Of the 52 units that are included in the three FMUs, 40 (22,099 acres) of them are actively managed with prescribed fire, the remaining 12 units (4,301 acres) are not (figure 9). Burn units range in size from 204 acres to 1169 acres. Based on an ideal three to five year fire interval approximately 5,500 acres should burn annually to maintain plant and wildlife habitat and minimize fuel buildup. It is the goal of the program to rotate the seasonality of burning each unit between growing season (April – August) and dormant season (November – March) although weather conditions including prevailing wind direction, smoke dispersion, drought and/or wildfire activity often limit burning in the preferred season. In these cases the prescribed fire program prefers to conduct the burn in the less desired season rather than miss an opportunity and have to extend the return interval another year.

Overall goals for prescribed fire on the Refuge include:

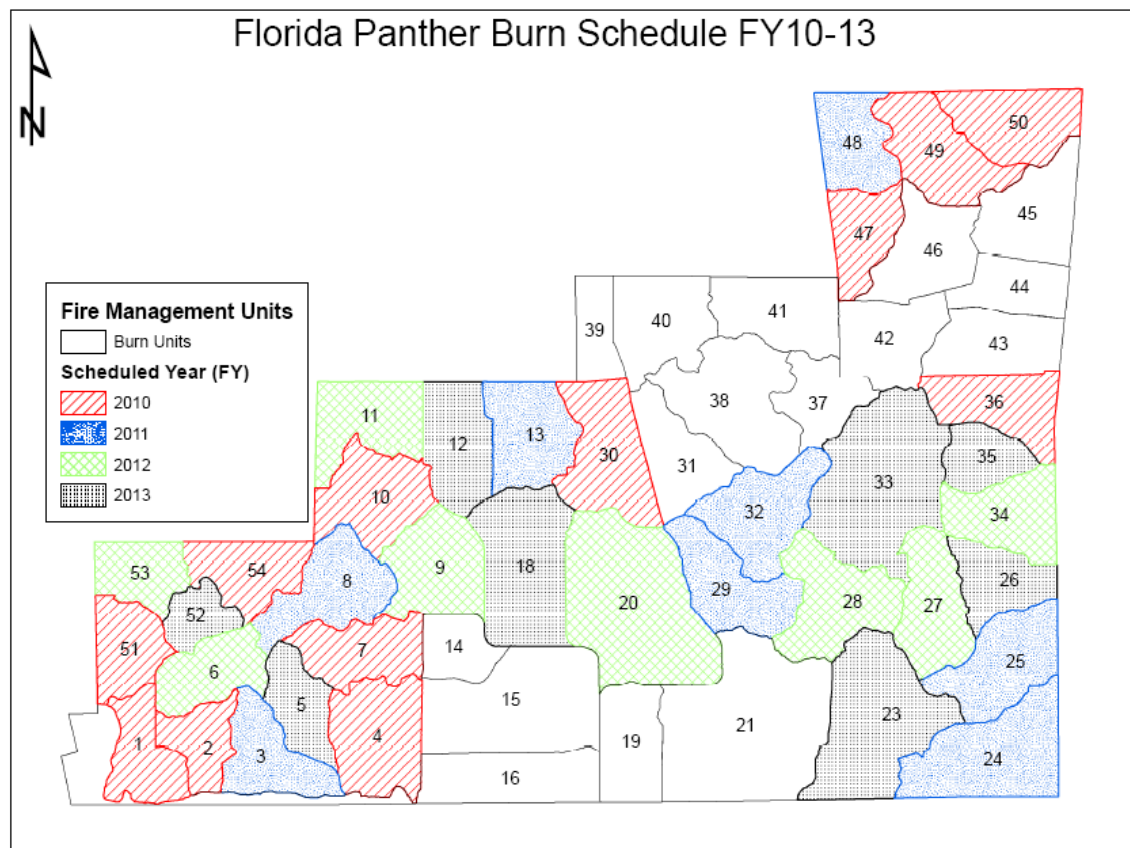
- 1) Use prescribed fire to reduce fuel loading in high hazard areas on the Refuge.
- 2) Use fire as a tool to maintain optimum habitat for the Florida Panther and related plant and animal species
- 3) Develop an understanding of conditions in which the various sites and fuel types can be safely burned, and meet resource objectives and other constraints (such as smoke management guidelines).
- 4) Develop the Refuges' capacity for qualified, experienced firefighters to assist all of the Refuges in District 6 (JN "Ding" Darling NWR, Ten Thousand Islands NWR, National Key Deer Refuge and Refuges in Puerto Rico) to carry out the fire management programs. Personnel and equipment must continually be developed to meet the challenges and opportunities.

Prescribed fire treatments may be conducted during any season of the year depending on the specific management objectives of the burn. Currently, the majority of the burns are conducted between November and June, but if weather and water levels permit, the burning season could extend into July and August. Over the past several years, the months of March, April and May have been very dry with high fire danger that has limited the opportunities during those months. While the use of prescribed fire may be desired throughout all seasons of the year the combination of atmospheric conditions for excellent smoke dispersal and timing of the burn to achieve optimum fire effects on fuels or habitat do not always coincide.

Table 6: Prescribed Burn Schedule 2010 – 2013 by burn unit

Florida Panther NWR			
Rx Burn Schedule: 2010-2013			
2010	2011	2012	2013
1	3	4	2
2	8	6	5
4	13	9	12
7	24	11	18
10	29	20	23
30	48	28	26
34		27	33
36		50	35
47		53	52
49			
50			
51			
54			

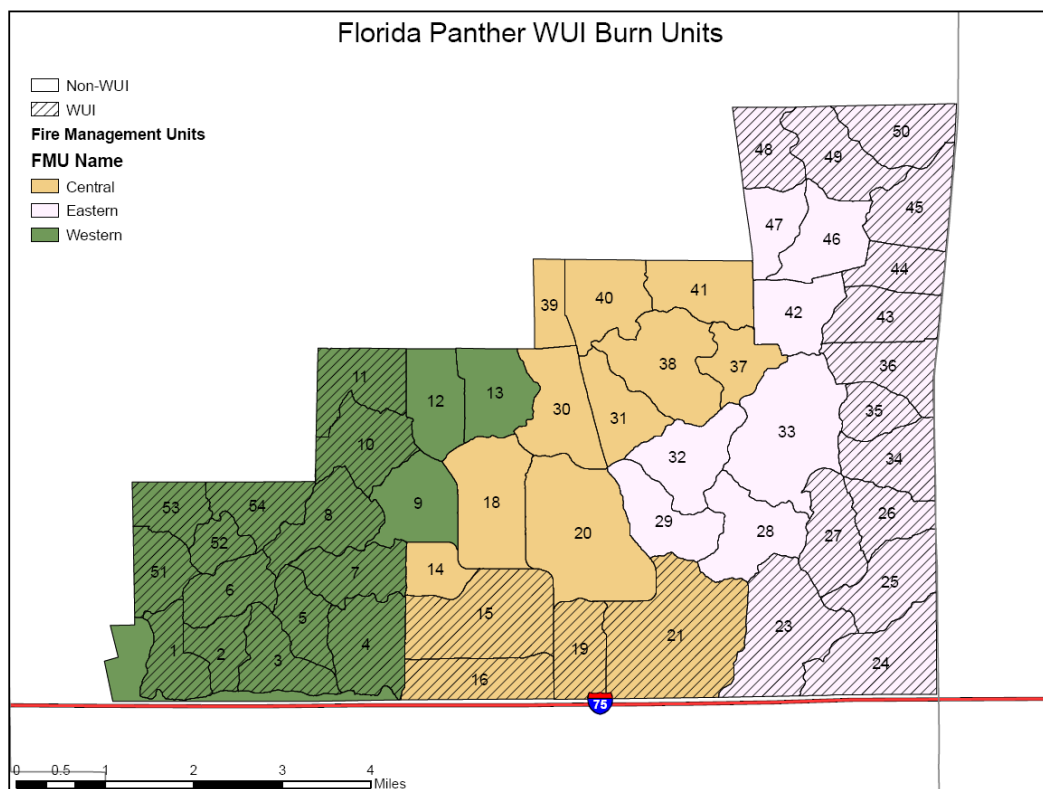
Figure 10: Example of four year prescribed fire schedule (note the units in white are not actively treated with prescribed fire)



### Prescribed Fire Treatment for Hazard Fuel Reduction

Thirty of the 52 burn units are considered to be located in the Wildland urban interface (Figure 11). The two primary Interface concerns are the road corridors (Interstate 75 and State Road 29) and Golden Gate Estates (a residential community) to the west of the Refuge. As stated previously, fire intervals of as little as five years, combined with only moderate drought conditions, can result in wildfires that are difficult to suppress.

Figure 11: Wildland Urban Interface burn units



### Compliance

All prescribed fires must comply with NEPA requirements. An EA must be prepared for each Prescribed Fire Plan unless: (a) the field office's approved FMP or planning documents and the accompanying environmental document adequately discuss the action; or (b) a categorical exclusion covers the activity. (621 FW 2). In the case of the Florida Panther Refuge, all prescribed fire treatments are covered under the categorical exclusion.

#### **4.2.1.2 Effect of National and Regional Preparedness Levels**

The National Interagency Coordination Center establishes national preparedness levels to keep track of resource availability at a national level to ensure national preparedness. These levels may constrain prescribed fire activities in some Geographic Areas not experiencing significant activity to ensure sufficient resources are available for the national situation.

The Southern Area Coordination Center (SACC), in consultation with agency fire coordinators, determines regional preparedness levels. These levels are based on wildland fire activity within the Southern Area and the need for fire suppression resources.

National Preparedness Levels I and II require no special actions on the part of the refuge. When Level III is reached, the Regional Office will be notified of any prescribed burn or wildfire action. When at national Preparedness Level 4 the Regional Director must approve all prescribed burns and at a Preparedness Level 5 any prescribed burning must be approved by the National Fire Director. These requirements can be found in the National Interagency Mobilization Guide.

#### **4.2.1.3 Project Planning**

The first step in planning a prescribed fire is defining the objectives of the burn. This will normally take place anywhere from a year to eighteen months prior to the actual burn and will involve recommendations from the Refuge Biologist and resource management staff. The refuge Prescribed Fire Specialist is responsible for prescribed fire project planning and will coordinate with the Refuge Biologist and Fire Management Officer when developing and updating burn plans. Two local studies on prescribed burning and its effects on habitats and vegetation of the Florida Panther National Wildlife Refuge have been completed which have been utilized to inform the development of burn plan objectives. The reports are located at the Helibase Office and include the following:

- Dees, Clark and van Manen, July 8, 1999: *Florida Panther Habitat Use in Response to Prescribed Fire at Florida Panther National Wildlife Refuge and Big Cypress National Preserve*. Final Report to Florida Panther National Wildlife Refuge
- Main, Barry, Portier, Harper and Allen, January, 2000: *Effects of Prescribed Fire on Soil Nutrients, Forage Quality, and Community Composition on the Florida Panther NWR*. Final Report to US Fish and Wildlife Service, Florida Panther NWR. University of Florida Wildlife Cooperative Unit (RWO 168) Report number: SWFREC-IMM-2000-03

The Prescribed Fire Plan (PFP) will conform to the Interagency Prescribed Fire Planning and Implementation Procedures Guide, the FWS Fire Management Handbook, chapter 18, and Interagency Standards for Fire and Fire Aviation Operations, chapter 17 (*Redbook*). The PFP should not only address the environmental factors required to achieve the desired fire behavior, but also pre-burn preparation required, the size and makeup of the burning crew, smoke management screening, and monitoring of the burn itself. All PFP's must undergo a technical review prior to implementation by a burn boss qualified at the level commensurate with the complexity of the plan.

Prescribed Burn Complexity: Each prescribed fire plan will require the completion of a complexity analysis. Many of the burns on the refuge involve the use of aerial ignition. According to the National Wildfire Coordinating Group's Prescribed Fire Complexity Guide, these burns must have a complexity rating of at least "Moderate".

#### **4.2.1.4 Project Implementation**

##### Qualifications:

During prescribed fire planning and operations, all federal agencies will accept each other's

standards for qualifications. The minimum qualification standard is the National Wildland Fire Coordinating Group (NWCG) *Wildland and Prescribed Fire Qualifications System Guide*, (PMS 310-1). State and local cooperators and contractors working on federal agency prescribed fires must meet the NWCG PMS 310-1 standards unless local agreements specify otherwise. No less than the organization described in the approved Prescribed Fire Plan may be used for implementation.

Cooperators, contractors, and casual hires (AD) may be used to implement prescribed fires. ADs must meet FWS standards. Cooperators, such as members of Volunteer Fire Departments, must have appropriate qualifications certified by their agency. Those who supervise FWS employees during prescribed fires must meet FWS standards.

#### Escaped Prescribed Fires:

A prescribed fire must be declared a wildfire by those identified in the burn plan when that person(s) determines that the contingency actions have failed or are likely to fail and cannot be mitigated by the end of the next burning period. An escaped prescribed fire must be declared a wildfire when the fire has spread outside the project boundary, or is likely to do so, and cannot be contained by the end of the next burning period. A prescribed fire can be converted to a wildfire for reasons other than an escape. A response will be made to such incidents and a formal analysis using a required wildfire decision support tool will be undertaken when needed. The Agency Administrator will be notified of an escaped prescribed fire.

#### The *Guide to Implementation of Federal Wildland Fire Management Policy* provides the following guidance:

A wildland fire may be concurrently managed for one or more objectives, and objectives can change as the fire spreads across the landscape. Objectives are affected by changes in the fuels, weather, topography, varying social understanding and tolerance, and involvement of other governmental jurisdictions having different missions and objectives.

#### Public Notification:

The public will be informed of prescribed fires through news releases, interpretive messages, and educational programs. Individual prescribed fires should not be conducted without informing those agencies and members of the public likely to be impacted.

#### Debris Burning:

We use a low complexity debris burn plan for debris disposal projects. The FMO will review the complexity of planned projects to ensure use of the plan is consistent with its intent. Further direction can be found in the *FWS Fire Management Handbook*, chapter 18.

#### **4.2.1.5 Smoke Management**

Planning for the production and movement of smoke during a prescribed burn is integral to all Prescribed Fire Plans (PFP). All PFPs will identify smoke sensitive areas within 10 miles of the burn unit that could be impacted by smoke from a prescribed burn. Management response to smoke production will be documented in the smoke management section of the PFP. Additional information for dealing with smoke may be found in the Smoke Management Plan (Appendix L).

Generally the goals of smoke management on the refuge are to manage prescribed burns in such a way as to cause minimum impact to the general public.

Specifically these goals are:

1. Avoid smoke impacts on Interstate 75 and State Road 29. Maintain visibility limits mandated by State regulation.
2. Avoid smoke impact to the major residential areas to the west of the refuge in Golden Gate Estates.

The refuge must comply with National and State regulations concerning air pollution. To do this, it must take aggressive action to manage smoke from both prescribed burns and wildfires to minimize impacts and maintain air quality.

Federal Regulations: The most important Federal Regulation concerning smoke management on refuges is the Clean Air Act (42 USC (USO) 7401). The specific areas of concern to fire managers are Non-Attainment Areas (NAA) and Class I Areas. FPNWR does not have any Class I or Non-Attainment Areas in the surrounding area that could be impacted by smoke production.

State Regulations: The State of Florida has delegated the control of smoke from prescribed burning to the Division of Forestry (DOF). A burn permit must be obtained from the DOF for all open fires. The DOF will issue prescribed burning permits so long as smoke dispersal conditions are good. Unless conditions are very unusual, burning permits are granted between 0900 and one hour before sunset. Night burning can be done if smoke dispersion is predicted to remain good throughout the nighttime hours.

The state requires that visibility remain above 500 feet on highways. It does not have any regulations at the present time that limit the total number of prescribed burns in an area, or the total amount of particulates in the air at one time.

#### **4.2.1.6 After Action and Escaped Fire Reviews**

The Burn Boss will ensure an informal After Action Review (AAR) is conducted for each operational period on a prescribed fire. The AAR is conducted for all line personnel that participated in the burn in order to review any communication, safety, operational or logistical problems that occurred during the prescribed burn.

All prescribed fires declared a wildfire will have an investigative review initiated by the Agency Administrator. The level and scope of the review will be determined by policy and procedures of the Red Book and the FWS Fire Management Handbook.

#### **4.2.1.7 Reports**

The Prescribed Fire Burn Boss will complete an evaluation and narrative of each prescribed burn. This evaluation will include the information on weather and fire behavior, results of the AAR, a narrative of firing procedures, smoke management problems if any, a cost analysis of the burn, and any significant equipment problems. The evaluation will also assess to what degree the objectives of the burn were met, and any recommendations for future burns in that particular burn unit.

All completed burn plans and associated documents will be kept in a binder with the District PFS as a permanent record of the burn day activities. The Burn Boss will ensure this information is provided to the Agency Administrator and/or Fire Management Officer as specified.

All prescribed fire projects files will contain the following information:

- Incident Action Plan
- Monitoring data - weather, fire behavior, fire effects, and smoke dispersal observations.
- Weather forecasts
- Notifications
- Fire organization
- Any agreements
- Go/no –go checklists
- Unit logs (ICS 214)
- Press releases
- Costs
- Actual ignition patterns and sequences used
- Smoke management information
- DOF Authorization number
- Post burn narrative

The Burn Boss will complete an Individual Fire Report in FMIS within 10 days of the fire being declared out. A Close of Business (COB) will be communicated to the Florida Coordination Center (FICC) for inclusion in the Regional prescribed fire accomplishment summary.

#### ***4.2.2 Non-fire Hazardous Fuels Treatment Program***

##### Mechanical Treatments – Mowing

Firelines associated with the burn units must be maintained for vehicle access and to limit fire spread between burn units. Approximately 202 miles of fireline are mowed annually. This information is recorded in NFPORS as fuels treatments as well as FMIS. This activity is accomplished primarily during the fall/winter (November – February) and then again on a more limited basis in the spring before areas become inundated with water from summer rains.

##### Chemical Treatments

Exotic / invasive plants are always a concern in the refuge. They can be found anytime there are ground disturbing activities and once established they are very difficult to eradicate. Resource managers under the direction of the Refuge Biologist use various chemicals for the treatment of exotic and invasive plants. Often chemical treatments and prescribed burns are coordinated and timed to achieve maximum results toward reducing these exotics and invasives. There are currently no hazard fuel funded chemical treatments conducted on the Refuge even though activities are coordinated with the fire management staff.

#### ***4.2.3. Processes to Identify Hazardous Fuels Treatments***

The District Prescribed Fire Specialist develops an annual program of work that targets specific treatment areas that are listed in the burn unit rotation. Burn units that were untreated from previous years are rolled into the annual work plan. This plan is presented to the Refuge Staff in an annual work plan meeting held in the fall in order to prioritize and coordinate other refuge management activities including visitation, chemical exotics/invasives treatments, research and other ongoing activities.

Prioritization for prescribed fire treatment is based on time since last burn and season of last burn, research activities ongoing within a planned burn unit and proximity to refuge boundary (those units closer to refuge boundary receive priority based on the need to reduce hazardous fuels on or near refuge boundary).

### **4.3 Emergency Stabilization and Rehabilitation/ Post Wildfire Activities**

The US Fish and Wildlife Service takes responsibility for taking prompt action to determine the need for and to prescribe and implement emergency treatments to minimize threats to life or property or to stabilize and prevent unacceptable degradation to natural and cultural resources from the effects of a fire on refuge lands (*Interagency Standards for Fire and Fire Aviation Operations*). Damages resulting from wildland fires are addressed through four post wildfire activities:

#### **4.3.1 Wildfire Suppression Activity Damage Repair**

Planned actions taken to repair the damages to resources, lands, and facilities resulting from wildfire suppression actions and documented in the Incident Action Plan. These actions are usually implemented immediately after the containment of the wildfire by the Incident Management Team before demobilization. If necessary, hydrologists or other specialists will be consulted to determine an assessment of damages incurred to refuge from suppression activities (*Interagency Standards for Fire and Fire Aviation Operations*).

All fire lines will be maintained to blend with the existing topography and to not interfere with the normal hydrology and vegetation patterns of the site. Emergency seeding and control techniques will be used in areas where erosion occurs. Wetlands will be protected from siltation, if necessary. Water quality will be monitored. Snags will be preserved for cavity nesting wildlife where they do not pose a threat to life or property.

All fire lines constructed during wildfire operations will be evaluated, and rehabilitated if necessary. In most cases, plow lines will need to be reworked to smooth them out. The rehab harrow is the tool of choice. In most cases, this will pull enough of the roots of native vegetation so that reseeding is not needed. Past experience has shown that hand lines do not require much rehabilitation.

#### **4.3.2 Emergency Stabilization**

Planned actions to stabilize and prevent unacceptable degradation to natural and cultural resources, to minimize threats to life or property resulting from the effects of a wildfire, or to repair/replace/construct physical improvements necessary to prevent degradation of land or resources. Emergency stabilization actions must be taken within one year following containment of a wildland fire and documented in a Burned Area Emergency Response Plan (*Interagency Standards for Fire and Fire Aviation Operations*; *Interagency Burned Area Emergency Response Guidebook*, DOI, 2006; and 620 DM 3 and 095 FW 3.9). Monitoring for treatment effectiveness will be conducted on all approved treatments and the results described in an annual or final report as stated in policy (620 DM 3 and 095 FW 3.9).

Natural recovery is the preferred emergency stabilization treatment for the refuge. No specific actions have been undertaken in the past to stabilize an area or implement a Burned Area Emergency Response Plan to date, however it is recognized that under certain possible scenarios stabilization

treatments could be implemented. Allowable actions permitted on the refuge that may be deemed necessary to stabilize an area under an emergency response include:

Assessments:

- Burned area assessments will identify post-fire threats to federal and tribal listed or proposed threatened and endangered species and what, if any, cost effective stabilization measures can be implemented to prevent further post-fire condition degradation.

Cultural Resources:

- Site stabilization and Protection
- NHPA Section 106 Compliance

Non-native Invasive Control:

- Assessments to determine the need for treatment. Contingent upon location of known infestations, possibility of new infestations due to management actions, suspected contaminated equipment use areas
- Treatments to prevent detrimental invasion by non-native species (not present on the site)
- Treatment of invasive plants introduced or aggravated by the wildfire. The treatment objective when the population is aggravated is to maintain the invasion at no more than pre-wildfire condition.
- Treatments to prevent permanent impairment of designated Critical Habitat for Federal and State listed, proposed or candidate threatened and endangered species.

Re-vegetation:

- Stabilize a site and minimize water or wind erosion
- Reduce invasion of non-native invasive plants
- Prevent Critical Habitat for federally listed threatened and endangered species from being more impaired than if nothing was done
- See *Interagency Emergency Response Guidebook* for further information

Federal Field Unit Infrastructure:

- Emergency stabilization of improvements and minor facilities (e.g., signs, guardrails, pit toilets, etc) burned or damaged by wildfire is appropriate only for public health and safety reasons
- HAZMAT and Facility Assessment and Stabilization
- Early Warning Flood and Evacuation Systems
- Emergency Road Repairs and Maintenance- Road closure is preferable unless the road is needed to provide immediate access to essential activities (e.g., hospital and post office access, threatened and endangered species management, communication systems). Damages due to suppression activities to roads will fall under "Wildfire Suppression Damage Activity Repair" as stated above.

Burned Area Emergency Response Team and Plan Development:

- An ad-hoc team of Agency Administrator (Refuge Manager, Project Leader) and refuge staff and any additional personnel necessary will form an initial Burned Area

Emergency Response Team. The team, under the guidance of the Agency Administrator will:

1. determine the need for burned area assessments
2. determine what further expertise is needed to conduct assessments
3. develop a Burned Area Emergency Response Plan with identified treatments
4. Track treatments in NFPORS
5. implement treatments
6. monitor effectiveness of treatments
7. write report based on monitoring results including a final report

#### **4.3.3 Rehabilitation**

Efforts taken within three years of containment of a wildland fire to repair or improve wildfire-damaged lands unlikely to recover naturally to management approved conditions, or to repair or replace minor facilities damaged by wildfire. These efforts are documented in a separate Burned Area Rehabilitation Plan (BAR plan) (Interagency Standards for Fire and Fire Aviation Operations ; Interagency Burned Area Rehabilitation Guidebook ; and 620 DM 3 and 095 FW 3.9).

Natural recovery is the preferred rehabilitation treatment for the refuge. No specific Burned Area Rehabilitation Plans have been implemented in the past following wildfires to date, however it is recognized that under certain possible scenarios rehabilitation treatments could be necessary. Allowable actions permitted on the refuge that may be deemed necessary to rehabilitate an area following wildfires include:

##### Cultural Resources:

- BAR funds are used to ensure burned area rehabilitation treatments conform to Section 106 of the National Historic Preservation Act (NHPA). Funds can not be used for restoration of any cultural resource or heritage sites.
- Additional limitations are listed in the Interagency Burned Area Response Guidebook.

##### Non-native Invasive Control:

- Burned area rehabilitation funds can be used to control non-native invasive plants in burned areas only if an approved management plan and existing program is in place addressing non-native species control.
- Assessments to determine the need for treatment. Contingent upon 1) known infestations; 2) possibility of new infestations due to management actions; and 3) suspected contamination due to equipment.
- Treatments to prevent detrimental invasion (not present on site) by non-native invasive species.
- Treatment of invasive plants introduced or aggravated by the wildfire. The treatment objective when the population is aggravated is to maintain the invasion at not more than pre-wildfire conditions.
- Systematic inventories can not be funded by rehabilitation funds.

## Re-vegetation

- Natural recovery by native plant species is preferable to planting or seeding, either of natives or non-natives. Re-vegetation of burned areas is not an appropriate use of BAR funds if natural regeneration will result in a vegetation type that meets BAR objectives.
- Planting of seed or seedlings for BAR is an appropriate treatment if seeding or planting of vegetation is prescribed to be effective with Departmental Policy and it repairs or improves land unlikely to recover naturally from wildfire damage by emulating historical or pre-fire ecosystem structure, function, diversity and dynamics consistent with existing land management plans.
- Additional limitations are listed in the *Interagency Burned Area Response Guidebook*.

## Forest Management:

- Forest management may be considered if the ecosystem is unlikely to recover naturally from wildfire damage as prescribed by a certified silviculturalist to not regenerate for 10 years following fire. Tree planting is limited to the following: the use of BAR funds to plant trees must be addressed in an approved land management plan (see 620 DM 3):
  1. facilitating the succession and stabilization of forest ecosystems.
  2. re-establishing habitat for federally listed threatened or endangered species, or other special status species.
  3. re-introducing or re-establishing native tree species and seed sources lost in a stand replacement fire.
  4. reforestation on Indian Trust Lands.

## Minor Facilities:

- The repair or replacement of minor improvements and facilities (e.g., kiosks, fences, interpretive or boundary signs, recreation facilities, corrals, guzzlers, trails, permanent long-term monitoring plots, etc.) burned or damaged by wildfire to pre-fire specifications is authorized with the use of BAR funds only if these improvements or facilities are necessary for implementing an approved land management plan. It does not include the construction of new or upgraded facilities that did not exist before the fire. BAR treatments and maintenance of BAR improvements beyond 3 years from wildfire containment is funded with other program funding. Minor facility repair or replacement must be addressed in the BAR plan.

## Burned Area Rehabilitation Team and Plan Development:

- An ad-hoc team of Agency Administrator (Refuge Manager, Project Leader) and refuge staff and any additional personnel necessary will form an initial Burned Area Rehabilitation Team. The team, under the guidance of the Agency Administrator will:
  1. determine the need for further burned area assessments
  2. determine what further expertise is needed to conduct assessments
  3. develop a Burned Area Rehabilitation Plan with identified treatments
  4. track treatments in NFPORS

5. implement treatments
6. monitor effectiveness of treatments
7. write reports based on monitoring results including annual reports and a final report

#### **4.3.4 Long Term Restoration**

Restoration includes continuing the rehabilitation beyond the initial three years or the repair or replacement of major facilities damaged by the wildfire. Land management plans and other funding sources are available to continue the rehabilitation efforts beyond three years.

### **4.4 Prevention, Mitigation, and Education**

Since the inception of the National Fire Plan in 2002, the traditional fire prevention program has been expanded to include efforts to mitigate or manage the hazardous fuels that threaten values at risk, whether structures in the interface or critical habitat for the Florida panther. The program includes actual treatment or mitigation of the hazardous fuel, and education of external and internal stakeholders who should be collaboratively engaged to help participate in the treatment of the problem.

#### **4.4.1 Prevention/Mitigation**

Fire prevention remains an important piece of the education program and is designed to reduce the number of human caused fires. To determine if human caused fires are numerous enough to develop a fire prevention plan, a significant number of fires must occur in high hazard fuels where valuable resources are at risk.

Florida Panther NWR has a very low incidence of human-caused fire. This is due, in part, to the fact that the refuge land is closed to the public. Arson is not unheard of, but its occurrence is rare. Accidental fires usually occur along roadsides, and are caused by discarded cigarettes, heat from vehicle exhausts or vehicle fires. These fires are usually easily detected and extinguished and do not lend themselves to reduction from a fire prevention program.

The Service provides Rural Fire Assistance Grants to local fire departments to enhance local wildfire protection, purchase equipment and train volunteer firefighters. The RFA Grant Program is coordinated through the designated WUI Specialist for the Southeast Region Fire Management Program.

There are opportunities to utilize the Community Wildfire Protection Program (CWPP) and Ready Reserve Program to cooperate with the adjoining communities to develop cooperative protection activities. The CWPP is led by the state agency, but the Refuge will cooperate as necessary to support those protective efforts.

The inadvertent or intentional ignition of wildland fuels by humans is illegal. The Refuge staff will investigate all human-caused wildfires at the earliest possible time. The investigation may range from a documented determination of cause by the initial attack crew to criminal investigation by a qualified arson investigator.

#### **4.4.2 Education**

Our outreach goal is to enhance knowledge and understanding of wildland fire management policies and practices through internal and external communication and education. One of the primary goals of the refuge fire staff is to keep the general public informed. Attempts to keep the general public informed are made through media contacts, participation in fire information organizations and outreach programs. Over the past few years several feature articles have been written about the refuge fire program. Interest in fires elsewhere in the United States has prompted some of these, while fires on the refuge have prompted local inquiries. The media is notified of burns in highly visible areas, and arrangements made to accommodate their presence.

Refuge staff members participate in such organizations as the South Florida Prescribed Fire Council. This organization works to bring to the public's attention the need for prescribed burning to reduce hazardous fuels and preserve the many fire maintained ecosystems in the state.

## CHAPTER 5 - MONITORING AND EVALUATION

### ***5.1 Fire Management Plan***

#### ***5.1.1. Annual FMP Review***

This Fire Management Plan will be reviewed annually and updated as needed and approved by the FPNWR Refuge Manager. Every five years this FMP will be reviewed and revised with concurrence from the Service's Regional Fire Management Staff. The plan will also be revised and or updated following completion of a new or significantly revised Comprehensive Conservation Plan or habitat management plan.

#### ***5.1.2. Fire Management Plan Terminology***

Terms in the FMP are defined in the National Wildfire Coordinating Group Glossary of Wildland Fire Terminology, located at <http://www.nwcg.gov/pms/pubs/glossary/index.htm>.

### ***5.2 Treatment Effectiveness Monitoring***

#### ***5.2.1 Fire Effects Monitoring Plan***

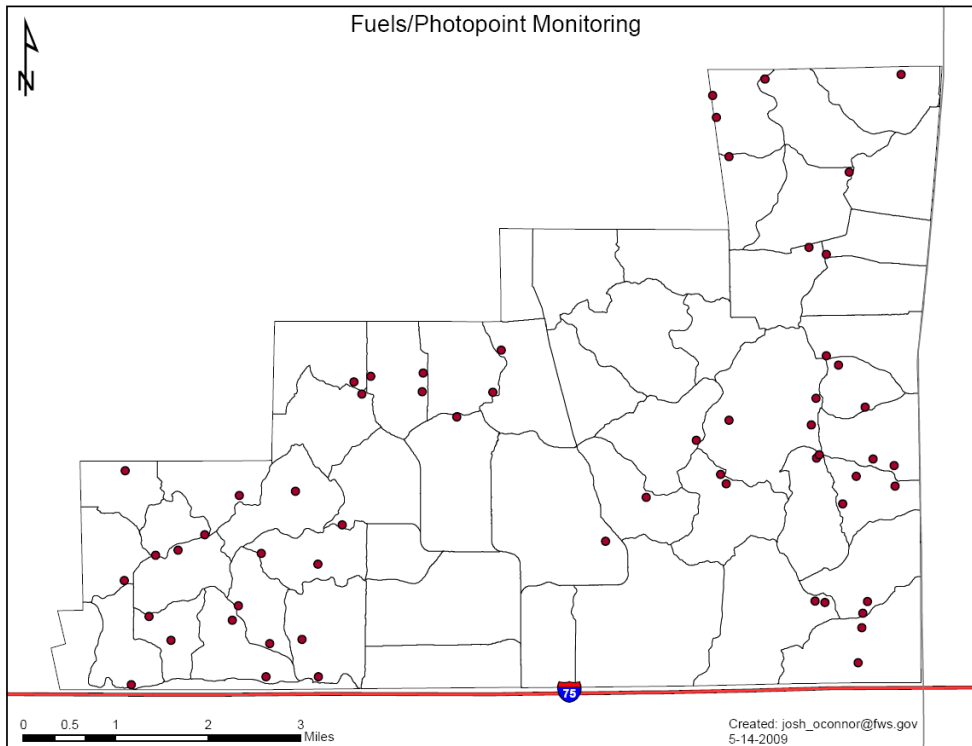
The Refuge has developed a Fuels and Fire Effects Monitoring Plan (Appendix Q) that is utilized to outline protocols necessary to capture the effects that fires have on the natural systems of the Refuge. The Monitoring Plan is an umbrella plan for all proposed fuel and fire effects monitoring activities for the refuge, and is required by the regional fire management office to authorize funding for monitoring and research activities.

The Monitoring Plan was prepared in accordance with the U.S. Fish and Wildlife Service Fire Management Handbook Guidance on Fuel Management Effectiveness Monitoring. The purpose of this Monitoring Plan is to identify specific measures that will be used by the refuge to:

- Evaluate the fuels management program and treatment effectiveness
- Ensure that refuge resource management goals and objectives are not compromised by fuels management projects.
- Ensure the effective use of prescribed fire in meeting refuge goals and objectives.

The effects of wildland fires will be monitored on the Refuge through various sampling techniques including: photo documentation, vegetation sampling, wildlife sampling, composite burn index sampling, and general observation. As of January, 2009 all compartments that are treated with prescribed fire will have a minimum of one permanently established photopoint and fuels transect.

Figure 12: Locations of fire effects monitoring photopoints and fuels transects



This Monitoring Plan will provide for adaptive management “feedback”, and conform to monitoring protocols established by the Service’s Southeast Region Monitoring Recommendations under the guidance of “Fulfilling the Promise” WH-10 (1) action item, the Service’s Fuel and Fire Effects Monitoring Guide and the FWS Southeast Region Fuel and Fire Effects Monitoring Field Guide.

The fire effects monitoring plan is tiered to the FMP and will be subject to amendments and modifications periodically to include various changes made in stated monitoring objectives, methods and etc., as needed. The plan may also be incorporated into a larger, more general refuge-monitoring plan that incorporates all monitoring activities throughout the refuge, if developed in the future.

### 5.2.2 Prescribed Fire Monitoring

During each prescribed fire, personnel are assigned to monitor weather and fire behavior. After the conclusion of prescribed fire treatment, an evaluation is written by the burn boss covering the operation itself and its effectiveness.

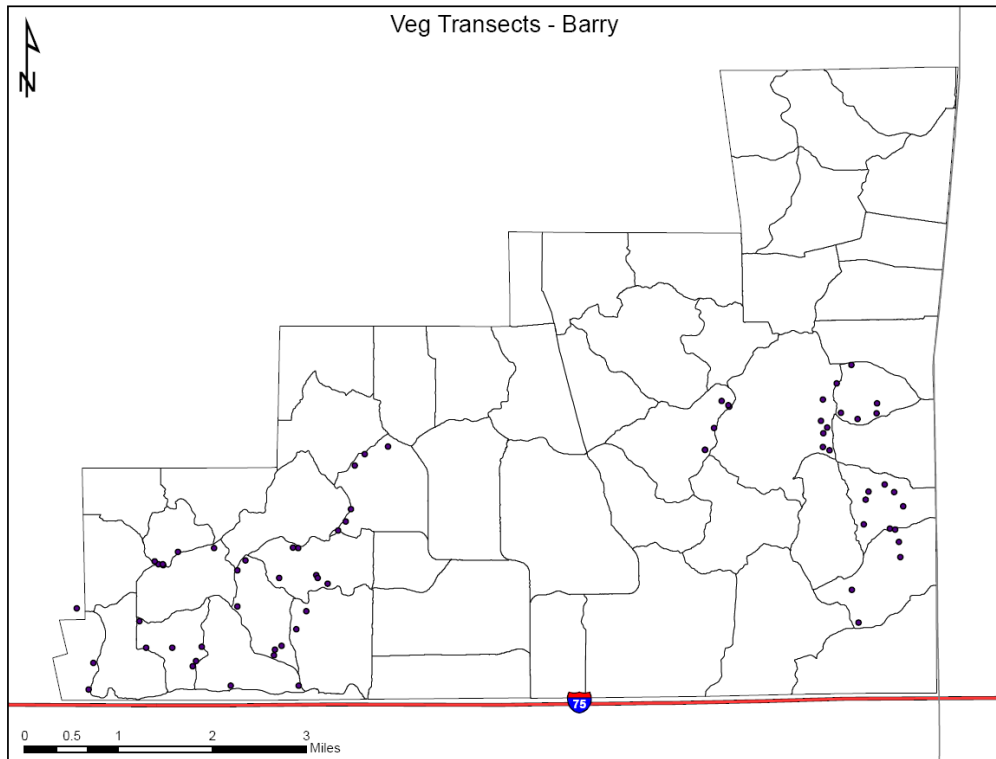
Pre and post – burn photographs are taken from a permanent location for each of the burn units at specified time periods after the burn is complete. The photographs are filed with the corresponding fire report and kept as a permanent record.

### 5.2.3 Long Term Monitoring Program

Permanent vegetation monitoring transects were installed in the refuge in 1996 by Martin Main of the University of Florida, IFAS Southwest Florida Research and Education Center. The final report on the study is on file at the Florida Panther Helibase Prescribed Fire Specialist office titled; *“Effects of prescribed fire on soil nutrients, forage quality, and community composition on the Florida Panther NWR”*. The purpose of these plots is to identify any long-term changes in vegetation due to the seasonal effects of fire during the growing and dormant seasons. These transects can be re-visited and

inventoried as needed to help assess other fire effects as well as other refuge management actions.

Figure 13: Locations of permanent Vegetation Transect





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## APPENDIX A

### Literature Cited

- Bradley, J. T. 1972. Climate of Florida. Climatography of the U.S. no. 60-8; U.S. Dept. of Commerce, Environmental Data Service, Silver Springs, Maryland. 31pp.
- Balfour, R. 1993. Operation plan, fire weather services. National Weather Service Office, Tampa Bay Area. Ruskin, Florida
- Craighead, F. C., Sr. 1971. The trees of South Florida. Vol. 1 *in* The Natural Environments and Their Succession. Univ. Miami Press, Coral Gables, Fla; 212 pp.
- Craighead, F.C. (1974). Hammocks of south Florida. In "Environments of South Florida: Present and Past" (P.J. Gleason, ed.), Mem. No. 2, pp. 53-60. Miami Geol. Soc., Miami, FL.
- Davis, J. H., Jr. 1943. The natural features of southern Florida. Fla. Geol. Surv. Bull. 25: 1-311 pp.
- Duever, M. J., J. E. Carlson, and L. A. Riopelle. 1975. Ecosystem analyses at Corkscrew Swamp. Pages 627-725 *in* H. T. Odum, K. C. Ewel, J. W. Ordway, and M. K. Johnston, eds., Cypress wetlands for water management, recycling and conservation. Second Annual Report to National Science Foundation and Rockefeller Foundation. Center for Wetlands, Univ. of Florida, Gainesville.
- Duever, M.J., Carlson, J.E., Riopelle, L.A., and Duever, L.C. (1978). Ecosystem analysis at Corkscrew Swamp. In "Cypress Wetlands for Water Management, Recycling, and Conservation," pp. 534-570. 4th Annu. Rep. to Natl. Sci. Found and Rockefeller Found., Cent. Wetlands, Univ. of Florida, Gainesville.
- Duever, M. J., J. E. Carlson, J. E. Meeder, L. C. Duever, L. H. Gunderson, L. A. Riopelle, T. R. Alexander, R. L. Myers, and D. P. Spangler. 1986. The Big Cypress National Preserve. Research Report No. 8. National Audubon Society, New York, New York.
- Ewel, K.C., and Mitsch, W.J. (1978). The effects of fire on species composition in cypress dome ecosystems. Fla. Sci. 41, 25-31.
- Flohrschutz, E.W. (1978). Dwarf cypress in the Big Cypress Swamp of southwestern Florida. M.S. Thesis, Univ. of Florida, Gainesville.
- Johansen, R., J Deming, M. Long and D. Ward. 1985. Chapter II, Smoke production characteristics and effects. In: Prescribed fire smoke management guide. National Wildfire Coordinating Group. Boise Interagency Fire Center, Boise, Idaho. Pages 5-10.
- Leighty, R. G., M. B. Marco, G. A. Swenson, R. E. Caldwell, J. R. Henderson, O. C. Olson, and G. C. Willson, Jr. 1954. Soil survey (detailed reconnaissance) of Collier County, Florida. U. S. Dept. Agric. Soil Conservation Service Series 1942, 8. Washington, D. C. 72 pp.
- Long, R. W. 1974. Vegetation of southern Florida, Fla. Sci. 37:33-45.
- Mathews, E., L. Lavdas, L. Mahaffery, T. Nichols, D. Sandberg and M. Ziolk. 1985. In: Prescribed fire smoke management guide. National wildfire coordinating group. Boise interagency fire center. NFES # 1279; 28 pages.
- Mobley, H. E., C. R. Barden, A. B. Crow, D. E. Fender, D. M. Jay and R. C. Winkworth. 1976. Southern forestry

smoke management guidebook. USDA Forest Service Southeastern Forest Experiment Station. General Technical Report SE-10; 140 pages.

NASA, 1984. Master Plan. John F. Kennedy Space Center, Florida.

Preston, Kathy. 1994. Habitat mapping of the Florida Panther NWR.

Robbins, L. E. and R. L. Myers. 1992. Seasonal effects of prescribed burning in Florida: a review. Tall Timbers Research, Inc.; Tallahassee, Florida.

Snyder, J.R. 1991. fire Regimes in subtropical south Florida. Tall Timbers fire Ecology Conference Proceedings 17:303-319.

United States Department of Agriculture. 1941. Climate and man. Yearbook of Agriculture, U.S. Government Printing Office, Washington, D.C.

U. S. Fish and Wildlife Service. 1985. Fakahatchee Strand: A Florida panther habitat preservation proposal. Final Environmental Statement. Naples, Florida. 64 pp.

U.S. Park Service. 1994. Big Cypress National Preserve Fire Management Plan. Final. 112 pages.

Wood, D. A. 1989. Official list of endangered and potentially endangered fauna and flora in Florida. Florida Game and Fresh Water Fish Commission, Tallahassee, Fla.

## **APPENDIX B**

### **Authorities for Plan Implementation**

- **Protection Act of September 20, 1922** (42 Stat. 857; 16 U.S.C. 594) Authorizes the Secretary of the Interior to protect, from fire, lands under his/her jurisdiction and to cooperate with other Federal agencies, States, or owners of timber.
- **Economy Act of June 30, 1932** (47 Stat. 417; 31 U.S.C. 1535). Authorizes Federal agencies to enter into contracts and agreements for services with each other.
- **Reciprocal Fire Protection Act of May 27, 1955 as amended by the Wildfire Suppression Assistance Act of 1989** (69 Stat. 66, 67; 42 U.S.C. 1856a)(102 Stat. 1615). Authorizes reciprocal fire protection agreements with any fire organization for mutual aid with or without reimbursement and allows for emergency assistance in the vicinity of agency facilities in extinguishing fires when no agreement exists.
- **National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 and the Refuge Recreation Act of 1962.**(80 Stat. 927)(16 U.S.C. 668dd-668ee)(16 U.S.C. 460k-460k4). Governs the administration and use of the National Wildlife Refuge System.
- **Disaster Relief Act of May 22, 1974.** (88 Stat. 143; 42 U.S.C. 5121). Authorizes Federal agencies to assist State and local governments during emergency or major disaster by direction of the President.
- **Federal Fire Prevention and Control Act of October 29, 1974 et seq.** (88 Stat. 1535; 15 U.S.C. 2201) as amended. Authorizes reimbursement to State and local fire services for costs incurred in firefighting on Federal property.
- **Federal Grants and Cooperative Act of 1977.** (Pub. L. 95-244, as amended by Pub. L. 97-258, September 13, 1982. 96 Stat. 1003; 31 U.S.C. 6301-6308). Eliminates unnecessary administrative requirements on recipients of Government awards by characterizing the relationship between executive agencies and contractors, States and local governments and other recipients in acquiring property and services in providing U.S. Government assistance.
- **Supplemental Appropriation Act of September 10, 1982.** (96 Stat. 837). Authorizes Secretary of the Interior and Secretary of Agriculture to enter into contracts with State and local government entities, including local fire districts, for procurement of services in pre-suppression, detection, and suppression of fires on any unit within their jurisdiction.
- **Wildfire Suppression Assistance Act of 1989.** (Pub. L. 100-428, as amended by Pub. L. 101-11, April 7, 1989). Authorizes reciprocal fire protection agreements with any fire organization for mutual aid with or without reimbursement and allows for emergency assistance in the vicinity of agency facilities in extinguishing fires when no agreement exists.

## Other Policy References

### Federal Standards

The federal standards related to fire management are:

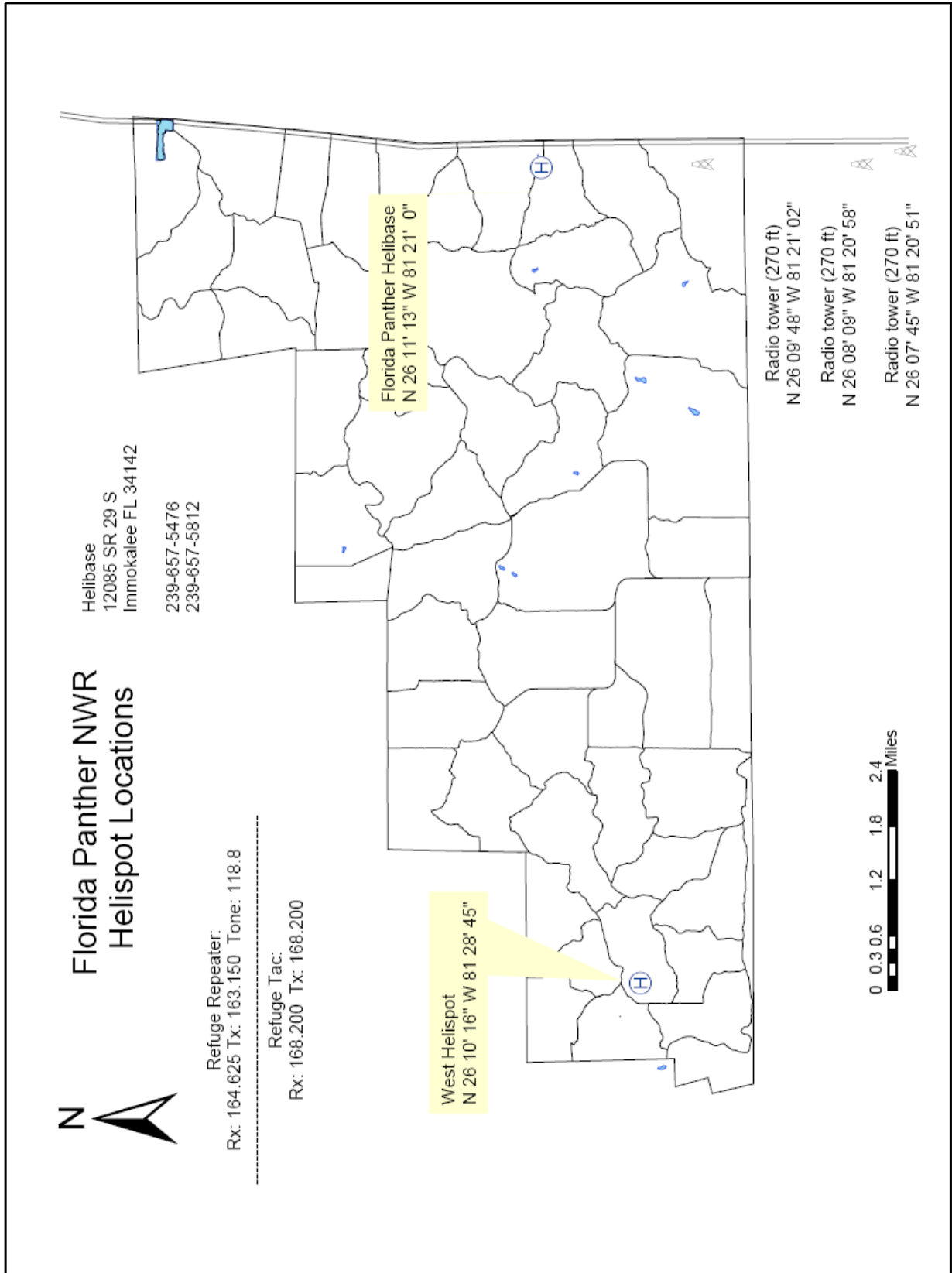
- Departmental Manual, 620 DM 1-3, Wildland Fire Management, General Policy and Procedures; Wildland Fire Management, General Policy and Procedures – Alaska; and Burned Area Emergency Stabilization and Rehabilitation.
- United States Fish and Wildlife Service Manual sections 095 FW 3 Emergency Preparedness and Response -- Wildland Fire Management, 241 FW 7 Wildland Fire Safety, 232 FW 6 Training Standards for Wildland and Prescribed Fire Operations, 621 FW 1 Wildland Fire Policies and Responsibilities, 621 FW 2 Fire Management Planning, and 621 FW 3 Prescribed Fire.
- *Interagency Standards for Fire and Fire Aviation Operations Handbook (Redbook)* NFES #2724 )
- *FWS Fire Management Handbook* (linked with the *Redbook*)
- *Interagency Qualification Certification System (IQCS)* , <http://iqcs.nwcg.gov>
- *Interagency Fire Program Management Qualifications Standards and Guide (IFPM)*

### Federal Guidelines

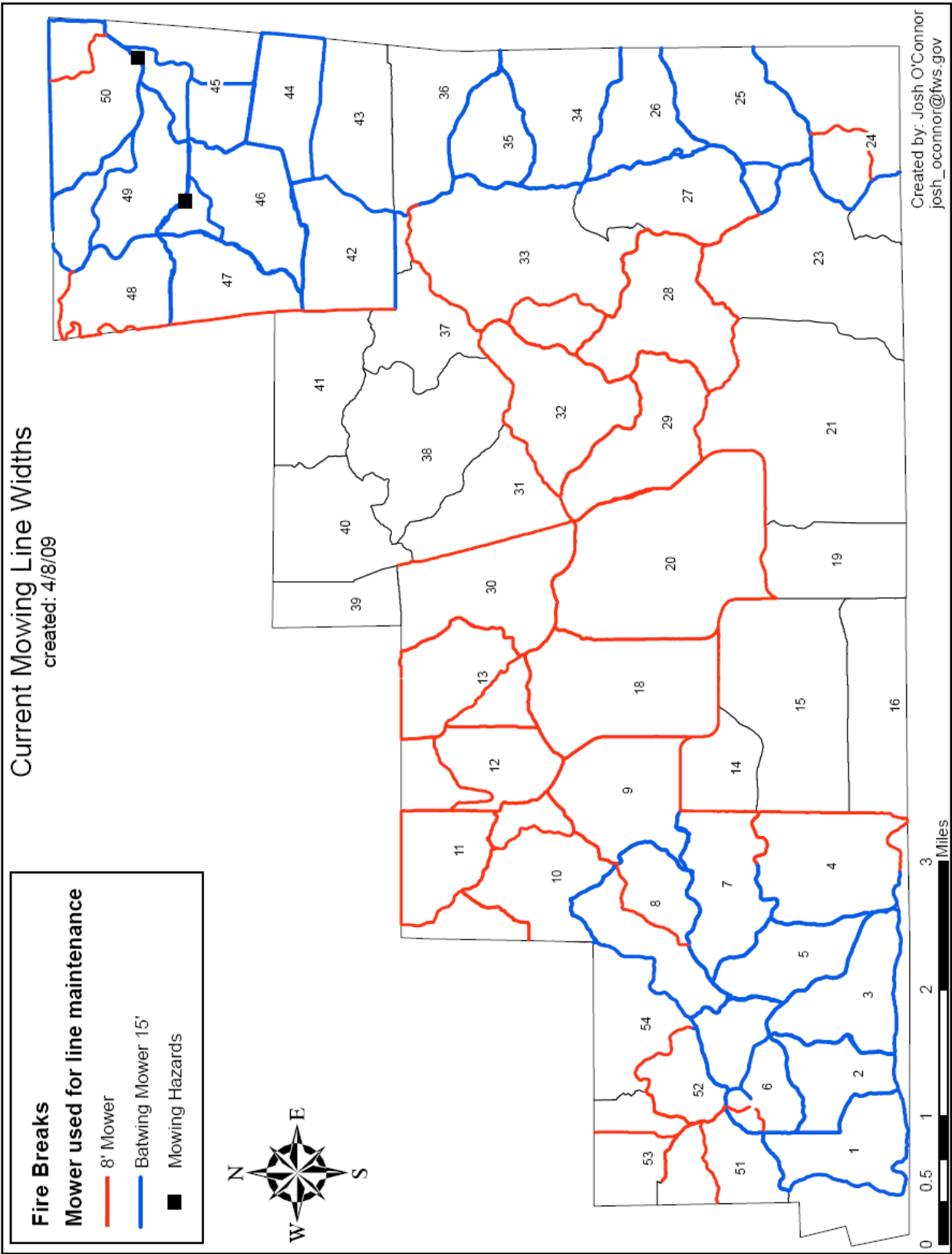
The federal guidelines related to fire management are:

- *Interagency Fire and Aviation Preparedness Review Guide*
- *Interagency Helicopter Operations Guide*, NFES 1885
- *National Interagency Mobilization Guide*, NFES 2092
- *Southern Area Interagency Mobilization Guide*, June 2006
- *Incident Response Pocket Guide (IRPG)*, NFES #1077
- *Fireline Handbook* NFES #0065
- *Wildland Fire Qualifications System Guide*, NFES #1414
- *Interagency Fire Program Management Qualifications Standards and Guide (IFPM)*
- *Interagency Business Management Handbook*, NFES #2160
- *Interagency Burned Area Emergency Stabilization and Rehabilitation Handbook* (
- *Fuel and Fire Effects Monitoring Guide*, Southeast Region, US Fish & Wildlife Service, September 2006
- *FWS Manual (Firefighting Safety)* 241 FW7
- *Investigating Wildland Fire Entrapments* (Missoula Technical Development Center) TE02P16, August 1995
- *Interagency Prescribed Fire Planning and Implementation Procedures Reference Guide* 2006. ([http://www.nifc.gov/fire\\_policy/rx/rxfireguide.pdf](http://www.nifc.gov/fire_policy/rx/rxfireguide.pdf))
- *Guide to Implementation of Federal Wildland Fire Management Policy* (Feb 2009).

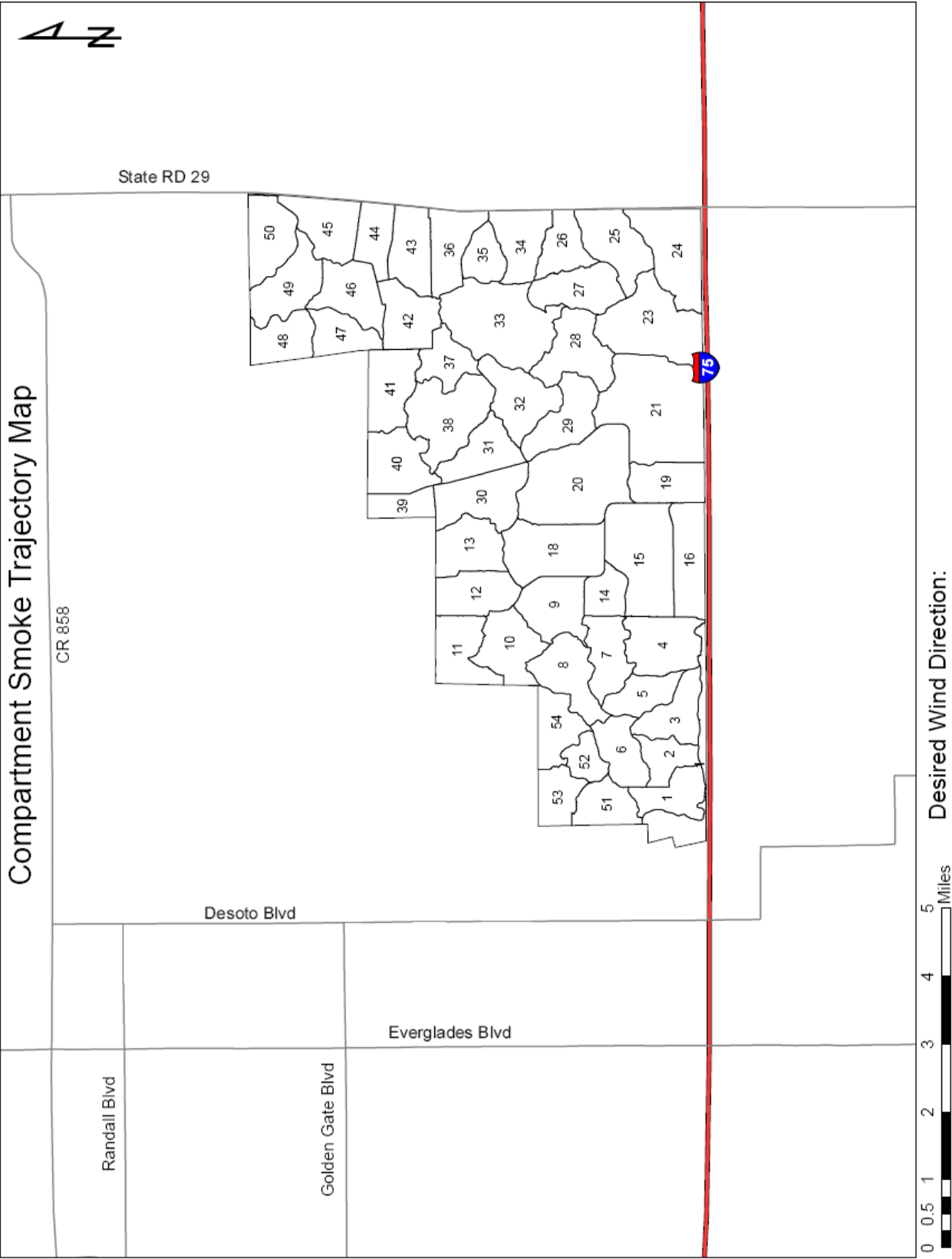
## APPENDIX C Maps



APPENDIX C  
Maps



APPENDIX C  
Maps



## **APPENDIX D**

### **Staff Responsibilities, Personnel Qualifications, Directory**

#### **STAFF RESPONSIBILITIES**

**Fire Management Officer:** The primary responsibility is for oversight of the fire management program at the Florida Panther Refuge and other refuges within the district (Ten Thousand Islands NWR, Ding Darling NWR, National Key Deer Refuge, Caribbean NWR's).

**Prescribed Fire Specialist:** The primary responsibility of the prescribed fire specialist is to develop and manage the prescribed fire and fuels management program at the Florida Panther, Ten Thousand Islands and Ding Darling NWR's. The prescribed fire specialist will work in conjunction with the Supervisory Forestry Technician and the FMO to plan, coordinate, implement and monitor prescribed fires and other fuels treatments at these refuges.

**Dispatcher/Program Assistant:** The Primary responsibility of the Dispatcher/Program Assistant is to oversee the administration of the fire management program including maintaining the Incident Qualification System, updating daily weather observations, maintaining budget records updating annual plans and entering wildfire reports. During wildfires or prescribed burns, the Dispatcher/program assistant staffs the Dispatch office and is the primary point of contact for firefighters in the field. The Dispatcher/program assistant will maintain a radio log and will secure resources and supplies as requested.

**Supervisory Forestry Technician (Station Manager):** The primary responsibility of the Supervisory Forestry Technician is to supervise the fire crew by coordinating daily activities including prescribed burning and responding to wildfires. It is expected that the Supervisory Forestry Technician will work in conjunction with the Prescribed Fire Specialist to prepare burn units and implement prescribed burns and other fuels treatments. Other projects and work center maintenance will be assigned as needed.

**Equipment Operator:** The Equipment Operator is responsible for the maintenance of the heavy equipment assigned to the fire management program. Currently this equipment includes the D-5 Dozer and lowboy transport, Skidsteer, Frontend Loader, Rollback transport, two farm tractors and batwing and bushhog mower. The equipment operator performs the same duties as the fire crew members as well as maintaining the heavy equipment.

**Forestry Technician (Firefighter):** The primary responsibilities of the Forestry Technicians are to implement prescribed burns and respond to wildfires both on the refuges of District 6 as well as assist cooperators as requested. Responsibilities also include day-to-day maintenance and upkeep of the Roger Roth Work Center as well as maintenance (mowing, clipping, trimming) of the fire breaks at the Florida Panther NWR.

## **PERSONNEL QUALIFICATIONS**

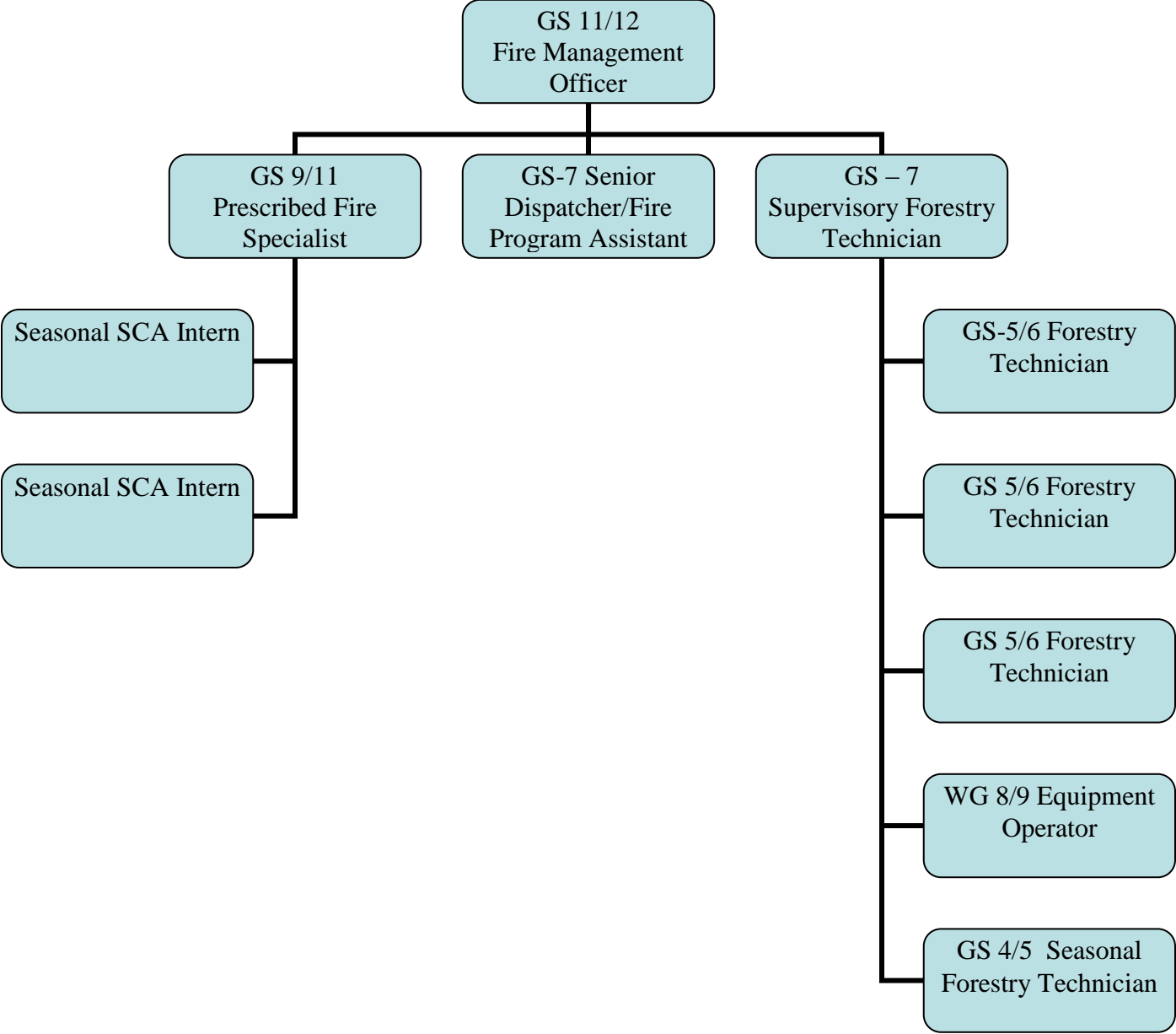
Name	Title	Qualifications	Fitness Score
Kim Ernstrom	Fire Management Officer	TFLD, RXB2, HECM, ENGB, PLDO, CRWB	Arduous
Josh O'Connor	Prescribed Fire Specialist	TFLD, RXB2, HECM, ENGB, PLDO	Arduous
Billy Snyder	Station Manager	ENGB, HELB, PLDO	Arduous
Fed Privett	Equipment Operator	TPLD, ENGB, HECM, DOZB	Arduous
Marc Rogers	Dispatcher	ABRO	N/A
Jay Mickey	Firefighter	STEN, ENGB, HELM, ICT4, PLDO	Arduous
Paul Stevko	Firefighter	FFT1, ENGB, HECM, PLDO	Arduous
Brian Bagozzi	Firefighter	ENGB, FFT1, HECM, PLDO	Arduous

## **FIRE STAFF DIRECTORY**

NAME	POSITION	RADIO ID#	LOCATION	PHONE #
Kim Ernstrom	Fire Management Officer	Panther 7	Panther Helibase	office 239-651-5476 cell 239-2536465

				nextel	158*41*63959
<b>Josh O'Connor</b>	Prescribed Fire Specialist	Panther 8	Panther Helibase	office cell nextel	239-657-5812 239-877-9545 159*96676*1
<b>Marc Rogers</b>	Senior Dispatcher	Panther 10	Panther Helibase	office cell nextel	239-657-2670 23-253-4197 158*41*64836
<b>Billy Snyder</b>	Supervisory Forestry Tech	Panther 12	Work Center	office cell nextel	239-657-7637 ext 26 239-707-9280 158*41*3878
<b>Fed Privett</b>	Fire Equipment Operator	Panther 5	Work Center	office cell nextel	239-657-7637 ext 27 239-253-3923 158*41*64835
<b>PJ Stevko</b>	Forestry Technician	Panther 22	Work Center	office cell nextel	239-657-7637 ext 23 239-633-1774 158*413927
<b>Brian Bagozzi</b>	Forestry Technician	Panther 13	Work Center	office cell nextel	239-657-7637 ext 28 239-253-6384 158*41*5092
<b>Jay Mickey</b>	Forestry Technician	Panther 14	Work Center	office cell nextel	239-657-7637 ext 25 239-707-9281 158*41*4211
<b>Seasonal</b>	Forestry Technician	Panther 15	Work Center	office Pvt cell	239-657-7637 ext 24
<b>Seasonal</b>	SCA Intern	Panther 16	Helibase		Pvt cell
<b>Seasonal</b>	SCA Intern	Panther 17	Helibase		Pvt cell
<b>David D. Lucas</b>	Fire Equipment Operator	Panther 19	Work Center	office cell nextel	239-657-7637 ext 29 239-253-2004 158*41*5394
<b>Paul Ryan</b>	Lead Forestry Technician	DingDarling9	Sanibel Isl.	office cell nextel	239-472-1100 ext 239 239-826-6755 159*506070*1

**APPENDIX E**  
**Fire Management Organization Chart**



## APPENDIX F

### Fire Danger Indices and Preparedness Step-Up Plan

This Step-Up Plan was developed by analyzing a combination of Burning Index (BI) and Energy Release Component (ERC) from Big Cypress (Miles City) and the Florida Panther East and West RAWs covering weather data for the previous ten years 1998 - 2008. Large fires (over 200 acres) from the Florida Panther Refuge and the Big Cypress National Preserve were used to correlate large fire days to the weather data and NFDRS indices. Break points were established by analyzing the 90<sup>th</sup> and 97<sup>th</sup> percentiles for the ERC and BI as well as the lightning activity levels (LAL). The break points are illustrated in the matrix below.

**Florida Panther Staffing Classes Matrix**

ERC 7G	0-6 ↓		6-14 ↓		15-21 ↓		22-28 ↓		29+ ↓	
BI 7G	30- 30+		30- 30+		30- 30+		30- 30+		30- 30+	
LAL	1-5 ↓	6 ↓	1-5 ↓	6 ↓	1-5 ↓	6 ↓	1-5 ↓	6 ↓	1-5 ↓	6 ↓
STAFFING CLASS	1		2		3		4		5	
ADJECTIVE RATING	LOW		MODERATE		HIGH		VERY HIGH		EXTREME	

Actions to be taken:

- Staffing Level 1: Normal Activities--No Fire Readiness
- Staffing Level 2: Normal Activities—Prescribed Burning Possible—Personnel should have fire line gear in office or vehicle.
- Staffing Level 3: Normal Activities-- Prescribed Burning Possible—Personnel should have fire line gear in office or vehicle. Fire equipment should be ready to move within thirty minutes of dispatch.
- Staffing Level 4: Fire personnel should be within 15 minutes of equipment and ready to respond to a fire. Prescribed burning can still be conducted at this level at the discretion of the FMO.
- Staffing Level 5: Fire personnel on standby for fire at refuge or for response to another refuge or cooperator. No prescribed burning is permitted at this staffing level. All equipment should be ready for immediate dispatch. If there is lightning activity the refuge boundaries should be patrolled for wildfires. Resource availability will be coordinated with neighboring agencies.

## **APPENDIX G**

### **Vehicles, Equipment and Cache Inventory**

#### **VEHICLES**

- **2007 F350 Turbo Diesel, 4x4 – assigned to FMO**
- **F250 Diesel, 4x4 – assigned to Prescribed Fire Specialist**
- **F250 Diesel, 4x4 – assigned to Supervisory Forestry Technician**
- **Dodge Utility Bed – assigned to Equipment Operator**
- **2009 Ford Escape Hybrid – utility vehicle for general use**

#### **EQUIPMENT**

- **Swamp Buggy – Fire Equipped (Type 6)**
- **Swamp Buggy – Fire Equipped - 100 gallon slip-on pump unit**
- **Type 6 Engine**
- **Dozer – D-5 LGP**
- **3 ATV's 4x4**
- **1 UTV equipped with 70 gallons water and pump**

#### **BASIC CACHE INVENTORY (Roth Work Center)**

#### **BASIC CACHE INVENTORY (Helibase)**

## APPENDIX H

### Radio Frequencies Used In Fire Management Operations

#### FL Panther Radio Frequency List

TYPE	CH. Name	Receive Freq	Rx Ch. Guard	Rx NAC (digital)	Transmit Freq	Tx Ch. Guard	Tx NAC (digital)	BK TLK Grp
Digital	FL Panther Rptr	164.62500		.0114	163.15000		.0114	769
Analog	FL Panther Rptr	164.62500	118.8		163.15000	118.8		1
Analog	Tac 1	168.20000	0		168.20000	0		1
Analog	Tac 2	168.05000	0		168.05000	0		1

\* All FL Panther Radio's are programmed with the Following Co-operator Frequencies: Big Cypress National Preserve, DOF, BIA – Seminole Reservation, Everglades National Park, all National Wildlife Refuges in Florida, All National Forests in Florida

## **APPENDIX I**

### **Local Agreements and Operating Plans**

- **Cooperative Agreement with Department of Environmental Protection (DEP) - Florida State Parks is being developed as of 10/09**
- **Annual Operating Plan with Fakahatchee Strand State Preserve is being developed as of 10/09**
- **Annual Operating Plan with Big Cypress National Preserve is being developed as of 9/09**

**APPENDIX J**  
**Annual Operating Plan – Florida Division of Forestry**

OPERATING PLAN

BETWEEN

FLORIDA PANTHER NATIONAL WILDLIFE REFUGE

AND

FLORIDA DIVISION OF FORESTRY  
Calooshahatchee Forestry Center District 17

FLORIDA PANTHER NATIONAL WILDLIFE REFUGE  
NAPLES, FLORIDA

February 2009

## PURPOSE:

The purpose of this plan is to outline operating procedures between the U.S. Fish and Wildlife Service (Florida Panther Refuge) and the Florida Division of Forestry District 17.

## AGREEMENTS:

An agreement exists between the Department of Interior, U.S. Fish and Wildlife Service and the State of Florida, Department of Agriculture and Consumer Services, Division of Forestry for Forest Fire Detection, Suppression and Pre-suppression services on National Wildlife Refuge lands. The cooperative agreement number is H-5023-02-0515 and FDACS No. 007491. The agencies agree to cooperate in the full spectrum of wildland fire management activities in non-fire emergencies to achieve land management goals. Cooperative efforts shall be provided for at the national, geographical, and local levels to facilitate efficient use of personnel, supplies, equipment, aviation services and other resources.

*The Division and the Refuge hereby waive all claims against each other for the compensation of any loss, damage, personnel injury or death occurring as a consequence of performance or any provision of the Plan.*

## MUTUAL AID ZONES:

The Florida Panther National Wildlife Refuge may offer assistance to the Division of Forestry (Caloosahatchee Forestry Center) in suppression efforts on a wildlands fire that is within one (1) mile of the Refuge should it threaten the resources, facilities, and general welfare of the public without prior approval from the Regional Office, U.S. Fish and Wildlife Service, Atlanta, Ga.

The Refuge is available for assistance outside this 1 mile zone if the following conditions exist:

- drought conditions >500 KBDI
- threatening of life and property in the urban interface
- all resources of Division are committed to on going fires, resources scarce
- dispatch requested by Caloosahatchee Forestry Center Dispatch
- Local Mutual Aid call out for all available resources within the county
- available to respond to incidents within the Big Cypress Basin

Other assistance may be provided to the Division of Forestry through the Incident Command System in the event of a State or National Disaster. In the response area, the requesting agency will call and request resources from the cooperator, resources will be dispatched to assist if they are available without detrimentally affecting their primary mission to protect their own geographic area.

## **B. Wildfire Suppression:**

### **Refuge Property**

The Refuge has no wilderness areas designated on the property. All wildfires will be suppressed using equipment to minimize damage to the ecosystem. All practices and tools including the use of heavy equipment (ie. tractor/plow units, bulldozers) are allowed for suppression of wildfires on the Refuge as outlined in the Refuge Fire Management Plan. The use of chainsaws is allowed to prepare firelines or remove hazards such as snags for fire personnel safety. The use of helicopters is allowed for transportation of troops, sling loading of equipment and supplies and applications of water from a Bambi bucket. The use of retardants is allowed either short or long term, from fixed wing or rotary wing aircraft.

### **Wildfire Operations**

Both agencies operate on wildfires under the Incident Command System (ICS). Each agency will retain primary responsibility for fire operations within their jurisdictions. The IC on a wildfire will be from the affected agency. If a fire is burning on both jurisdictions or has immediate threats to both, the fire will be run under a Unified Command.

The Refuge and the Division both have limited forces available for suppression and prescribed fire operations. They will cooperate to share resources to the greatest extent possible while meeting their primary obligations to protect their own geographic area. In the event either agency experiences an incident on their jurisdiction while working on a fire for the other agency, if requested, every effort will be made to release the resource back to the home units as soon as is reasonably possible, without jeopardizing the first fire action. Safety of life and property are the primary concerns of both agencies. In no instance will employees of either agency be expected to perform duties outside the scope of their own agency performance and safety standards.

Smoke on the highways is a major concern for both agencies. Every effort will be made to avoid this situation happening or to mitigate the hazard. Existing roadside smoke signs will be opened when smoke is on the roadway or imminent. Portable smoke signs will be used when needed to warn travelers of the threats. Law enforcement will be requested to perform traffic control as needed. The Department of Transportation and the Highway Patrol will be notified whenever smoke hazards may require road closures.

## **BURN AUTHORIZATION:**

The Florida Division of Forestry is responsible for the enforcement of Chapter 590, Florida Statutes. An intergovernmental agreement between the Florida Division of Forestry and the Florida Department of Environmental (DEP) Regulations has delegated a portion of DEP rules, Chapter 62-256 Open burning and frost prevention fires to the Division of Forestry. The Division is also responsible for chapter 5I-2, Rural Open Burning.

The Division is also responsible for the issuance of burn authorizations and the enforcement of regulations pertaining to Agriculture, Silviculture, and Land Clearing.

The U.S. Fish and Wildlife Service is mandated to observe all National and State regulations pertaining to open burning. The Refuge has both a Station Fire Management Plan that covers fire suppression and prescribed burning and an Annual Prescribed Burn Plan with individual prescriptions for the units to be treated during that fiscal year (Oct 1-Sept 30). The Refuge will furnish the local Division office with each years planned prescribed burn plans. Prior to any prescribed burning activities, the respective Fire Departments will be notified as to location, acres and responsible person to contact.

The Refuge's Burn Boss obtains a burn authorization from the appropriate Division dispatch center prior to initiating any prescribed burn activity. The Burn Boss on any prescribed burn is an individual who has successfully completed the Certified Burners Course.

## **INCIDENT REPORTS:**

The Center Office of the Division of Forestry from which the suppression unit is dispatched furnishes the Refuge with an incident report of any fire suppression action that has taken place on or near Refuge boundaries. It is requested these reports reach the Refuge office within seven (7) days of any suppression effort, as the Refuge is required to submit their report within 12 days after a fire is declared out to Atlanta Regional Office. The Refuge is required to submit an individual fire report for both wildfire suppression and prescribed burning to their Regional Office to be recorded in the Fire Base at the Boise Interagency Fire Center.

The Refuge does not initiate an incident report to the Division on prescribed burning. It does however, gives the dispatcher the location, time of burn, acreage involved, and also informs the dispatcher if the burn scheduled had been completed.

## **FIRE CAUSE INVESTIGATION:**

Fire investigations on the refuge are informal. The initial attack force upon arriving at the scene attempts to determine the cause. If it is determined to be man caused then the point of origin is identified and protected from disturbance by personnel and /or equipment involved in the suppression action. A more thorough investigation is made when time and/or more help arrives at the scene to search for evidence that would lead to the apprehension of the arsonist.

The Division's Fire Investigator and/or the Refuge Law Enforcement Officer would continue the investigation should the evidence indicate the need for further action. The officers may work independently or together however they should decide would achieve the best results.

Any legal actions could be handled in State and/or Federal Court. This decision will be made by mutual consent of the parties involved, and which court could bring the case to a speedy and satisfactory conclusion.

## **FIRE PREVENTION:**

The Refuge does not have a prevention program per se, however the prescribed burning is a de facto activity that reduces fuel buildup and acts as a deterrent to devastating wildfires.

## **PRESCRIBED BURNING:**

The Cooperative Agreement between the two agencies states the Division will provide assistance to the Refuge, upon request if time and personnel are available.

This agreement has proven to be a successful venture as the Division has provided personnel and equipment to assist in prescribed burning on the Refuge. Refuge personnel are available as time permits to the Division on prescribed burn activities off the refuge. Their involvement can only be in a training, advisory or operational support capacity.

Assistance to the Refuge would be to have a tractor-plow unit with operator to assist in establishing control lines and to standby during the prescribed burn in the event an escape would occur. This service would be needed only when the Refuge equipment is incapacitated.

The refuge is willing to pay overtime and equipment cost for Division assistance on prescribed burning for the refuge. See the attached **Appendix G and H** for details and costs.

## **TRAINING:**

The Division and the Refuge will share annual training schedules and announcements of course offerings. Each agency will strive to assist the other in training activities by providing instructors or subject matter experts. The Division and Refuge conduct training classes and have qualified instructors for a variety of courses pertaining to wildland fire and prescribe burning activities. Information on courses to be taught will be made available to both agencies.

Cooperative readiness exercises will be planned and conducted to allow personnel from both agencies to practice working together in fire situations.

## **HELICOPTER USE:**

The use of the Service's helicopter on prescribed burns on Division managed lands is allowed provided the Division pays for actual flight time.

The Division is allowed to use the Service's helicopter in the event that a fire is threatening life or property within the Mutual Aid Zone. There will be no payment from the Division for flight time when used for life threatening or property damage.

## **COMMUNICATIONS:**

A written agreement (Oct 29, 1990) between the Division and the Refuge permits the use of the Division radio frequencies 159.450 (base) and 159.315 (mobile) as they pertain to fire management. The agreement also states the refuge may utilize the RED, WHITE, BLUE frequencies for use during emergencies. These frequencies are licensed by the Division of Forestry. The Refuge use of these frequencies will follow procedures established by the Division of Forestry and the Florida Fire Chiefs Association.

Radio Frequencies for the Florida Panther NWR are as follows. Mobile to mobile frequency is 168.200 and base frequency of 163.150 receives and 164.625 transmit with a repeater tone of 118.8. on both the TX and RX frequencies. The refuge has recently acquired a new radio system which is digital and narrow band capable. The repeater will be able to handle both analog radio traffic as well as digital radio traffic. The digital frequencies are the same as the above but with a PL 67. (see Frequency List, Appendix A)

Telephone number at the Refuge Headquarters in Naples is 239-353-8442 and a work center number of 239-657-7637. The office is open five days a week from 0730 to 1630. The Refuge has

a FAX number of 239-353-8640 and the work center is 941-657-9037 if needed. **Appendix A** lists after hour contacts for the Refuge and Radio Frequencies.

**Appendix B** is a listing of key personnel in the Division's Ft Myers District.

## **FACILITIES:**

There are three locations available for meetings and training sessions. The Roger Roth Work Center, 13233 SR 29 S, 1.5 miles north of I-75/Hwy 29 intersection, has space that will seat 20 people. The Comfort Inn Motel, 3860 Tollgate Blvd, where the main refuge office is located, has a meeting room that can hold 100 people. The Division has seating for 20 people at the District Office in Ft. Meyers at 10941 SR 80. There is a possibility of other locations such as Big Cypress National Preserve at Oasis and various hotels and motels in the Naples area.

The Roth Work Center is also available as a command post during emergency management functions. It has telephone service, FAX and internet service along with radio communications. Dispatching would be done from the Roth Work Center which houses the FAX machine, telephone, and E-mail all of which would enhance communications for the incident. Telephone service for dispatching needs would not interfere with that of the command post from this location.

The Refuge has two areas that can be used for a staging area. The first one would be at the Roth Work Center and the other area would be at the Panther HeliBase that is located about two (2) miles north of I-75 on SR 29.

Air operations could be handled out of the Panther helibase located on the Refuge (N26 11' 15" W81 21' 7".. The refuge has two (2) helispot locations on the refuge. They are Oil Pad at (N26 10' 19" W81 28' 50") and Roth Work Center (N26 10' 28" W81 20 47") See **Appendix I** map for further details.

Crew camps for this area would not be practical. There are area motels and eating establishments which would relieve the command of the additional responsibility for providing sleeping, shower, restroom and eating accommodations for the personnel. Lunches would be provided for the line crews at the staging areas or command post.

## **PERSONNEL AND EQUIPMENT:**

*The Division and the Refuge hereby waive all claims against each other for the compensation of any loss, damage, personnel injury or death occurring as a consequence of performance of any provision of the Agreement.*

The refuge is willing to pay overtime and equipment cost for assistance on prescribed fires and wildfires for the refuge. See attached **Appendix H and I** for details and costs.

**Appendix C** is a listing of the personnel on the Refuge and their qualifications.

**Appendix D** is a list for Division of Forestry personnel eligible for initial attack on wildfires on the Florida Panther NWR.

**Appendix E** is a list of equipment at the refuge and available for Fire Suppression activities.

**Appendix F** is a list of equipment from Division available for fire suppression activities.

**Appendix G** is a list of equipment costs from Division.

## **OPERATIONS:**

As per the current Cooperative Agreement, the Division will provide pre-suppression, detection and suppression services, consistent with those provided on state and private lands in Florida. The Division will initiate attack forces, determine if additional men and equipment are needed to extinguish the fire and should these reinforcements exceed the demands on the Division's resources, the refuge will provide them consistent with Service policy.

Incidents will expand in a logical manner from an initial attack situation into a major incident if conditions warrant. The majorities of incidents in SW Florida are usually one operational period but may escalate to multiple operational periods in times of drought. As long as the Division and Refuge are involved, it will be a single jurisdiction with multi-agency involvement. Should the incident affect two or more agencies then the multi-jurisdiction/multi-agency command system will prevail until the incident has been concluded or there has been a jurisdictional change before the episode has been terminated.

In the event of a state or national emergency the resources are subject to the policy of the U.S. Fish and Wildlife Service and orders for men/women and/or equipment are ordered and sent to incidents through the Southeast Regional Fire Coordination Center, Atlanta, GA.

Availability of the various resources is dependent on the level of readiness required to protect and assure the safety of personnel should a disaster strike this situation. Every effort will be made to cooperate within the ICS without placing the Refuge in jeopardy by depleting its resources.

## **FINANCIAL ARRANGEMENTS:**

The Refuge is obligated to pay the Division \$0.03 per acre for detection services on 24,300 acres or \$729.00 annually for this service.

The Service agrees to pay the Division for all direct costs incurred during any and all prescribed fire or pre-suppression and/or suppression activities.

The reimbursement will be made as follows:

A. Equipment-Scheduled rates, as posted by the Division, for equipment used on any incident are to be paid by the Service. Equipment not covered by an established rate schedule will be at a scale mutually agreed upon. The reimbursement will be made at the rates set forth in the

attached **Appendix. G-Equipment Scheduled Rates**. Other equipment rented from the private sector will also be paid by the Service at a rate established by the affected parties prior to any work and supported by rental agreement.

B. The current hourly rate for Division personnel shall begin from the time of departure until return to official duty station, including overtime, if and when overtime is earned under the provisions governing the employees of the Division. Division personnel above the level of District Manager will be excluded and reimbursement for salary, overtime, travel or subsistence will not be authorized unless these people had been considered being a part of direct costs to a project, and their presence we requested in writing prior to the incident. **Appendix H** is a list of costs for personnel from the Division.

C. The pay scale for personnel from the private sector will be a part of the equipment rental, if not the rate shall be commensurate with their job description and be obtained from the Government Wage Rate Schedule. Wages for the U.S. Fish and Wildlife Service personnel will be borne by the respective agency for services rendered during the incident. Their base pay, overtime, travel and subsistence will be commensurate with the policy of their respective agency.

This OPERATING PLAN shall become effective **January -- 2009**, and shall continue in effect until **December 31, 2009**, and shall be considered as automatically extended for one (1) year each, beginning **January 1, 2009** for a period not to exceed five (5) years unless notice is given of cancellation before that date. In such case, the operating plan terminates 30 days from date of notice.

This operating plan may be terminated by either party upon thirty (30) days written notice of such termination to the other party. This operating plan will be reviewed annually in January to discuss operational procedures and/or problems.

IN WITNESS WHEREOF, the Service and the Department have made and entered into this operational plan on the date hereinafter first written.

State of Florida  
Department of Agriculture and Consumer Services

\_\_\_\_\_  
Director of Administration

\_\_\_\_\_  
Date

United States Department of the Interior  
Fish and Wildlife Service

\_\_\_\_\_  
Refuge Manager

Date

# APPENDIX A.

After hours contact for the Refuge:

NAME	POSITION	RADIO ID#	LOCATION	PHONE #	
<b>Kim Ernstrom</b>	FIRE MANG. OFFICER	Panther 7	Panther Helibase	office cell nextel	239-651-5476 239-2536465 158*41*63959
<b>Josh O'Connor</b>	Rx Fire Specialist	Panther 8	Panther Helibase	office cell nextel	239-657-5812 239-877-9545 159*96676*1
<b>Marc Rogers</b>	Sr. Dispatcher	Panther 10	Panther Helibase	office cell nextel	239-657-2670 23-253-4197 158*41*64836
<b>Billy Snyder</b>	Sup. Forestry Tech	Panther 12	Work Center	office cell nextel	239-657-7637 ext 26 239-707-9280 158*41*3878
<b>Fed Privett</b>	Fire Equip. Operator	Panther 5	Work Center	office cell nextel	239-657-7637 ext 27 239-253-3923 158*41*64835
<b>PJ Stevko</b>	Forestry Tech	Panther 22	Work Center	office cell nextel	239-657-7637 ext 23 239-633-1774 158*413927
<b>Brian Bagozzi</b>	Forestry Tech	Panther 13	Work Center	office cell nextel	239-657-7637 ext 28 239-253-6384 158*41*5092
<b>Jay Mickey</b>	Forestry Tech	Panther 14	Work Center	office cell nextel	239-657-7637 ext 25 239-707-9281 158*41*4211
<b>Andrew Clapp</b>	Seasonal Forestry Tech	Panther 15	Work Center	office Pvt cell	239-657-7637 ext 24 701-200-6124
<b>Tracy</b>	SCA Intern	Panther 16	Helibase		

<b>Weidert</b>				Pvt cell 301-525-1219
<b>James Griffin</b>	SCA Intern	Panther 17	Helibase	Pvt cell 913-484-9440
<b>David D. Lucas</b>	Fire Equip. Operator	Panther 19	Work Center	office 239-657-7637 ext 29 cell 239-253-2004 nextel 158*41*5394
<b>Paul Ryan</b>	Lead Forestry Tech	DingDarling9	Sanibel Isl.	office 239-472-1100 ext 239 cell 239-826-6755 nextel 159*506070*1

#### FL Panther Radio Frequency List

TYPE	CH. Name	Receive Freq	Rx Ch. Guard	Rx NAC (digital)	Transmit Freq	Tx Ch. Guard	Tx NAC (digital)	BK TLK Grp
Digital	FL Panther Rptr	164.62500		.0114	163.15000		.0114	769
Analog	FL Panther Rptr	164.62500	118.8		163.15000	118.8		1
Analog	Tac 1	168.20000	0		168.20000	0		1
Analog	Tac 2	168.05000	0		168.05000	0		1

\* All FL Panther Radio's are programmed with the Following Co-operator Frequencies:

	DOF Rptr					
	DOF Tac 9					
	DOF Tac 10					
	DOF mobile					
	DOF AIR/Grnd					
	RED					
	WHITE					
	BLUE					
	Oasis Rptr					
	Carnstown					
	BICY-Tac					
	BICY-Local					

## APPENDIX B.

Key personnel list in the Division's Calooshahatchee District.

District Office  
10941 State Road 80,  
FT. Myers, FL. 33905.  
690-3500 office  
690-3504 FAX

Collier Work Center  
710 Randall Blvd.  
Naples, FL. 33942  
Phone #:348-7522

Picayune Strand State Forest  
2121 52nd Ave. S.  
Naples, FL  
Phone # 348-7557

Keri Work Center  
6261 CR 832  
Felda, FL 33930  
Phone#: 863 674-4679

<u>Position</u>	<u>Name</u>	<u>Call Number</u>	<u>Office</u>	<u>Phone</u>
District Manager	Hank Graham	CAL 1	Ft. Myers	239-690-3500
Fire Operations	Johnny Bryson	CAL 2	Ft. Myers	239-690-3500
Forest Area Supervisor	Jim Isaacs	CAL 3	Ft. Myers	239-690-3500
Forest Area Supervisor	Joe Lecea	CAL 5	Collier WTC	239-348-7522
Forest Area Supervisor	Greg Cox	CAL 4	Keri WTC	863-674-4679
Forester	Michael Weston	CAL 16	Ft. Myers	239-690-3500
Forester	Greg Ihle	CAL 14	Picayune WTC	239-348-7557
Law Enforcement	Ricky Bell	026053	Picayune WTC	239-348-7557
Law Enforcement	Daniel Holland		Ft. Myers	239-690-3520
Investigator II	Dan Hocholi		Ft. Myers	239-533-7191
Automotive Equipment Supervisor	Dave Mayer	CAL 8	Ft. Myers	239-690-3500

## APPENDIX C.

### Florida Panther Firefighter Qualifications and Fitness Level

Name	Qualifications	Fitness Score
Kim Ernstrom	TFLD, RXB2, HECM, ENGB, PLDO, CRWB	Arduous
Josh O'Connor	TFLD, RXB2, HECM, ENGB, PLDO	Arduous
Billy Snyder	ENGB, HELB, PLDO	Arduous
Fed Privett	TPLD, ENGB, HECM, DOZB	Arduous
Marc Rogers	Senior Dispatcher	N/A
Jay Mickey	ENGB, HELM, ICT4, PLDO	Arduous
Paul Stevko	FFT1, ENGB, HECM	Arduous
Brian Bagozzi	FFT1, HECM, PLDO	Arduous

## APPENDIX D.

The following is a list for Division of Forestry personnel responsible for initial attack on wildfires on the Florida Panther NWR.

### Collier County Personnel:

Name	Position	Location
------	----------	----------

Joe Lecea	Forest Area Supervisor	Collier WTC
Wilbur Chaney	Senior Forest Ranger	Collier WTC
Jeff Cummings	Senior Forest Ranger	Collier WTC
Steve Stubelt	Senior Forest Ranger	Picayune State Forest
Bob Lowande	Forest Ranger	Collier WTC
J.B. Tarrate	Forest Ranger	Collier WTC
Alex Acosta	Forest Ranger	Collier WTC
Barry Manning	Forest Ranger	Collier WTC
Dave Gravitt	Forest Ranger	Collier WTC
Bobby Fischer	Forest Ranger	Collier WTC
Carlos dela Cruz	Senior Forest Ranger	

## APPENDIX E.

The following is a list of equipment on the Florida Panther Refuge that is available for fire suppression activities.

Equipment	Cost/Hr	Cost/Mi	Cost/day
Swamp buggy, Type VI			500
Dozer, D-5 LGP	165		750
Tractor/low boy	200		1600
ATV=s 4x4			100
Chainsaws			100
Pick ups 4x4			150
Engine, Type VI w/ops			500

## APPENDIX F

The following is a list of Division of Forestry equipment available for fire suppression activities. Other Division equipment within the state can be ordered depending on the emergency and the availability of such equipment.

<b>CREW #</b>	<b>VEHICLE #</b>	<b>LOCATION</b>	<b>TYPE</b>	<b>YEAR</b>
Cal 50	27310	CWC	Sterling Transport	2001
Cal 51	T417	CWC	JD 650H Tractor w/ winch	2001
-----	<b>HH406</b>	CWC	Mathis 2-Disc Plow	1968
Cal 52	11786	CWC	Sterling Transport	2000
Cal 53	T067	CWC	JD 550G Tractor	1989
-----	P822	CWC	Fesco 2-Disc Rock Plow	1999
Cal 54	<b>8480</b>	CWC	IHC Transport (Cal 64)	1989
Cal 55	T068	CWC	JD 550G Tractor	1989
-----	<b>HH405</b>	CWC	Mathis 2-Disc Plow	1968
Cal 56	10992	CWC	Sterling Transport	1999
Cal 57	T065	CWC	JD 550G Tractor	1989
-----	P832	CWC	Fesco 2-Disc Rock Plow	1999
Cal 58			Transport	
Cal 59			Dozer 650	
Cal 21	27760	PSSF	Ford 4x4 Pickup (Diesel)	2002
Cal 250	<b>8876</b>	CWC	Ford 4x4 Pickup (Diesel)	1990
Cal 251	T341	PSSF	Young Swamp Buggy	1999
Cal 252	9816	PSSF	GMC 4x4 Pickup (Diesel)	1995
Cal 253	T262	PSSF	New Holland Farm Tractor	1998
Cal 254	1741	PSSF	Dodge 4x4 Pickup	2000
Cal 256	12187	PSSF	Sterling 12-Ton Dump Truck	2000
Cal 258	<b>8294</b>	PSSF	Dodge 4x2 Pickup	1988
-----	<b>HH 506</b>	CWC	Hester 2-Disc Plow	1975
DA333	27418	PSSF	Chevrolet 4X4 Blazer	2001

Area fire departments that can be contacted if the needed.

<b>NAME</b>	<b>PHONE NUMBER</b>
Big Corkscrew Fire Dept.	239-455-1204
Golden Gate Fire Dept.	239-455-1884
Ochopee Fire Dept.	239-695-4114

## Appendix G

Equipment rates for Division of Forestry

<u>Equipment</u>	<u>Cost/Hr</u>	<u>Cost/Mile</u>	<u>Cost/Day</u>	<u>Cost/Flight Hr</u>
------------------	----------------	------------------	-----------------	-----------------------

Dozer, JD 550	82.00			
Dozer, JD 650	82.00			
Dozer, JD750	98.00			
Tractor/low boy	52.00	1.50		
Transport	52.00	1.50		
Pick-up 4x4		0.35		
Type VI Engine	43.00	0.75		
Helicopter, Bell 205				\$900 plus fuel
Fixed Wing Aircraft				\$100
Fuel trailer for helicopter	52.00	1.50		
Swamp Buggy w/transport	110.00			
ATV=s	110.00			

#### Personnel Costs - Division

Supervisory	\$28.00
Non-Supervisory	\$20.00

**APPENDIX K**  
**Delegation of Authority**  
**(may be modified depending on incident complexity)**

Date:

Subject: Delegation of Authority for the \_\_\_\_\_ **Incident**

To: \_\_\_\_\_, **Incident Commander** \_\_\_\_\_,  
you are hereby assigned as the Incident Commander for the \_\_\_\_\_ Incident on  
the Florida Panther National Wildlife Refuge.

You have full authority and responsibility for managing incident operations within the framework of legal statute, current policy, and the broad direction provided in both your verbal and written briefing materials. You are accountable to me. A formal evaluation of your performance will be conducted prior to your departure from the Refuge. This formal evaluation may be followed up within sixty days after your departure once the Refuge has had the opportunity to review accountability, claims, financial matters, and other items, which require time to evaluate.

**Safety**

Accountability for fire safety is your first and most important responsibility. All members of your team must observe a “Zero Tolerance” for any careless or unsafe action. As Incident Commander, please take the appropriate actions to insure that everyone involved in suppressing the \_\_\_\_\_ Incident knows and follows these **Safety Principles**:

- Safety Comes First on Every Fire, Every Time.
- The Ten Standard Fire Orders Are Firm. They will not be bent or broken. If anyone is observed breaking an Order, they are to be relieved of their fire assignment on the spot. No exceptions!
- All firefighters must have a safe assignment. If a chance is taken, it will be on the loss of property and natural resources, never on firefighter safety.
- Every firefighter and member of your team is responsible to ensure compliance with the established safe firefighting practices.

Incident personnel who violate these practices are to be reprimanded and released from the incident. Again—**ZERO TOLERANCE**—no exceptions.

**WFDSS**

An incident has been initiated within the Wildland Fire Decision Support System (WFDSS). As the incident progresses and courses of action change as objectives change, your team should be prepared to assist in developing and publishing a Decision Document.

### **Cost Accountability**

You are to provide the necessary suppression capability to control this wildfire at a reasonable cost to meet the objectives specified and to protect on- and off- Refuge values.

- Emphasize good accountability for supplies ordered from the cache. Keep the incident loss tolerance within 25%.
- By 10:00 AM each morning, please provide me with a daily fire suppression cost, by category for this incident.
- Although broad incident suppression cost estimates is set within WFDSS, I expect the team to develop and implement reasonable and prudent incident suppression expenditure decisions.
- Wildfires involving multiple jurisdictions may require mutually approved cost apportionment agreements. These agreements should be implemented by you as the Incident Commander based upon direction from the Administrative Officer or the Incident Business Advisor.

### **Public Information**

Work closely with Public Affairs Officer, \_\_\_\_\_, and representatives of other agencies and jurisdictions. Keep them informed and work closely with them, proactively dealing with controversial issues.

The information within WFDSS sets the priorities for the suppression actions. In my absence, \_\_\_\_\_ (Refuge Manager) or \_\_\_\_\_ (Fire Management Officer) will be my representative.

### **Resource Issues**

Sensitive resource and land management issues include the necessity to minimize long-term watershed damage and minimize the adverse impacts to threatened and endangered species habitat. Please coordinate closely with the assigned agency Lead Resource Advisor \_\_\_\_\_ to minimize impacts to these habitats. Other sensitive activities requiring resource management advice include the placement of tractor lines, road damage and other suppression actions that could cause disturbance to watershed values.

Practice minimal impact suppression tactics in riparian areas when ever possible. Be conscious of invasive species, I expect actions to be taken to reduce the opportunity of spread of weeds. Work closely with the Resource Advisors at briefings and planning meetings to minimize impacts to all resources.

The incident is to be managed with ZERO TOLERANCE FOR SEXUAL HARASSMENT. Incident personnel who demonstrate any type of inappropriate behavior

should be released immediately with appropriate follow-up documentation. Inappropriate behavior would include alcohol, drugs, sexual harassment, or any violation of personnel rules. Be sure we provide for and meet Regional Training needs and human resource objectives.

The Fire Management Officer\_\_\_\_\_ will set the turn back standards.

Should any problems or concerns arise, please contact me. I am prepared to discuss any needs to revise or revisit this delegation. Agency personnel can be contacted at the following numbers:

Sincerely,

**Layne Hamilton**  
**Project Leader – Southwest Florida Gulf Coast Refuge Complex**

## **APPENDIX L**

### **Smoke Management Plan**

#### **Refuge Smoke Management Goals**

In general terms, the goals of smoke management on the refuge are to manage both prescribed burns and wildfires in such a manner as to cause minimum impact to the general public. Specifically these goals are:

1. Avoid smoke impacts on Interstate 75 and State Road 29. Maintain visibility limits mandated by State regulation.
2. Avoid smoke impact to the major residential areas to the west of the refuge in Golden Gate Estates.

#### **Smoke Management Techniques**

There are three basic ways to manage smoke from wildland fires; avoidance, dilution and emission reduction (Mathews, et al; 1985). Through the careful application of these techniques, the impacts of smoke from refuge prescribed fires can be minimized - prescription development and ignition patterns can be managed to provide the maximum amount of smoke management possible. During unplanned ignitions, smoke management can be more challenging, but mitigation techniques can include burning out when dispersion is highest, mopping up next to road corridors and utilizing direct attack to minimize acres burned.

##### **Avoidance**

Avoidance is the process of considering weather conditions when scheduling prescribed fires to avoid the incursions of smoke into sensitive areas. During most prescribed fires, there is an active burning phase and a residual phase, and the wind direction during both of these must be considered. Fortunately, refuge fires in the pineland and prairies do not have a long residual smoke period. In the cypress areas, long burning fuels such as snags, downed logs and lighter stumps can cause a residual smoke problem.

##### **Dilution**

The impacts of smoke can be reduced by diluting the smoke in a large volume of air. This practice can be done either by burning during good dispersion conditions, or burning at slower rates. An important aspect of this process is the mixing height. This height is the thickness of the layer of air into which the smoke will eventually be diluted by atmospheric mixing. The height of the mixing level can change during the day as low level inversions dissipate in the morning and reform at night. Usually, it is better to start burning in the morning because ventilation rates will increase during the daylight hours.

##### **Emission Reduction**

The total amount of emissions produced by a fire can be reduced by varying the ignition techniques, choosing fuel conditions that make problem fuels unavailable, removing problem fuels, or reducing the size of the burn.

#### **Prescribed Fire Smoke Management Procedures**

##### **Planning**

The refuge will use a combination of all of the above techniques to manage smoke from prescribed burning. The most effective of these is avoidance. To assist in the smoke management planning process, the major smoke sensitive areas are plotted on a burn unit map that is included in each Incident Action Plan for the day of

the burn. Smoke plume directions will be plotted on this map from the burn unit center to a 10 mile radius. Appropriate smoke management techniques will be used to mitigate smoke impacts to these areas. If smoke impacts cannot be mitigated, the prescribed burn will not be conducted.

To lessen the impact of smoke, the refuge has developed specific guidelines concerning the atmospheric conditions that must exist before a day time burn is ignited. These requirements are as follows:

- A spot weather forecast is requested for the day of the prescribed burn utilizing the standard spot weather forecast form from the National Weather Service.
- Both the low level and transport wind directions must be from a direction that will meet the avoidance goals described above.
- Transport wind speeds will be above eight miles per hour, and the mixing height will be at least 1700 feet.
- The Dispersion Index must be above 30. If all of these conditions are met, ventilation in the atmosphere will be sufficient to allow the smoke to disperse quickly.
- No prescribed burn will occur within 1 mile of Interstate 75 or State Road 29 if there is any mention of the possibility of FOG in the spot forecast.
- The burn boss or designee will notify the Florida Highway Patrol and the Collier County Sheriffs Office that a burn will be conducted along smoke sensitive areas (I-75 and SR 29). A legal description or mile marker will be given to the dispatcher as to the location of the planned burn. Phone numbers of the person(s) in charge are provided to the dispatcher. The dispatcher's name, date and time will be recorded on the burn plan notification form for the Service's record.

#### Operations

On the day of the burn, the burn boss will evaluate the fire weather forecast to ensure that the burn can proceed within prescribed weather parameters, including atmospheric conditions for smoke dispersal.

1. Burn Bosses will use the firing technique which minimizes the smoke impacts to the public and still accomplishes the burn's objectives.
2. Media and other public affairs and fire dispatching offices will be kept informed of fire and smoke dispersal conditions or expected problems throughout a fire event.

A test fire will be ignited at the beginning of each prescribed burn to determine if objectives, including smoke management can be met. The fuels for the test fire should be representative of the burn unit, and the area ignited should be of sufficient size to give a good indication of smoke plume direction and dispersal. The smoke generated by the fire will be monitored throughout the burn by the burn boss and fire effects monitor. If the prescription parameters for smoke management are exceeded, steps to mitigate impacts will be taken according to the individual burn plan. The appropriate tactics for mitigating smoke impacts will be discussed in the Smoke Management section of the Prescribed Fire Plan. Example of smoke management tactics are:

- Initiating mop-up within 50 feet of any control line adjacent to major roads or residential areas.
- Placing "smoke ahead" signs along any public road that may have reduced visibility due to smoke. The burn boss will notify the Florida Highway Patrol and the Division of Forestry if visibility is impaired or could become impaired along any public road.

- Burn out areas during peak smoke dispersal periods with sufficient time to allow smoke to disperse prior to daily diurnal lowering of the inversion boundary layer.

#### Monitoring

Smoke monitoring by Service personnel will take place along smoke sensitive areas that may be impacted. The attached **"Smoke Sensitive Areas"** and refuge compartment map correspond to the areas that will require smoke monitoring following a burn. The monitoring will be accomplished throughout the night utilizing road patrols. The road patrols will be in two hour shifts, beginning at mid night and continuing until daylight. The road patrols will utilize fire personnel and non-fire personnel for this purpose. Patrols will be concentrated one mile on either side of the burn site. Smoke signs will be placed out on the road at least one mile on either side of the burn site. If the fog develops and drifts towards the smoke signs, the signs will be moved to stay beyond the heaviest fog. The drivers will keep notes as to if/when fog develops, location of the fog, a visual density of the fog, and if there is any driving hazards. A log sheet containing the note data will be signed by the shift monitor and passed on to the next shift monitor. This documentation will then be attached to the respective prescribed burn plan. If heavy fog is determined to impede normal traffic by refuge personnel, local law enforcement (Florida Highway Patrol or Collier County Sheriffs Office) will be notified along with the FMO. The law enforcement agency notified will make the determination as to what action is to be taken.

#### **"Smoke Sensitive Areas"** **Interstate 75 (Alligator Alley)**

Compartments: 1,2,3,4,15,16,19,21,23 and 24

#### **State Road 29**

Compartments: 25,26,34,35,36,43,44,45,49 and 50

**APPENDIX M**  
**Standard Operating Procedures**

**Under Development**

## APPENDIX N

### Annual Fire Management Plan Review Checklist

Element	Yes	No	Comment
1. Date FMP was approved _____ <ul style="list-style-type: none"> <li>Annual Review yrs 1 – 4 by Refuge Manager</li> <li>Year 5 of Plan, Contact District FMO. FMP requires revision and Regional Director approval.</li> </ul>			
2. Will the FMP continue to adequately provide for firefighter and public safety as the first priority in every fire management activity this year?			
3. Does this FMP continue to support land and resource management plans? <ul style="list-style-type: none"> <li>Completion of CCP or new habitat management plan might require more extensive FMP revision.</li> </ul>			
4. Were there any significant fire management activities from the previous year that were not adequately addressed within the scope of this FMP?			
5. Does the direction in this Plan remain economically viable given the values needing protection, and the costs to administer?			
6. Does this FMP continue to be based on best available science?			
7. Does the FMP provide for adequate response to wildland fire (wildfire) and prescribed fire (if applicable)? <ul style="list-style-type: none"> <li>Directories/Contact List(s) updated</li> <li>Agreements and Operating Plans current</li> <li>Staffing/equipment meet Service policy and ready</li> <li>Annual work and Prescribed Burn Plans completed</li> <li>Seasonal Assessment made by District FMO</li> </ul>			
8. Were there additional lands added to the refuge last year? <ul style="list-style-type: none"> <li>Total acres to amend _____</li> <li>Burnable acres _____</li> </ul>			
9. If additional lands were added, will environment compliance requirements (EA for this FMP) adequately allow for fire management program activities to be conducted if appropriate?			
10. Based on FMO advice, are there changes in national fire policy or direction that now conflict with direction within the FMP? <ul style="list-style-type: none"> <li>Policy changes warrant an amendment.</li> <li>Policy changes are significant – need for immediate revision.</li> <li>Policy changes can be incorporated within the 5-year revision.</li> </ul>			
11. Considering the responses above, can this FMP be amended without further review? <ul style="list-style-type: none"> <li>If yes, attach amended information, including maps. Refuge Manager approval. Notify the District FMO.</li> <li>If no, most likely the FMP and/or environmental compliance require Plan revision and Regional Director approval. Contact District FMO for assistance.</li> </ul>			

Having reviewed the FMP for calendar year \_\_\_\_\_, and addressed the questions above, I find that the Plan continues to support fire program needs (safety, resource protection, hazard fuel treatments, wildlife enhancement, and ecosystem restoration as applicable). The Plan amendments are attached, and require no further review or approval. This is the (please circle) 1<sup>st</sup> 2<sup>nd</sup> 3<sup>rd</sup> 4<sup>th</sup> 5<sup>th</sup> implementation year for this Plan.

\_\_\_\_\_  
Refuge Manager

\_\_\_\_\_  
Date

**APPENDIX O**  
**FY2009**  
**Regional Dispatch Plan**

**A.     Introduction**

The purpose of this plan is to detail the proper procedures for obtaining emergency help during wildland fire suppression. Many refuges are currently covered by contracts/agreements with State Divisions of Forestry which are the first source of help. We also have a National agreement with the U.S. Forest Service (USFS) and Department of the Interior agencies (DOI) to furnish assistance during wildland fire suppression.

The objective of this plan is to ensure the cost-efficient use of available fire support services. In most cases the closest resource will be used, but consideration will be given to the use of distant resources to avoid excessive commitments from local units with critical fire weather or suppression activities.

**B.     Sequence for Requesting Support When Wildland Fire Exceeds Station Suppression Capabilities**

- a.           State Division of Forestry. Your local Division of Forestry is the first place you should go for assistance (personnel or equipment).
- b.           Neighboring Refuges. If your State Division of Forestry is unable to assist you, aid from nearby refuges should be solicited.
- c.           State Interagency Coordination Center. If you are unable to obtain local assistance; contact your State Coordination Center. They can provide assistance in locating and dispatching resources for any emergency situation.

<b>STATE</b>	<b>DISPATCHER</b>	<b>OFFICE TELEPHONE</b>	<b>CELL TELEPHONE</b>
Alabama	Cathy Cline	334-241-8107	334-324-9254
Arkansas	Randy Nichols	501-321-5232	501-622-0284
Florida	Eva Moore	850-523-8602	850-524-2676
Georgia	Renee Bishop	770-297-3022	770-932-2568
Kentucky	Bonnie Truett	859-745-3172	859-986-5643
Louisiana	Sheryl Roach	318-473-7152	318-613-7271
Mississippi	Herman Hall	601-528-6203	601-408-7139
North Carolina	Drag Sharp	828-257-4805	828-777-2075
Puerto Rico	Bruce Drapeau	787-888-1880	787-549-0083
South Carolina	Dave Kuhn	803-561-4057	803-960-2943
Tennessee	Laney Cutshaw	423-476-9761	423-829-1538

d. Regional Chiefs, Fire Management Division)

IF YOU HAVE A WILDLAND FIRE ON YOUR REFUGE THAT EXCEEDS 80 ACRES IN SIZE OR IS COMPLEX ENOUGH TO REQUIRE A COMMITMENT OF SIGNIFICANT RESOURCES, NOTIFY EITHER THE REGIONAL CHIEF OR DEPUTY REGIONAL CHIEF AS SOON AS POSSIBLE AT WORK, HOME, OR BY CELL PHONE AND THEY WILL RETURN YOUR CALL.

CHIEF	(Bob Eaton)	
	Office:	404-679-7190
	Home:	770-985-6766
	Cellular	404-386-1872

DEPUTY CHIEF	(Pete Kubiak)	
	Office:	404-679-7244
	Home:	770-886-7683
	Cellular:	404-661-4819

The Regional Chief and Deputy Regional Chief, Fire Management Division, will obtain help from other U.S. Fish & Wildlife Service installations in the Region or from the Southern Area Coordination Center.

e. Southern Area Coordination Center (SACC), Pat Boucher, Fish and Wildlife Service, Assistant Area Coordinator.

Office:	678-320-3003
Home:	678-714-5710
Cellular:	404-229-8440

The Center will obtain the necessary personnel and/or equipment for you from the closest available source. The source may be the USFS, NPS, BLM, BIA, other State agencies or even contract, but they will find what you need. If your needs are not available in the Southern Area, SACC will place your Resource Order request through ROSS to the National Interagency Coordination Center (NICC) and fill your requests from other Geographic Areas (GACC).

Notification of Refuge Supervisors

The respective Refuge Supervisors need to be kept informed of large fire situations at all times. If you are working through the RFMC, he will keep the responsible refuge supervisor informed. However, if you are working through your State Division of Forestry or State Dispatch Center, you should inform your supervisor at the earliest opportunity. You do not need to go through your supervisor when requesting assistance, but as soon as the situation allows you should contact him/her. The supervisor's home telephone numbers are:

**Area Supervisor****Assistant Area Supervisor**

Area 1	Ricky Ingram (AR, LA, TN, KY) 404-679-7167 (Office) 770-517-8684 (Home) 770-329-1740 (Cell)	VACANT (Office) (Home) (Cell)
Area 2	Elizabeth Souheaver (FL, MS) 404-679-7163 (Office) 678-482-5005 (Home) 404-394-0820 (Cell)	Holly Gaboriault 404-679-7224 (Office) 770-535-9146 (Home) 404-825-7014 (Cell)
Area 3	Pete Jerome (AL, NC, SC, GA, PR) 404-679-7157 (Office) 770-622-4832 (Home) 770-329-1772 (Cell)	Brett Hunter 404-679-7164 (Office) 770-924-1552 (Home) 404-536-4306 (Cell)

RSE  
3/12/09

**APPENDIX P**  
**Prescribed and Wildfire History by Burn Unit 1990 - 2009**

***Fuel Treatment and Wildfire History – Eastern FMU***

UNIT	TOTAL ACRES	RX TREATMENT Mo./Yr.	WILDFIRE YEAR/ACRES	WILDFIRE CAUSE
23	887	1/93, 5/97, 1/01, 5/05, 2/09	N/A	N/A
24	707	3/91, 2/95, 1/01, 5/05	6/07, 4/09, 707ac	BICY Complex burnout ('07), Deep Fire burnout ('09)
25	532	4/94, 1/99, 7/03	6/07, 4/09 532ac	BICY Complex burnout ('07), Deep Fire burnout ('09)
26	341	1/93, 5/97, 9/03, 3/06	6/07, 4/09 341ac	BICY Complex burnout ('07), Deep Fire burnout ('09)
27	479	3/92, 3/96, 3/04, 2/09	N/A	N/A
28	565	3/92, 3/96, 5/04, 6/08	N/A	N/A
29	494	3/91, 3/95, 7/99, 1/03, 1/07	N/A	N/A
32	534	5/95, 1/98, 1/02, 1/06	N/A	N/A
33	1063	2/93, 5/97, 1/02, 4/05, 7/09	N/A	N/A
34	450	1/99, 4/03, 3/06	6/07, 450ac	BICY Complex burnout
35	269	2/93, 5/97, 2/02, 4/03, 4/06	6/07, 269ac	BICY Complex burnout
36	446	2/98, 12/01, 1/07	N/A	N/A
42	464	N/A	N/A	N/A
43	453	N/A	N/A	N/A
44	323	N/A	N/A	N/A
45	495	N/A	N/A	N/A
46	485	1/92, 5/96, 3/04	N/A	N/A
47	335	5/95, 7/99, 4/02, 7/06	N/A	N/A
48	381	1/91, 5/95, 7/99, 2/03, 1/07	N/A	N/A
49	515	2/97, 2/03	N/A	N/A
50	480	3/92, 5/96, 3/04	N/A	N/A
<b>Total Acres</b>	<b>10,698</b>			

**APPENDIX P**  
**Prescribed and Wildfire History by Burn Unit 1990 - 2009**

***Fuel Treatment and Wildfire History – Central FMU***

UNIT	TOTAL ACRES	RX TREATMENT Mo/Yr	WILDFIRE YEAR/ACRES	WILDFIRE CAUSE
14	255	1/91	N/A	N/A
15	930	N/A	N/A	N/A
16	510	N/A	N/A	N/A
18	754	2/97, 1/02, 3/05, 2/09	N/A	N/A
19	414	N/A	N/A	N/A
20	1169	3/92, 2/96, 2/00, 1/04, 6/08	N/A	N/A
21	1304	N/A	N/A	N/A
30	583	1/95, 1/99, 4/05, 7/06	N/A	N/A
31	428	N/A	N/A	N/A
37	325	N/A	N/A	N/A
38	747	N/A	2007, 146 acres	Lightning
39	240	N/A	N/A	N/A
40	516	N/A	N/A	N/A
41	499	N/A	N/A	N/A
<b>Total Acres</b>	<b>8674</b>			

**APPENDIX P**  
**Prescribed and Wildfire History by Burn Unit 1990 - 2009**

***Fuel Treatment and Wildfire History – Western FMU***

UNIT	TOTAL ACRES	RX TREATMENT Mo/Yr	WILDFIRE YEAR/ACRES	WILDFIRE CAUSE
1	357	12/91, 1/95, 1/02	N/A	N/A
2	276	12/92, 1/97, 1/02	N/A	N/A
3	408	1/90, 2/95, 1/98, 7/03	5/06 - 408 acres, 7/09 – 408 acres	lightning
4	565	2/92, 6/96, 2/99, 2/04	N/A	N/A
5	317	12/92, 1/97, 7/03, 1/07	N/A	N/A
6	384	1/92, 2/96, 7/99, 12/03, 2/09	N/A	N/A
7	426	1/95, 2/98, 4/03, 3/06	N/A	N/A
8	511	1/91, 1/95, 7/99, 1/07	5/03, 511 acres	lightning
9	511	1/92, 6/96, 2/00, 2/04, 2/09	N/A	N/A
10	503	2/94, 2/98, 1/02, 3/06	N/A	N/A
11	469	1/92, 3/96, 1/00, 1/04, 7/09	N/A	N/A
12	459	12/92, 2/97, 1/02, 4/05, 7/09	N/A	N/A
13	479	10/90, 1/95, 1/99, 1/03, 2/08	N/A	N/A
51	344	2/94, 1/98, 4/02, 6/06	N/A	N/A
52	204	2/93, 1/97, 3/05, 2/09	N/A	N/A
53	312	3/92, 6/06, 7/09	N/A	N/A
54	386	2/94, 2/98, 6/06	N/A	N/A
<b>Total Acres</b>	<b>6911</b>			N/A

**APPENDIX Q**  
**Fuels and Fire Effects Monitoring Plan – Florida Panther NWR**

RESERVED