

Review of Burnover Incident at  
St. Sebastian River Preserve State Park  
Indian River County, Florida  
February 24, 2004




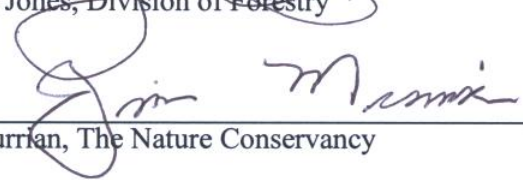
Submitted April 2, 2004



St. Sebastian River Preserve State Park  
Prescribed Fire Burnover  
February 24, 2004  
Review Team Members

  
\_\_\_\_\_  
John Kern, Division of Forestry 3-29-04  
Date

  
\_\_\_\_\_  
Wayne Jones, Division of Forestry 3-29-04  
Date

  
\_\_\_\_\_  
Jim Murrin, The Nature Conservancy 3-29-04  
Date

  
\_\_\_\_\_  
Jeff DiMaggio, Department of Environmental Protection, Florida Park Service 3/29/04  
Date



# Contents

<b>Review Team Mission .....</b>	<b>3</b>
<b>What Happened .....</b>	<b>4</b>
<b>Why Did It Happen .....</b>	<b>10</b>
<b>Other Review Items .....</b>	<b>11</b>
<b>Recommendations Relating to the Burnover .....</b>	<b>12</b>
<b>General Prescribed Burning Recommendations .....</b>	<b>13</b>
<b>Findings of Things That Were Done Very Well .....</b>	<b>14</b>

## **Attachments**

- 1. Burn Unit Map**
- 2. Position Training Record**
- 3. National Weather Service Forecast**
- 4. Burn Units Prescription**
- 5. Dr. Goodrick's Weather Explanation**

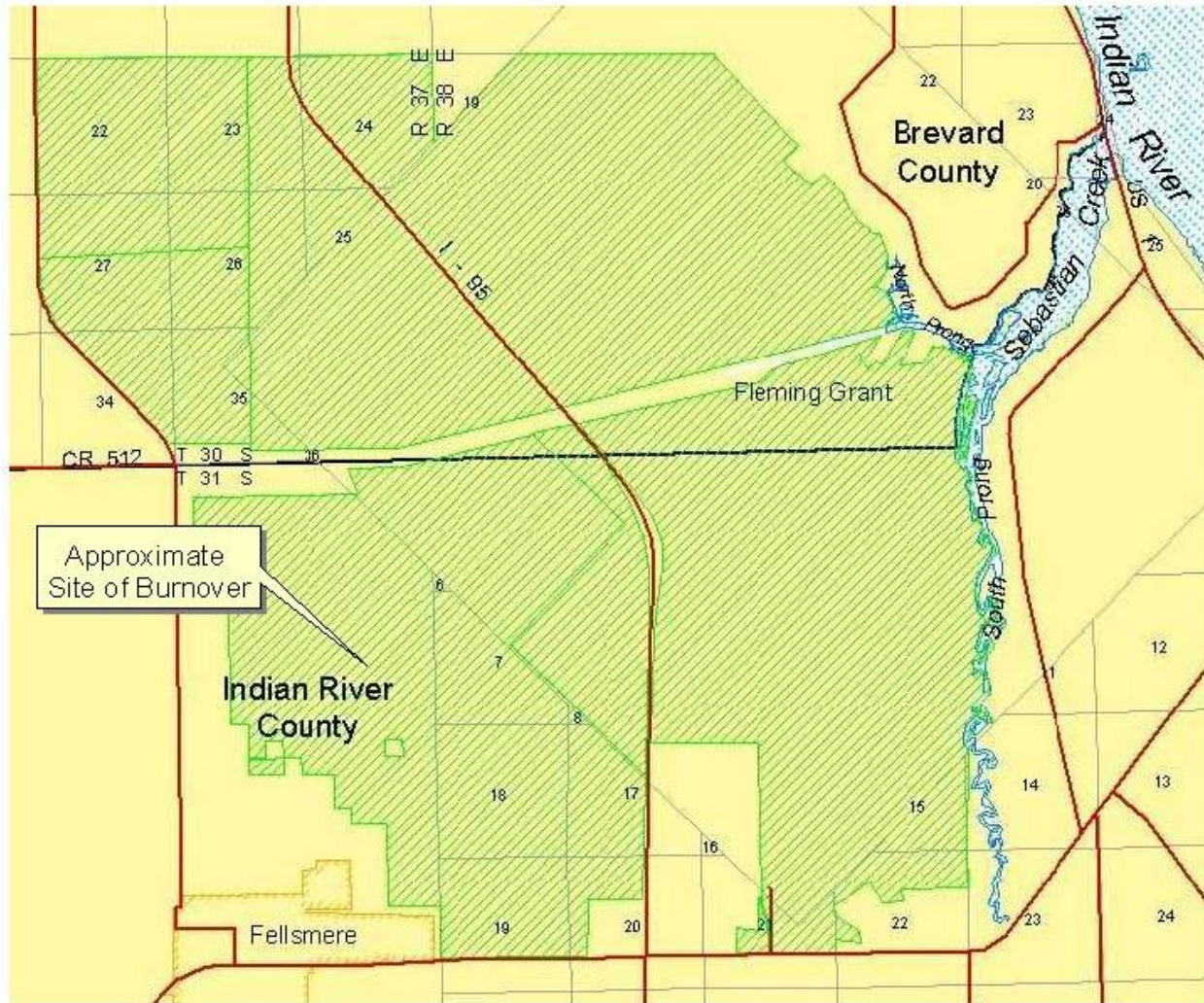
*Mission –*




The mission of the Review Team was to look into the prescribed fire operation at the St. Sebastian River Preserve State Park on the day of February 24, 2004. The Review Team was created at the request of Department of Environmental Protection (DEP), Division of Recreation and Parks, Florida Park Service (FPS) management to the Florida Division of Forestry. The members of the team are; two from the Division of Forestry, one from an outside organization and a FPS member to act as a liaison as well as team member. The Team began its work on February 26<sup>th</sup> at the St. Sebastian River Preserve State Park. The team first met with the local and regional FPS supervisors to determine the extent of the review and the format of the report.

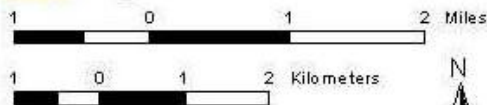
It was agreed that the report should describe:

- What happened
- Why it happened
- Review of Policy and Law Compliance
- Review of the Burn Prescription
- Recommendations and Findings
  - Relating to this Burn
  - Relating to Prescribed Burning Operations in General

*What Happened* – St. Sebastian River Preserve State Park is located in southern Brevard and northern Indian River Counties. This state park is approximately 22,000 acres.



-  Aquatic Preserve
-  Buffer Preserve
-  City limits



CAMA Map  
Created October, 2001

Projection Albers  
Datum NAD HPGN  
Aquatic Preserve boundary created by:  
Florida Marine Research Institute  
Buffer Preserve boundary created by:  
Office of Coastal and Aquatic Managed Areas  
Both verified by:  
Office of Coastal and Aquatic Managed Areas

A prescribed fire was planned for burn units SSR 82 (136 acres) and SSR 85 (147 acres) for February 24, 2004 (attachment 1). This burn was conducted with 6 members of local FPS

employees and 6 members of the newly formed FPS, Backlog Abatement Team (BAT). Crews and equipment assigned to the burn were:

Personnel

Keith Fisher, Burn Boss, local  
Jill Scanlon, local  
Kelly Morgan, local  
David Simpson, local  
Robert Chesser III, local  
Terry Smith, local and on BAT  
Christopher Raby, BAT  
Philip Spycaboer, BAT  
Edward Alford, BAT  
Roy Ozmore, BAT  
Christopher Ammon, BAT  
Benny Woodham, BAT Team Leader

Equipment

1 ATV  
1 Type VI engine (Humvee)  
3 Type VI engines  
1 Type VII engine  
1 Farm tractor and harrow  
2 Horses

Weather Forecast – The forecast (see attachment 2) for the day of the burn called for winds south at 9 MPH in the morning and southwest at 11 MPH in the afternoon. The maximum temperature was forecast to be 81 degrees, with a minimum relative humidity of 55%. There was a 40% chance of thunderstorms for this area. The dispersion index for the day of the burn was 65. All of these values are within the parameters of the prescription. Local weather readings were taken on site beginning at 1010 with wind S-SW at 8-10 and relative humidity was just above 60%, the 1230 reading indicated 50% RH, and the 1400 reading indicated 45% RH. There was ¼” of rain reported on the site on Monday, February 23, 2004, the day before the burn.

Burn Units – Burn History – The two units (see attachment 1) to be burned on February 24, 2004 were designated SSR 82 (136 acres) and SSR 85 (147 acres). Chesser indicated that SSR 82 was last burned in 1996 by a wildfire, and SSR 85 was last burned in 1989. Chesser also indicated the burn unit to the north of SSR 82 was last burned in a 1986 wildfire (SSR 81). The burn units have a variety of fuel types in them. The dominant fuel in these units is scattered pines with light to medium palmetto/gallberry understory. Other areas in the burn units have oak scrub, or cabbage palms, and there are depressions with marshes.

Fire Breaks – All of the burn unit boundaries were clean dirt lines approximately 20 feet wide that had been recently disked. The eastern firebreak along both units was a mowed power line easement approximately 200 feet wide. All of the SSR 82 unit boundaries were recently chopped and mowed approximately 20 feet wide to the interior side to reduce fire activity near the

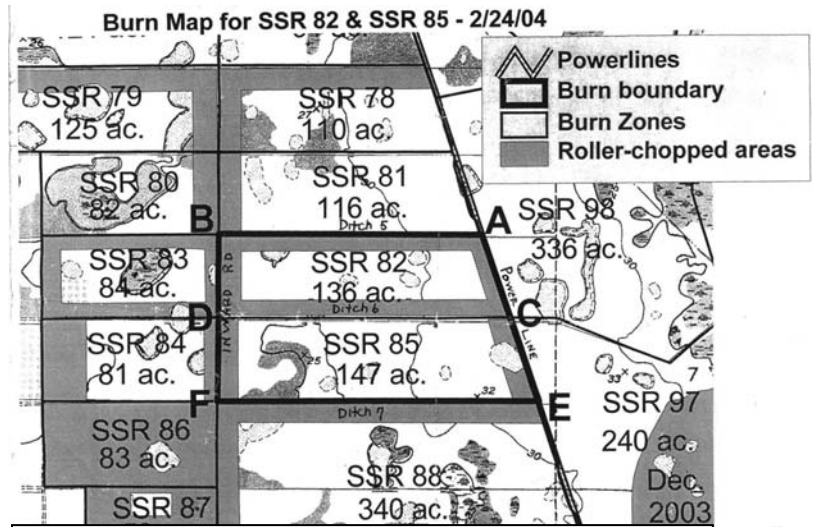
**Figure 1 - Looking east along A-B line. Note clean line and chopped/mowed area next to line.**  
*Photo by Woodham*



lines. The east and west boundaries of SSR 85 had also been chopped and mowed to the interior side. The north and south side lines could not be treated to the interior side because of drainage ditches (approximately 20 feet wide at the top and 15 feet deep) along those boundaries. The fuels on the south side of the south boundary of unit SSR 85 (E-F line) were recently chopped and mowed to lower the fuels. The ditch along the E-F line is to the north side of the disked fire break.

These wide mineral soil fire breaks with the additional fuel treatments of mowing and chopping created very effective fire breaks. It should be noted that the very recent and deeply harrowed lines did make engine travel more difficult.

**Briefing** – A briefing was held at 0900 with all crew members (except Chesser who was installing fire breaks and moving needed equipment, however Chesser received his briefing from crew boss Fisher prior to the burn starting). All team members interviewed indicated the briefing covered the forecasted weather, known hazards (power lines, ditches...), fire behavior, tactics, firing plans, crew assignments, objectives and other pertinent items. Escape routes and safety zones were not discussed during the pre-burn briefing.



**Figure 2 - Burn Unit Map**

All BAT crews and several of the local crew members drove around both units to visually inspect, and orient themselves to the burn units. During this surveillance one of the engines became stuck in the mud hole between points B-D on the west side of the burn.

**Test Fire** – The test fire was started near point A at between 1030 and 1100. Fire behavior and weather were within prescription.

**Base Line Establishment** – After the test fire indicated weather conditions and fire behavior were as predicted, the crews proceeded from the northeast corner (point A) of the burn units to the west and to the

**Figure 3- Crews installing base line** *photo by Woodham*



south to establish the base lines for the southwest winds they had. The crews were divided so the BAT would be establishing the long base line from A to B (see attachment 1) along the north side of the burns, and the local crews would be working toward the south from A to C. There were two crew members, Chesser and Morgan, working from horseback lighting spot ignitions in the unit as the other crews proceeded with installing the base lines.

The A-B base line was completed out to point B just prior to 1500. Much of the interior had been ignited by the horseback crew members. Great care and time was taken in establishing the A-B base line because there is 10-12 year old palmetto rough to the north of the line. There were no spots over this line. At approximately 1130 the crew working from point A to C experienced and extinguished a small spot fire south of point A.

Throughout this operation, Fisher was patrolling the area on the ATV, and directing operations as needed. Scanlon was taking and reporting weather observations during this time.

Completing the First Block – With the main base line installed the crews quickly completed the burning out of the first block (SSR 82). One engine moved from point B around to A, then C and then D to assist with holding along the west line south of the mud hole while the two horseback igniters lit the interior. The firing of this block was completed a little after 1500.

Working the Second Block - At approximately 1500 Fisher and Woodham met to discuss whether they should now move onto the second block (SSR 85). It was felt that everything was going well and the winds and fire behavior were favorable to continue on and begin to work the second block. The BAT crews began to bring the fire down the west side (from D toward F) of the unit.

The local crew was lighting line from C toward E. The local crew had established the base/flank line along the power lines from C to E by approximately 1540. Chesser was on horse back and was adding interior ignitions along the north portion of SSR 85. Smith had switched with Morgan, and Smith was now on horseback, burning out some interior areas near point E. Morgan was stationed with a Type VI engine at Point E, Smith moved to the E-F road that is the south boundary of the unit. They proceeded to light along the E-F road from point E toward the west. Scanlon was working near the Humvee lighting fire along the north side of the E-F road. Simpson's location and assignment at this point was unknown to those interviewed by the Review Team, but he had been working in the area of point E. Fisher was patrolling the area on the ATV.

Clouds and Wind shift – Most members of both crews noticed a dark cloud approaching from the northwest at about 1530. Some described it as looking like a rolling cloud not attached to the ground. Others felt it looked more like a line of showers. The remark was made, referring to this cloud formation, "Here comes the mop-up crew", indicating they thought this cloud would be bringing rain. Crew members commented that they thought the cloud and its possible rain were still an hour away. Both crews increased the pace of ignition at this time in order to get unit SSR 85 secure before the anticipated rain arrived.

At about 1540, the change in wind speed and direction was first reported by Spyckaboer who was toward the northwest corner of the burn. The wind shifted from the southwest to the northwest, increased greatly in speed and the temperature decreased significantly. Woodham was standing on the bed of an engine observing the fire and stated the gust of wind nearly blew him off the truck. The National Weather Service monitoring station at the Vero Airport (15 miles to the southeast of the burn) reported gusts to 37 MPH and sustained winds of 31 MPH out of the northwest when the gust front moved to that area. Between 1500 and 1700 a weather station located west and slightly north of the site, in Kenansville, reported a change in wind direction of 236 degrees to 352 degrees and a change in 10m (above the surface) wind speed from 18 MPH to 31 MPH. Word of this wind shift and increased speed was immediately relayed by radio to Woodham and others. Within moments Woodham, located between D and F on the west side, felt the wind change and relayed his observations of the wind and change in fire behavior potential directly to Fisher who was on the E-F road. There was also radio traffic confirming that Chesser and Smith who were working the interior were heading to safe areas. Chesser was making his way out of the burn unit by horseback, and Smith was on horseback and on the E-F road near point E and in visual contact with Fisher. Chesser's quick action and local knowledge of the burn unit allowed him to leave a very dangerous location safely, as he was in the middle of the burn block with the fire he just lit to his north. Fisher immediately said over the radio for all crews on the south line to "Get out of the area, get out".

The engine patrolling A-B line became stuck in sand at some point. This had no effect on the burnover as this crew was assigned to the north line of the fire, well away from the burnover area and escaped fire.

#### Just Before the Burnover -

The fire that was in the middle of SSR 85 was now moving rapidly to the southeast, towards an area just to the west of point E. Reported flame heights were greater than 20 feet. This is consistent with bark char heights, needle consumption and other indicators at the scene. The last visual contact with Fisher and Scanlon before the burn over was by Smith who was on horseback near point E and the point where the fire came out of the unit. Smith indicated that he saw Fisher on the ATV approximately 150' to the west of him. Scanlon was 20' – 30' from the Humvee that was 50' west of Smith. The Humvee was in the E-F road/fire line, pointing to the west and the ATV was pointing to the east. Smith did not know the location of Simpson at that point. The last Smith saw of Scanlon before the burnover was her moving to the Humvee and attempting to put a drip torch into the rack on the back of the Humvee. At that point the smoke and heat forced Smith to retreat towards the east. It was shortly after losing sight of Fisher and Scanlon that crew members heard Fisher saying over the radio, "Get in the ditch, get in the ditch". At this point the gust of wind made it to point E. Morgan reported not feeling any of the wind shifts being reported over the radio. But shortly after hearing the reports of wind shifts Morgan was hit by the gust and stated that lots of debris and smoke were being carried by the gust blowing all around reducing visibility to near zero. She got in the driver seat and positioned the engine for escape if needed.

During the Burnover - The only people that know what happened at the burnover site at that point are the three individuals that were injured. We do know the Humvee had been turned around and was facing east and was on the south side of the E-F road, and was on fire just after the burnover. The ATV had been moved to east of the Humvee. Based on the radio traffic, their wet gear, and objects found in the ditch it is believed they were located in the shallow water of the ditch during the burnover. The three crew members that were burned carried fire shelters but there were no indications that they tried to deploy them.



**Figure 4 - Ditch where crew members sought refuge. Water levels were probably lower on the day of the burnover** *photo by Review Team*

During the period that Smith could not get to the spot of the burnover due to heat and smoke, he gave his cell phone to Morgan at Point E to call 911 because they knew that crew members were entrapped. After dealing with a bad phone and switching to a serviceable one, Morgan was able to contact 911 dispatchers and get EMS en route to their location. The 911 dispatch was contacted at 1559 and the medic arrived on scene at Babcock Rd at 1608.

After the Burnover – Smith was able to make it to the burnover location a few minutes after the burnover. He found the three injured crew members wandering and staggering in the E-F road approximately 300 feet from point E and approximately 50 feet from the unburned edge of the escaped fire. He gathered them into a group and assisted them to point E. Morgan administered first aid including applying water to cool burns, and removed some PPE. Smith rode the horse to his pick up that was at point A. Upon Smith’s return to point E, Morgan and Smith loaded the injured in the truck and transported them to where the ambulance was located at the closest paved road (Babcock Rd.).

Escape and Control - Crews on the west side of the burn were taking action to limit the size of the escape and to put out several small spot fires that occurred in unit SSR 88. Woodham became the Burn Boss at this point due to the injuries and transport of Fisher. The only local crew member not injured or directly assisting the injured was Chesser. It was decided Chesser should take the farm tractor and harrow and proceed to reinforce the lines on the south side of the block



**Figure 5 - View to the SE showing area of escape** *photo by DOF*

(SSR 88) the fire was now burning in. At this point there was no crew member, other than Chesser on the tractor, working on indirect attack of the fire with good local knowledge of the site. One engine worked spot fires south of the E-F line towards the west end of the block. The engine that was stuck on the A-B line was pulled out at some point and assisted in the fire suppression efforts.

Woodham took steps to photograph the accident scene and to limit any disturbance to that area.

The gust of wind that caused the fire to escape was short lived and the fire behavior subsided after a brief but intense run. A Florida Division of Forestry (DOF) tractor and supervisor heard the local fire department's radio dispatch and responded to the scene. Radio problems and frequency confusion, such as which channel on a truck radio was the DOF channel, were reported but did not appear to contribute to the incident. The escaped fire was suppressed fairly quickly with the FPS, DOF and cooperators' efforts. Fire crews left the scene at approximately 2300.

It should be noted that all crew members throughout the entire incident reacted well, kept their composure, followed directions and handled a very difficult and challenging situation extremely well. Smith and Morgan showed a great deal of courage and composure in dealing with the injured crew members. The Backlog Abatement Team (BAT) was recently organized and had only been on one burn together prior to this one and they functioned very well. Woodham displayed outstanding leadership once the fire escaped and he became the Burn Boss. Florida Park Service District 3 staff Rosi Mulholland and Donald Forgione were very professional in organizing after incident support and were sensitive to the crew members needs by having Crisis Counselors available. The Review Team was provided all necessary support and information to complete this review. Use of the Incident Command System was initiated by Mulholland and Forgione to facilitate the organization of their operations after the incident.

#### *Why Did it Happen –*

By far the leading cause of this accident was the strong gust front that moved through the burn area at approximately 1600. This gust front was the result of severe thunderstorms that happened over 100 miles away (see attachment 3, Dr. Goodrick's report). There was one report from Chief Lunden of the Brevard Fire Department that at his location, 10 miles north of the burn, that winds changed direction and blew at an estimated 50 MPH, lifting debris and blasting him with sand. Available weather monitoring stations including National Weather Service (NWS) sites at Vero and Melbourne airports and Florida Automated Weather Network sites at Kenansville and Fort Pierce all reported, starting at sites to the northwest of the burn and progressing to the southeast, a wind direction shift from southwest to northwest, and increase in wind speed. This includes one report from the NWS Vero site of gusts up to 37 MPH and sustained winds of 31 MPH just after the accident. There were tornado warnings issued for northern Brevard County (approximately 40 miles to the north) during this period.

The plans and actions of all team members prior to and during the incident did not seem to contribute to the incident. The burn plan/prescription was sufficient, adequate staff and

equipment were on site, predicted and locally taken weather was within prescription and the units were very well prepared. The Review Team did not interview the persons that were injured, so their actions immediately prior to and during the burnover could not be considered by the team.

#### *Other Review Items -*

Other issues reviewed by the team include determining if the burn followed applicable policy, rules and laws and a review of the prescription. There were no violations of state laws, DOF rules, or violations of FPS policies.

##### DEP rules

Fire Breaks – All of the fire breaks used on this burn were adequate and maintained properly as defined in DEP 910, Sept. 17, 1999.

##### FPS Operation Policy Manual - Chapter 15

Equipment on Prescribed Burns – All required equipment was on scene as directed by FPS Operating Guidelines and Prescribed Burning Standards. And all members were wearing all required personal protective gear and fire shelters. Equipment and personnel exceeded the level called for on the prescription.

Training of Personnel –Fisher had all of the required training and experience for Burn Boss position as outlined in the above referenced Manual. Woodham has not had the Interagency Basic Prescribed Fire Training (IABPF), however he has completed the Fire Management Leader Program that was the precursor to IABPF and records shows he has had significant training and been an experienced burner and been a Certified Prescribed Burn Manager since 1987. All crew personnel had the required training for their positions on the burn. (see attachment 4)

##### DOF Rules and law

Permit – The burn authorization was secured from DOF that morning (#84692) and indicates this was a “Certified Burn”.

Certified Burner – Keith Fisher is a Certified Prescribed Burn Manager, # 19942501

Prescription – The original prescription was destroyed in the accident. The computer copy looks very complete and meets the requirements of Florida Statute 590.125(3), and Chapter 5I-2.006(2)(a), sometimes referred to as the “Prescribed Burner’s Act”.

Requirements – There were adequate fire breaks, personnel and equipment.

##### Prescription

The actual prescription was destroyed in the burnover incident. A computer copy was printed and shared with the Review Team (see attachment 5). Additionally, a copy of a prescription written by Fisher, for a burn conducted on February 20, 2004 was supplied to the team. All prescription documents seemed to be very complete, professional and appropriate for the unit and conditions.

Recommendations Relating to the Burnover -

1. Dedicated Weather Observer Position – A crew member dedicated to observing, monitoring all available weather updates and reporting on the weather might have been able to better judge the rapid speed this cloud was approaching. The only indication of the change in wind direction might be coming, was the dark cloud members reported seeing prior to the gust and change in direction. Had this cloud, and its rapid approach, been identified as indicating a change in wind direction, preventative action might have been able to have occurred earlier. However, there is no guarantee that even a trained weather observer would have been able to interpret that this cloud was going to have the drastic effect on the winds that it did.

## General Prescribed Burning Recommendations –

1. Start Operations Early - Establishing the base line of prescribed fires can be done more efficiently and safer under the weather conditions found in the morning. The relative humidity is higher, and the winds are typically lighter in the morning when compared to the afternoon. This leads to a reduced threat of spot fires. Transporting crews and equipment, conducting briefings and preparing the unit should be planned to take advantage of the above weather considerations.
2. Dozer/Plow Units – Dozer/plow units are very effective at controlling fires in heavier fuels like palmetto. Having this type of unit on scene is helpful, especially during the establishment of the base line. Dozers are able to patrol the palmetto areas down wind and catch spot fires in places Type VI engines won't. The lack of a dozer on site during the burn did not contribute to the incident but would have quite possibility kept the escape to a smaller size.
3. Brush Trucks – The Type VI brush trucks were having some difficulty operating in the soft sand on the fire breaks of these burn units. Trucks had become stuck several times during this burn operation. Wider, larger tires that offer better floatation in sand and increased ground clearance. Maintaining proper weight loading on trucks would lead to better traction and performance in these conditions and should be looked at. If engines are going to be used in prescribed fire operations, steps should be taken to limit the disking of their travel lanes just prior to the burn.
4. Familiarization with Area – After the burnover, Woodham found himself in charge of a wildfire where people had been seriously hurt in an area he was not familiar with. It would have been very beneficial for Woodham to have more complete maps and communication information to assist him in his contacting assistance and decision making. The Review Team recommends any Crew Bosses or Line Bosses, especially if they are outside their normal working area, be given maps, phone numbers, radio contact information and emergency medical information and should arrive at the burn site in plenty of time to adequately familiarize themselves with the area. The Team would point out that Woodham did an outstanding job in managing the burn after the burnover incident.
5. Radio Channel Identification - Though it was not a contributing factor, some crew members commented that they were not sure if the local DOF frequency was on the same radio channel in all vehicles. Radios should have a list of channels taped to the radio. The working radio frequency to be used on the burn was identified in the morning briefing and a radio check was performed. All crews on this burn did have high-band radios. High-band radios are capable of being programmed with the frequencies of more local cooperators such as DOF. Throughout the day, communications on the burn and during the wildfire suppression were very effective.
6. Critical Incident Policy - Develop policies and procedures and training for critical incident operations. At times of great stress and significant decision making, it is useful to have an outline for actions in writing that has been developed in advance of the emergency. Such items as; who to call, what information should be given out by phone or radio, who contacts family members, and the process for setting up care of those involved in the incident should be part of the agency's operating manual.

### Findings of Things That Were Done Very Well –

Below is a brief list of actions the Review Team wanted to point out especially to identify exceptional behavior and actions of individuals that worked on this prescribed burn.

> Quick relay of wind shift:

There was no hesitation by crew members to recognize the importance of the wind shift and it was passed on to all members with conformation of the information being received.

> Disciplined radio traffic during emergency:

Only essential traffic was relayed as needed. This helped ensure that crew members got all needed information to provide aid to the injured and provide for an organized and safe suppression of the escaped fire.

> Immediate calling of 911:

As soon as contact was lost with members of the team during the burnover, immediate and appropriate calls were made to Emergency Services enabling rapid response of EMT crews to the scene.

> PPE and fire shelters worn:

The nature of emergencies is such that there is often not time to prepare for them, therefore it is necessary to have all PPE on at all times, and all crew members did. Had this protective equipment not been used, injuries probably would have been more severe.

> Securing the accident scene:

Even while taking emergency action, providing aid to the injured and organizing and executing suppression efforts, crew leaders and members had the foresight to protect the accident scene. These efforts (including photographing the area) helped ensure no critical information was lost.

> Adequate equipment and labor:

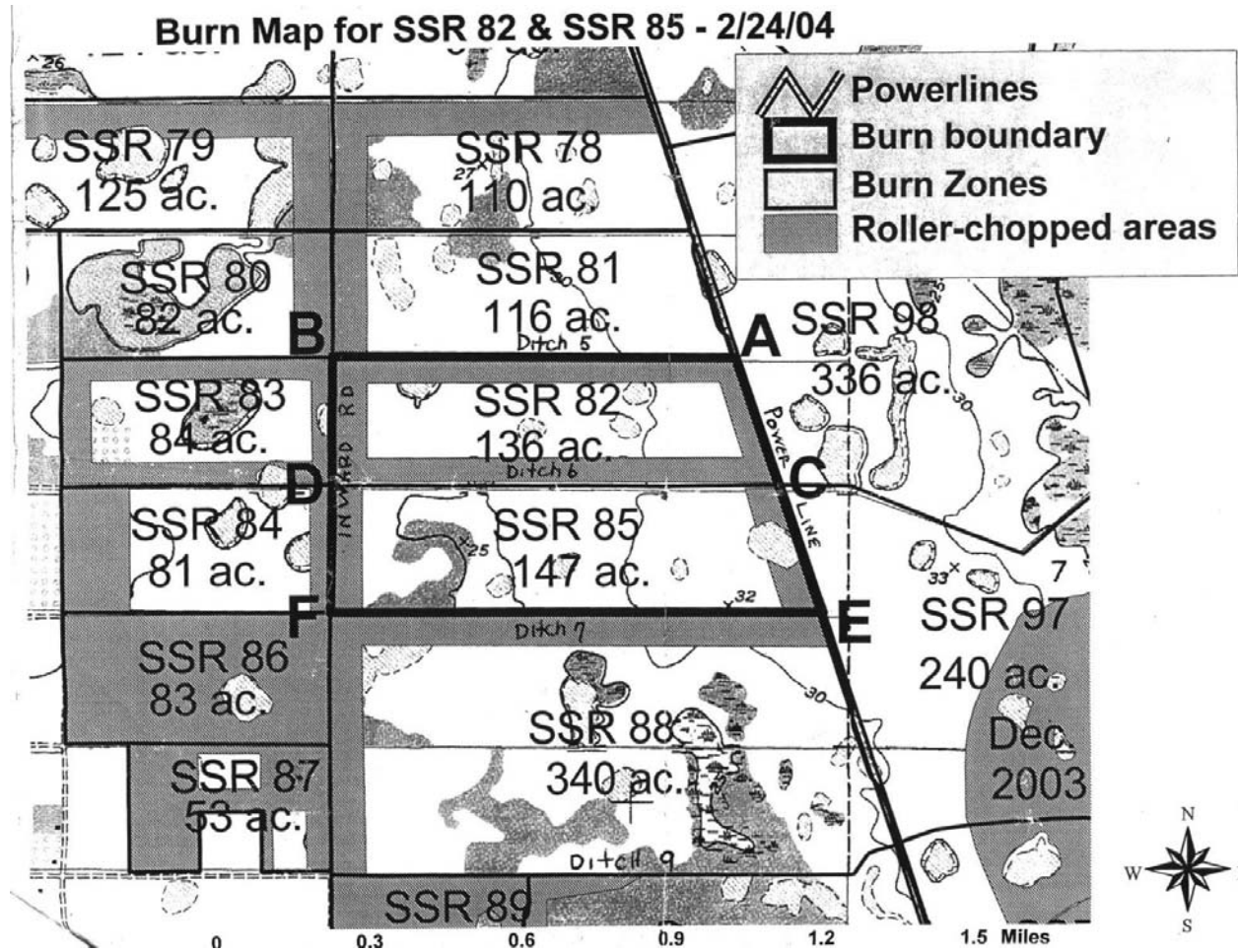
Leaders planned and staffed this burn well. Even after individuals were injured and equipment destroyed, there were adequate resources to maintain a safe environment and begin to suppress the escaped fire.

> After incident support:

Incident Command System was established after the incident. This helped ensure that critical needs were met dealing with the operations, planning and logistics of the incident. Critical Incident Stress Management was made available to all individuals involved in a very timely fashion. Leadership provided for the well being of all members involved in this accident. Many crew members indicated they felt the Critical Incident Stress Debriefing was very helpful.

Attachments

Attachment 1. Burn unit map



Attachment 2. National Weather Service Forecast

000

FNUS52 KMLB 241031

FWFMLB

EAST CENTRAL FLORIDA FIRE WEATHER FORECAST

NATIONAL WEATHER SERVICE MELBOURNE FL

510 AM EST TUE FEB 24 2004

.RED FLAG...NONE.

.DISCUSSION...A WET PATTERN IN PLACE DURING THE MID WEEK. A SERIES OF LOW PRESSURE CENTERS ARE FORECAST TO DEVELOP ALONG A FRONTAL BOUNDARY DRIFTING OVER FLORIDA. RAIN COVERAGE WILL BE HIGHER OVER NORTHERN SECTIONS TODAY THEN RAIN IS EXPECTED TO BECOME WIDESPREAD ON WEDNESDAY AS AN UPPER LEVEL DISTURBANCE APPROACHES. SCATTERED LIGHTNING STORMS WILL BE EMBEDDED IN THE RAIN WITH THE POTENTIAL FOR AN ORGANIZED LINE OF STORMS TO AFFECT THE AREA ON WEDNESDAY. NO CRITICAL RELATIVE HUMIDITY THRESHOLDS WILL BE REACHED THROUGH THE LATE WEEK.

FLZ047-054-242030-

INDIAN RIVER-SOUTHERN BREVARD-

INCLUDING THE CITIES OF...MELBOURNE...PALM BAY...VERO BEACH

509 AM EST TUE FEB 24 2004

.RED FLAG...NONE.

	TODAY	TONIGHT	WED
CLOUD COVER	MCLDY	CLOUDY	CLOUDY
PRECIP TYPE	TSTMS	TSTMS	TSTMS
CHANCE PRECIP (PCT)	40	50	80
TEMP	81	65	76
RH (PERCENT)	55	98	64
AM WIND/(20 FT MPH)	S 9	SW 5	SW 8
PM WIND/(20 FT MPH)	SW 11	SW 7	W 9
PRECIP AMOUNT	0.09	0.24	0.75
PRECIP DURATION	5	5	11
PRECIP BEGIN	6 AM	6 PM	6 AM
PRECIP END	6 PM	6 AM	6 PM
MIXING HEIGHT (FT)	3800	700	3400
TRANSPORT WIND (MPH)	SW 24	SW 8	SW 26
DISPERSION INDEX	65	5	70
CEILING	8000	3500	3500
LTG STRIKE/15 MIN	1-8	9-15	9-15

.EXTENDED FORECAST...

.THURSDAY...MOSTLY CLOUDY THEN BECOMING PARTLY CLOUDY. SCATTERED SHOWERS. LOWS IN THE LOWER 60S. HIGHS IN THE MID 70S. SOUTH WINDS 5 TO 10 MPH.

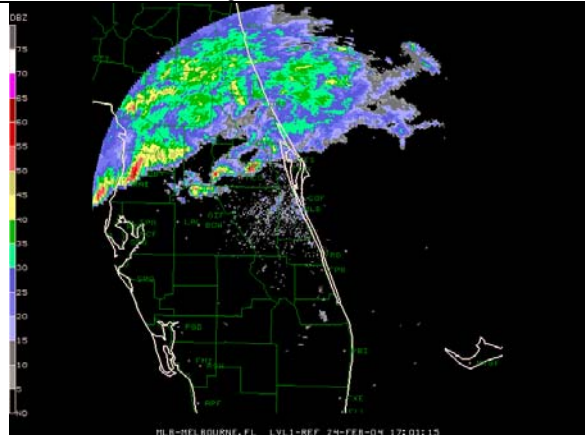
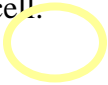
.FRIDAY...PARTLY CLOUDY. LOWS IN THE MID 50S. HIGHS IN THE LOWER 70S. NORTHWEST WINDS 10 TO 15 MPH.

.SATURDAY...MOSTLY CLEAR THEN BECOMING PARTLY CLOUDY. LOWS IN THE MID 50S. HIGHS IN THE UPPER 70S. EAST WINDS AROUND 15 MPH.

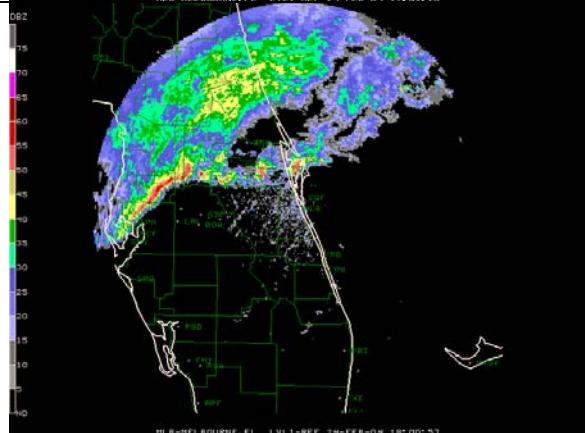
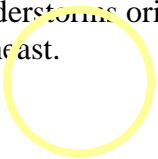
Attachment 3. Dr. Scott Goodrick's Weather Explanation

**Radar sequence for February 24, 2004**

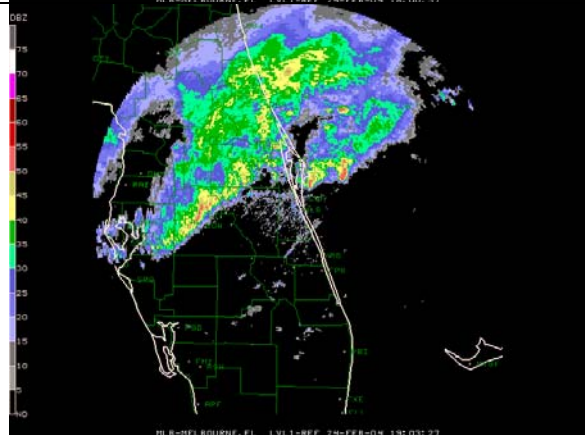
1200 - An extremely strong cell moves onshore in Pasco and Hernando counties. Some severe weather was associated with this cell.



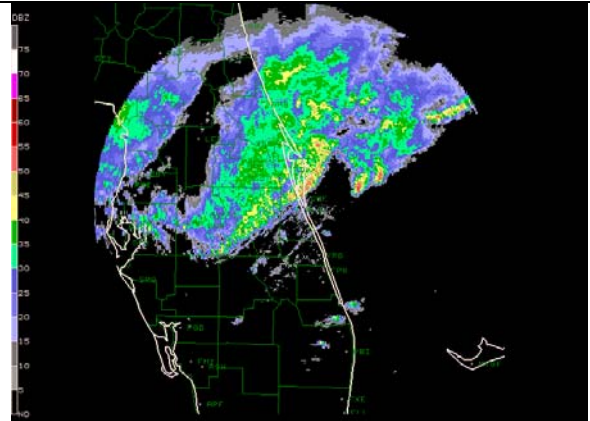
1300 - Outflow from strong cell interacts with other outflows, leading to the development of a strong line of thunderstorms oriented from southwest to northeast.



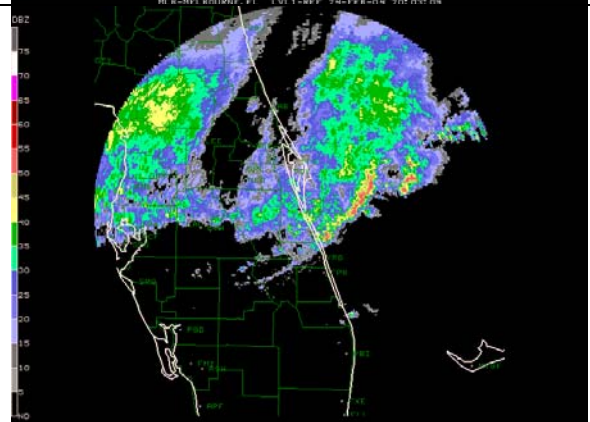
1400 - These storms dissipate fairly quickly and produce a strong, coherent outflow that begins propagating across the state.



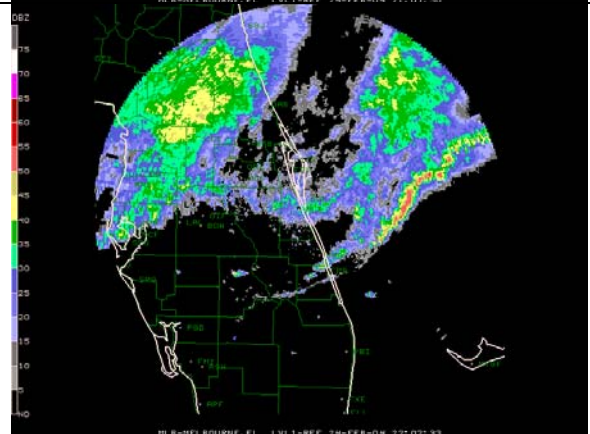
1500 – Outflow boundary rapidly moves across central part of state with some light to moderate rain behind the gust front.



1600 – Most of the precipitation along the southwestern end of the gust front has dissipated. Gust front is now reaching east coast.



1700 – Gust front has continued through the region. Its orientation has shifted to more of an east-west line.



The weather events associated with the burn-over incident were largely unforecast and no spot forecast issued that morning could have foreseen the wind shift that came that afternoon. The forecast did call for a chance of thunderstorms that implies a potential for strong and variable winds, but in this case the thunderstorms that generated the wind event occurred well to the northwest of the burn unit (on the opposite side of the peninsula) and produced outflows that propagated across the entire peninsula that afternoon.

Scott Goodrick is currently a Meteorologist with the US Forest Service Lab in Macon, Georgia. Scott was previously the Meteorologist for the Division of Forestry.

Attachment 4. Prescribed Burning Training Spreadsheets

This table only shows the level of training received for the courses required by FPS Operation Policy Manual - Chapter 15 for their assigned burning positions.

<b>Required Training for assigned position is noted by outlined boxes</b>						
	130+Standards	S-190	IABPF	Cert.#	Fl.Fire Behavior	Fire Team Leader
<b>Keith Fisher, Burn Boss</b>	Dec-94	Dec-94	May-95	May-94	Jan-95	Mar-95
<b>Jill Scanlon, Crew</b>	Oct-00					
<b>David Simpson, Crew</b>	Nov-95					
<b>Kelly Morgan, Crew</b>	Oct-99					
<b>Robert Chesser III, Crew</b>	Oct-95					
<b>Terry Smith, Crew</b>	Sep-98					
<b>Christopher Raby, Crew</b>	Sep-99					
<b>Philip Spyckaboer, Crew</b>	Mar-00					
<b>Edward Alford, Crew</b>	Mar-00					
<b>Roy Ozmore, Crew</b>	Dec-94					
<b>Christopher Ammon, Crew</b>	Apr-03					
<b>Benny Woodham, Line Boss</b>	Rural Community Fire Protection	Jan-87	Fire Management Leader Program 1/87	Jun-87		

Complete training records indicate all individuals have received additional training that can be found below.

Attachment 4 (continued)

<b>STAFF TRAINING INFORMATION -</b>		<b>FEB 24, 2004 ST SEBASTIAN PRESERVE SP BURN CREW</b>	
<b>LNAME</b>	<b>FNAME</b>	<b>TOPIC</b>	<b>DATE</b>
ALFORD	ED	S-212	05/20/03
ALFORD	ED	SOUTHERN AREA WILDLAND ENGINE OPS.	1/17/03
ALFORD	ED	FLORIDA FIRE BEHAVIOR	8/22/00
ALFORD	ED	STANDARDS FOR SURVIVAL	2/29/00
ALFORD	ED	S-190	2/28/00
ALFORD	ED	S-130	3/1/00
ALFORD	ED	S-211	1/12/03
AMMON	CHRISTOPHER	S-190	4/24/03
AMMON	CHRISTOPHER	S-130	4/24/03
AMMON	CHRISTOPHER	STANDARDS FOR SURVIVAL	4/24/03
AMMON	CHRISTOPHER	I-100	10/6/03
CHESSER	ROBERT	S-130	10/95
CHESSER	ROBERT	S-190	12/90
CHESSER	ROBERT	CERTIFIED BURNER	3/15/91
CHESSER	ROBERT	INTER BASIC PRESCRIBED FIRE	12/15/00
FISHER	KEITH	SO. AREA WILDLAND ENGINE OPS.	02/23/95
FISHER	KEITH	S-190	12/19/94
FISHER	KEITH	INTER BASIC PRESCRIBED FIRE	5/15/94
FISHER	KEITH	CERTIFIED BURNER	5/26/94
FISHER	KEITH	I-220	6/2/94
FISHER	KEITH	S-230	3/1/96
FISHER	KEITH	S-130	12/14/94
FISHER	KEITH	FLORIDA FIRE BEHAVIOR	01/24/95
FISHER	KEITH	WORKSHOP ON ECOLOGICAL BURNING	03/10/95
FISHER	KEITH	S-390	03/06/95
FISHER	KEITH	S-211	01/05/96
MORGAN	KELLY	S-130	10/27/99
MORGAN	KELLY	STANDARDS FOR SURVIVAL	10/27/99
MORGAN	KELLY	S-190	10/27/99
MORGAN	KELLY	SOUTHERN AREA WILDLAND ENGINE OPS.	10/5/01
MORGAN	KELLY	S-211	10/5/01
OZMORE	ROY	CERTIFIED BURNER	20002969
OZMORE	ROY	FIRE HOSE PROCEDURES & TECH	10/28/93
OZMORE	ROY	STANDARDS FOR SURVIVAL	12/02/97
OZMORE	ROY	INTER BASIC PRESCRIBED FIRE	03/15/96
OZMORE	ROY	S-130	12/14/94
OZMORE	ROY	S-190	07/01/93
OZMORE	ROY	FLORIDA FIRE BEHAVIOR	07/13/93

RABY	CHRISTOPHER	STANDARDS FOR SURVIVAL	9/29/99
RABY	CHRISTOPHER	S-190	9/28/99
RABY	CHRISTOPHER	S-130	9/28/99
SCANLON	JILL	INTER BASIC PRESCRIBED FIRE	3/2/01
SCANLON	JILL	S-290	1/26/01
SCANLON	JILL	S-130	10/2000
SCANLON	JILL	I-100	10/22/00
SCANLON	JILL	S-211	09/22/02
SCANLON	JILL	S-190	10/2000
SCANLON	JILL	SOUTHERN AREA WILDLAND ENGINE OPS	09/27/02
SIMPSON	DAVID	S-130	11/95
SIMPSON	DAVID	S-190	11/95
SIMPSON	DAVID	STANDARDS FOR SURVIVAL	11/95
SIMPSON	DAVID	INTER BASIC PRESCRIBED FIRE	2/96
SMITH	TERRY	STANDARDS FOR SURVIVAL	9/10/98
SMITH	TERRY	S-130	9/9/98
SMITH	TERRY	S-190	9/8/98
SPYCKABOER	PHILIP	S-211	10/5/01
SPYCKABOER	PHILIP	SOUTHERN AREA WILDLAND ENGINE OPS.	10/5/01
SPYCKABOER	PHILIP	STANDARDS FOR SURVIVAL	2/29/00
SPYCKABOER	PHILIP	S-190	2/28/00
SPYCKABOER	PHILIP	INTER BASIC PRESCRIBED FIRE	2002
SPYCKABOER	PHILIP	CERTIFIED BURNER	2003
SPYCKABOER	PHILIP	AERIAL IGNITION	9/25/03
SPYCKABOER	PHILIP	S-130	3/1/00
SPYCKABOER	PHILIP	S-290	2/7/03
SPYCKABOER	PHILIP	S-212	11/22/02
WOODHAM	BENNY	CERTIFIED BURNER	6/5/87
WOODHAM	BENNY	RURAL COMMUNITY FIRE PROTECTION	3/83
WOODHAM	BENNY	FIRE MANAGEMENT LEADER PROGRAM	1/23/87
WOODHAM	BENNY	S-190	1/19/87
WOODHAM	BENNY	S-300 INCIDENT COMMANDER MULTI RES	6/18/87
WOODHAM	BENNY	S-200 INCIDENT COMMANDER SINGLE RES	1/28/88
WOODHAM	BENNY	S-205	1/7/94
WOODHAM	BENNY	SOUTHERN AREA WILDLAND ENGINE OPS.	12/10/99
WOODHAM	BENNY	S-211	12/4/99

Attachment 5. Prescriptions for SSR 82 and 85.

**Florida Department of Environmental Protection  
Florida Park Service  
Burn Plan/Prescription**

PRESERVE: St. Sebastian River Preserve State Park COUNTY: Indian River  
Unit: Southwest Preserve (Carson Platt Tract) SECTION(S): 11, 12 TOWNSHIP: 31 S RANGE: 37 E  
BURN ZONE(S): SSR 82, 85 ACRES TO BURN: 283 acres DATE WINDOW TO BURN: Winter 03/04  
BURN DATES OF LAST THREE BURNS: Previous unknown-no burn history

ZONE DESCRIPTION (NOTE: (A) BIOLOGICAL COMMUNITY TYPES, (B) PLANT SPECIES  
DOMINANTS, (C) APPROXIMATE % WOODY VERSUS HERBACEOUS, (D) UNDERSTORY  
AVERAGE FUEL HEIGHT, (E) FUEL MODEL).

- A) Primarily mesic pine flatwoods with scrubby flatwoods and oak scrub on the ridge along the east edge of the zone. Small depression marshes scattered throughout zone.
- B) Overstory primarily scattered slash pine with a few pockets of cabbage palms. Understory a mix of saw palmetto, gallberry, ericaceous shrubs, and scrub oaks in scrubby flatwoods and scrub areas. Ground cover a mix of wiregrass and other typical flatwoods herbs and grasses.
- C) Approximately 40% herbaceous, 60% woody
- D) Edges of zones roller-chopped/mowed in spring of '03. Fuel heights 1-2 feet in roller-chopped areas, 4-6 feet in non-chopped areas.
- E) Fuel Model 7.

REQUIRED MAPS: 1) BURN ZONE MAP MUST BE ATTACHED OR DRAWN ON BACK, INCLUDING LOCATION OF ALL CONTROL LINES, SAFE ZONES, AREAS OF SPECIAL CONCERN, WATER SOURCES, AND PROPOSED IGNITION PATTERN.  
2) MAP SHOWING DESIRED WIND DIRECTION AND SMOKE SCREENING INFORMATION.

**RESOURCE MANAGEMENT OBJECTIVES**

- 1) Reduce 1 hr. and 10 hr. fuel accumulations by 75-90%. Remove fuel downed by roller chopping/mowing.
- 2) Topkill woody shrubs and encroaching hardwoods less than 3" dbh by 50-75%.
- 3) Reduce and maintain low stature of understory to maintain scrub jay habitat.
- 4) Maintain fire as an ecosystem process in the zone.
- 5) Limit pine mortality to less than 10% and protect older trees.

NO. OF PERSONNEL REQUIRED: 6 minimum

EQUIPMENT REQUIRED: 2 Type 6 engines, PPE, hand tools

PASSED SMOKE SCREENING SYSTEM:  X  (YES)   (NO)

**POSSIBLE SMOKE SENSITIVE AREAS**

- 1) Interstate 95 approximately 2 ½ miles east of zones.
- 2) County Road 512 approximately 2 miles south of zones.
- 3) Town of Fellsmere approximately 2 miles southwest of zones.
- 4) Babcock Street approximately 1 ½ miles west of zones.

FIRE BREAKS/SITE PREP: Disked line along north, south, east, and west sides. Mowed powerline easement along eastern boundary of zone. Roller-chopped/mowed approximately perimeter of the zone in spring of 2003 to reduce fuel heights. Site prep to include disking all lines as needed.

**SPECIAL PRECAUTIONS (CULTURAL RESOURCES, HIGH FLAMMABILITY, SENSITIVE AREAS, PROTECTED SPECIES).**

- A) Limit smoke on I-95 and CR 512.
- B) Keep fire out from under powerlines and limit fire intensity along powerline easement.
- C) Homes on wooded lots along western boundary. If fire escapes west call for assistance.

PHOTO POINTS TO TAKE: None

POST-BURN MONITORING: Standard post burn monitoring protocol.

ADJACENT LANDOWNERS TO NOTIFY: See attached contact sheet.

PREBURN CONFERENCE (DATE/PARTICIPANTS) (OPTIONAL): Not conducted

GENERAL INTENDED FIRING PROCEDURE: Burn with a Southwest or south wind. Blackline along eastern and northern boundaries of zone. Ignite spots or strips throughout zones to burn out interior. Use flanking and head fires along south and east line to hold line. Coordinate internal zone ignition and ignition along lines to limit fire intensity. Can cut fire off on line between zones if necessary

CONTINGENCIES: Direct attack on all escapes and extinguish if possible. If fire escapes west into SSR 79, 80, 83 or 84, notify DOF for assistance, fall back to established perimeter lines and burn out zones. May need to request assistance in structure defense if fire threatening homes along western boundary. If fire escapes north into SSR 81, fall back to established perimeter lines and burn out. If smoke on I-95 or CR 512, notify DOT and Highway Patrol for assistance in traffic control. If fire escapes south into SSR 86, protect out parcel and burn out zone.

<b>WEATHER/FIRE BEHAVIOR FACTORS</b>	<b>PREFERRED</b>	<b>ACTUAL (Fill out day of burn)</b>
SURFACE WINDS (DIRECTION/SPEED)	DIR:SW, S MIN/MAX: 5/15	DIR _____ MIN/MAX ____/____
TRANSPORT WINDS (DIRECTION/SPEED)	DIR:SW, S MIN/MAX: 9/30	DIR _____ MIN/MAX ____/____
MINIMUM MIXING HEIGHT	2400 Ft	_____
DISPERSION INDEX	DAY: 30-65 NIGHT: 6	DAY: _____ NIGHT: _____
TEMPERATURE	MIN: 35 MAX: 95	MIN: _____ MAX: _____
RELATIVE HUMIDITY	MIN: 35 MAX: 70	MIN: _____ MAX: _____
FINE FUEL MOISTURE	MIN: 8 MAX: 25	MIN: _____ MAX: _____
DAYS SINCE 1/2" RAIN	More than 1	_____
DROUGHT INDEX	200 – 500	_____
RATE OF SPREAD	Max 65 ch/hr Head	_____
FLAME LENGTH	4 – 8 ft.	_____
STARTING TIME	10:00	_____

PRESCRIPTION PREPARED BY Keith Fisher DATE: 2/23/04  
 PRESCRIPTION APPROVED BY \_\_\_\_\_ DATE: \_\_\_\_\_

**FILL OUT ON DAY OF BURN:**  
 DATE OF BURN: \_\_\_\_\_  
 BURN BOSS (print) \_\_\_\_\_ (sign) \_\_\_\_\_ (certif. #)  
 942501

This form requests all information required by Ch. 5 I-2, Rural Open Burning.  
 FPS – R011

Attachment 5. Continued

**Florida Park Service  
St. Sebastian River Preserve State Park  
DAY OF BURN PROCEDURES**

Unit St. Sebastian River Preserve State Park – Carson Platt Date of Burn February 24, 2004

Burn Zone(s) 82, 85 Evaluation Date February 2005

Acres Planned to Burn 283 Acres Actually Burned \_\_\_\_\_

Section(s): 11,12 Township: 31 South Range: 37 East

DOF Authorization #: 66527 DOF Landowner #: 92872 DOF Customer #: 1306026

DOF Customer Name: Keith Fisher

**Personnel Contacted**

<u>Agency</u>	<u>Name/Date/Time Called</u>	<u>Help/Attendance Invited</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

- Attach:**
- 1. Burn Zone Map** indication firing pattern used with numbered arrows and cross hatch burned areas;
  - 2. Fire Weather Forecast**
  - 3. Weather, Fine Fuel Moisture, and Fire Behavior Data Sheets**
  - 4. Diagram of crew, crew positions, and equipment**
  - 5. Pre-burn Checklist and Crew Briefing**
  - 6. Fill out Actual Weather column on Prescription**

Start of Operation Period \_\_\_\_\_ End of Operation Period \_\_\_\_\_

Smoke Dispersal Problems: \_\_\_\_\_

Deviations from Plan/Prescription \_\_\_\_\_

Problems and General Observation: \_\_\_\_\_

Burn Boss (Print) \_\_\_\_\_ (Signature) \_\_\_\_\_ DOF  
Certification # 942501