

D-4

PRESCRIBED BURNING REQUESTS RECORDS
FOR
SMOKE MANAGEMENT

A DISTRICT

RECEIVED
NOV 25 1974

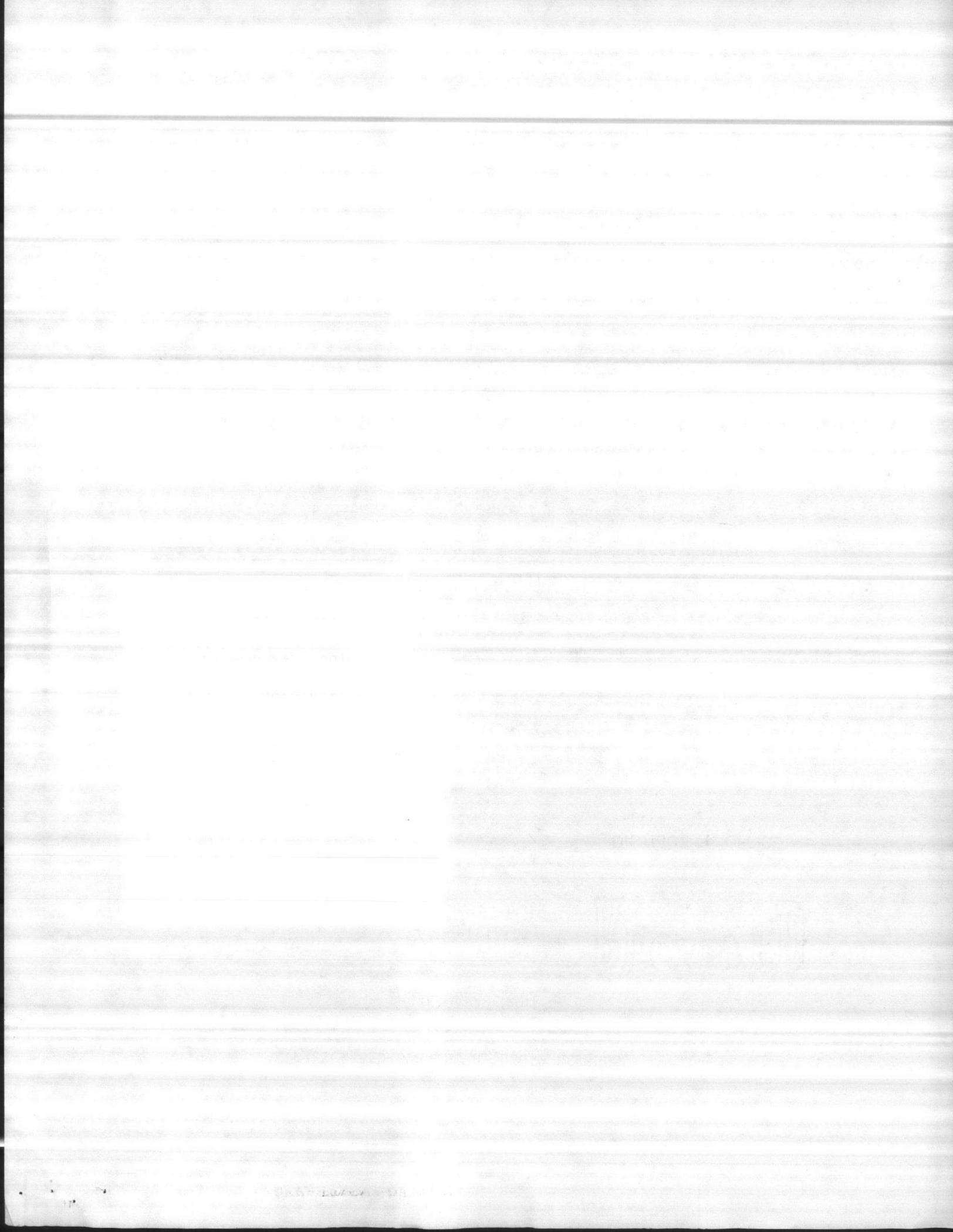
DISTRICT 4 OFFICE

*DANNY,
File one and let
Louie EWAYNE read the
others*

Shanker

Letter on Termination of Voluntary Smoke Management Program
Smoke Management Guidelines
Fuel Type Description

4. Estimate of Fuel volumes by fuel Type
5. Probable Fuel Type Occurrence by N. C. Forest Resources Regions
6. Coordination Procedures for N. C. Forest Resources District Offices using Smoke Management Guidelines
7. Temporary Form for Recording Prescribed Burning Requests
8. Procedure for Obtaining Category Day
9. Explanation of difference between Stagnation Advisory and Category Day



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FOR
SMOKE MANAGEMENT

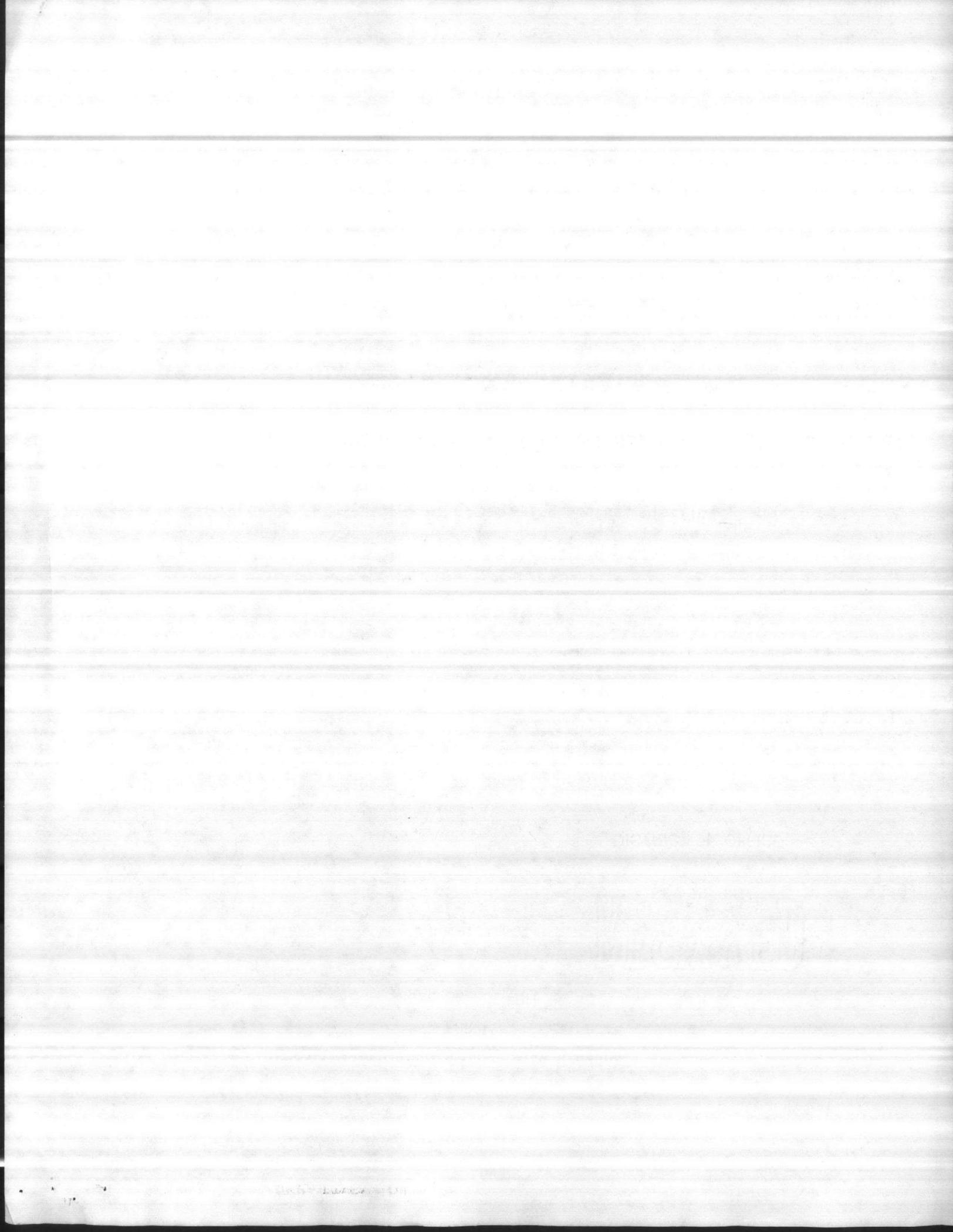
4 DISTRICT

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NOV 25 1974

DISTRICT 4 OFFICE

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MEMORANDUM

D-4

RECEIVED
DEC 18 1974

All Districts -----

Leonard Kilian -----

DISTRICT 4 OFFICE

Subject: PRESCRIBED BURNING REQUESTS RECORDS FOR SMOKE MANAGEMENT Date: December 9, 1974

The attached letter to all forest interests and cooperators in North Carolina concerning Smoke Management Guidelines was inadvertently left out of the book PRESCRIBED BURNING REQUESTS RECORDS FOR SMOKE MANAGEMENT. Please add it to your other material.

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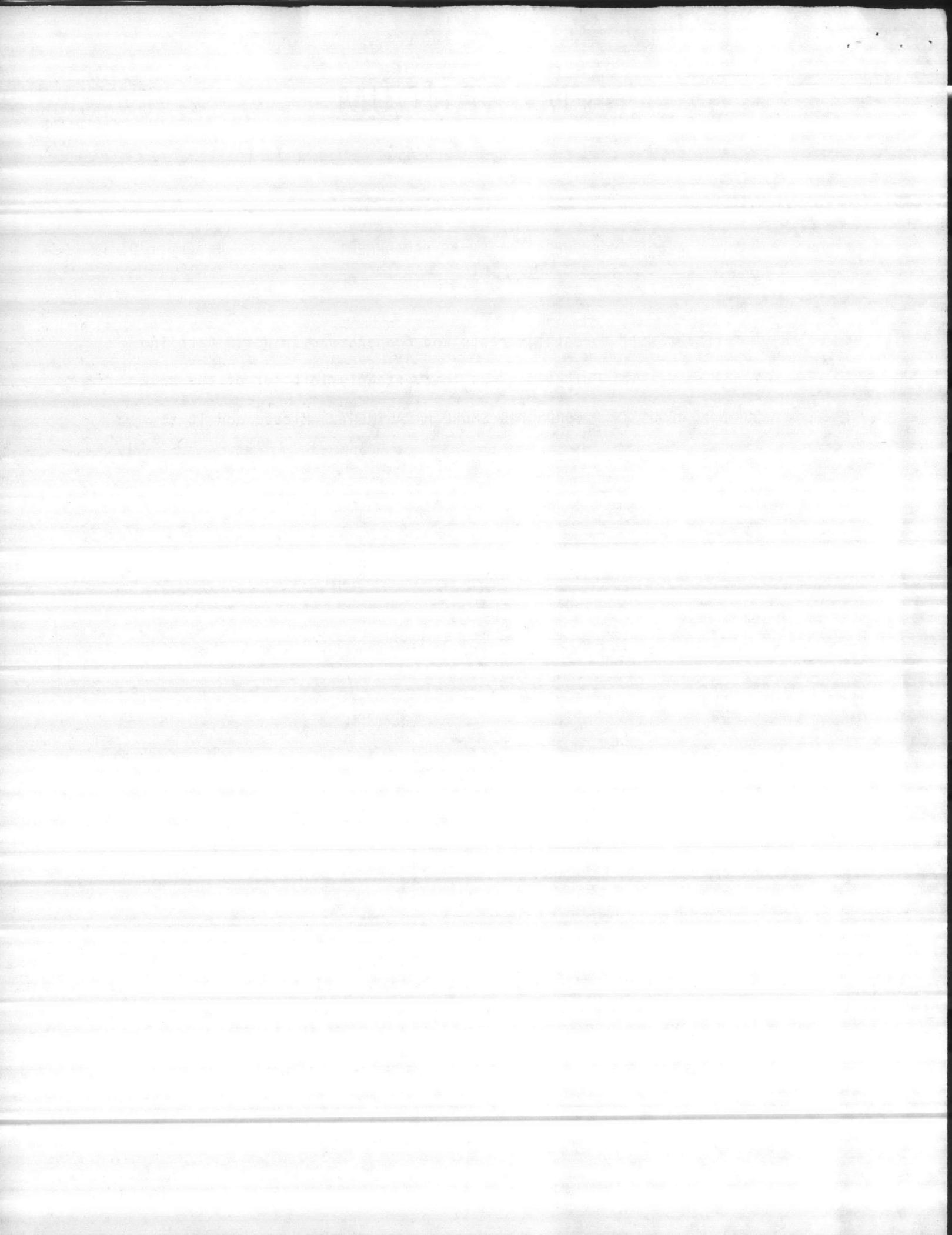
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ORL





North Carolina Department of
Natural & Economic Resources

JAMES E. HOLSHOUSER, JR., GOVERNOR • JAMES E. HARRINGTON, SECRETARY

OFFICE OF
FOREST RESOURCES

RALPH C. WINKWORTH
ADMINISTRATOR

BOX 27687, RALEIGH 27611
TELEPHONE 919 829-4141

October 11, 1974

**SUBJECT: Update of Smoke Management Guidelines for all Forest
Interests and Cooperators in North Carolina**

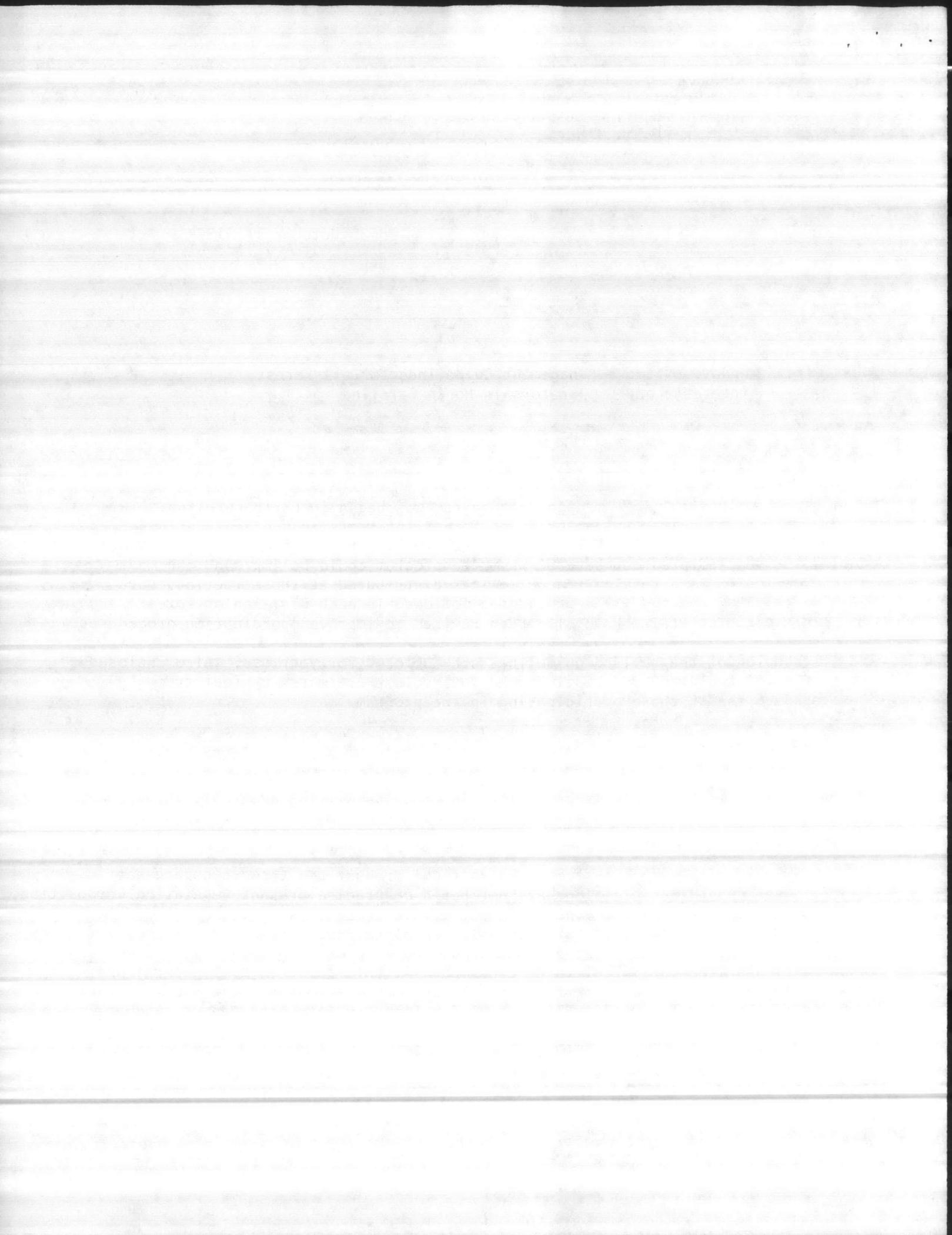
Gentlemen:

Last year a voluntary smoke management program was begun in North Carolina. This program was presented to the majority of forest interests in the state at a series of meetings and the results have been generally favorable. The experience gained during the year pointed out several ways the program could be improved and made more practical. As a result, the guidelines distributed at those meetings have been revised and updated. The procedures followed in each Division of Forest Resources district office have also been revised to improve coordination procedures.

Several copies of the revised guidelines are enclosed for your use. Also enclosed are copies of fuel type descriptions and fuel volume estimates by fuel type developed to assist those participating in the program.

Mr. Norm Ellis, the Forest Fire Weather Forecaster of the National Weather Service at the Raleigh-Durham Airport, will provide a burning category, mixing height, and transport winds based on the weather factors that affect smoke dispersal to the N. C. Division of Forest Resources. This information will be available through any district office and can be obtained by telephone or by two-way N. C. Forest Resources radio for those that operate on these frequencies.

It is recognized that this system is not a final product and techniques are not exact. Fuel type classifications are not based on precise present vegetation composition, and minor variations in fuel type may occur within a few acres. Items such as tons per acre are based on samples taken in North Carolina, oven dried and weighed. Using the guidelines available, estimates must be made of both total fuel volume and that portion of the total fuel to be consumed. At this point in time, operational need is ahead of available research information. This voluntary system will serve both as an interim measure of self-control for forestry interests and as feedback for research. This feedback will probably result in both more information and a source of questions for more information.



Page 2
October 11, 1974

In order to properly coordinate the burning in an area, the Forest Resources district office will need the following information on planned prescribed burns:

1. Date and time of planned burn
2. Acres to be burned
3. Estimate of tons per acre to be burned
4. Estimate of total tons to be burned
5. Location of burn (Forest Resources Block & Square System)
6. Reason for burn
7. Person responsible for burning operation
8. How to contact man in charge (radio & telephone)

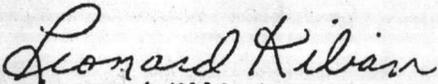
Any additional information may be added that is thought to be important or useful.

In the event that more than one burning operation is planned for the same block the same time, the Forest Resources District Coordinator will operate on a first request, first approval basis in order to be fair to all concerned.

If additional training or information on any part of the voluntary smoke management program is desired, please contact either your District Forester, Bill Flanner in Kinston, or myself in the Raleigh Office.

Sincerely,

Ralph C. Winkworth, Director

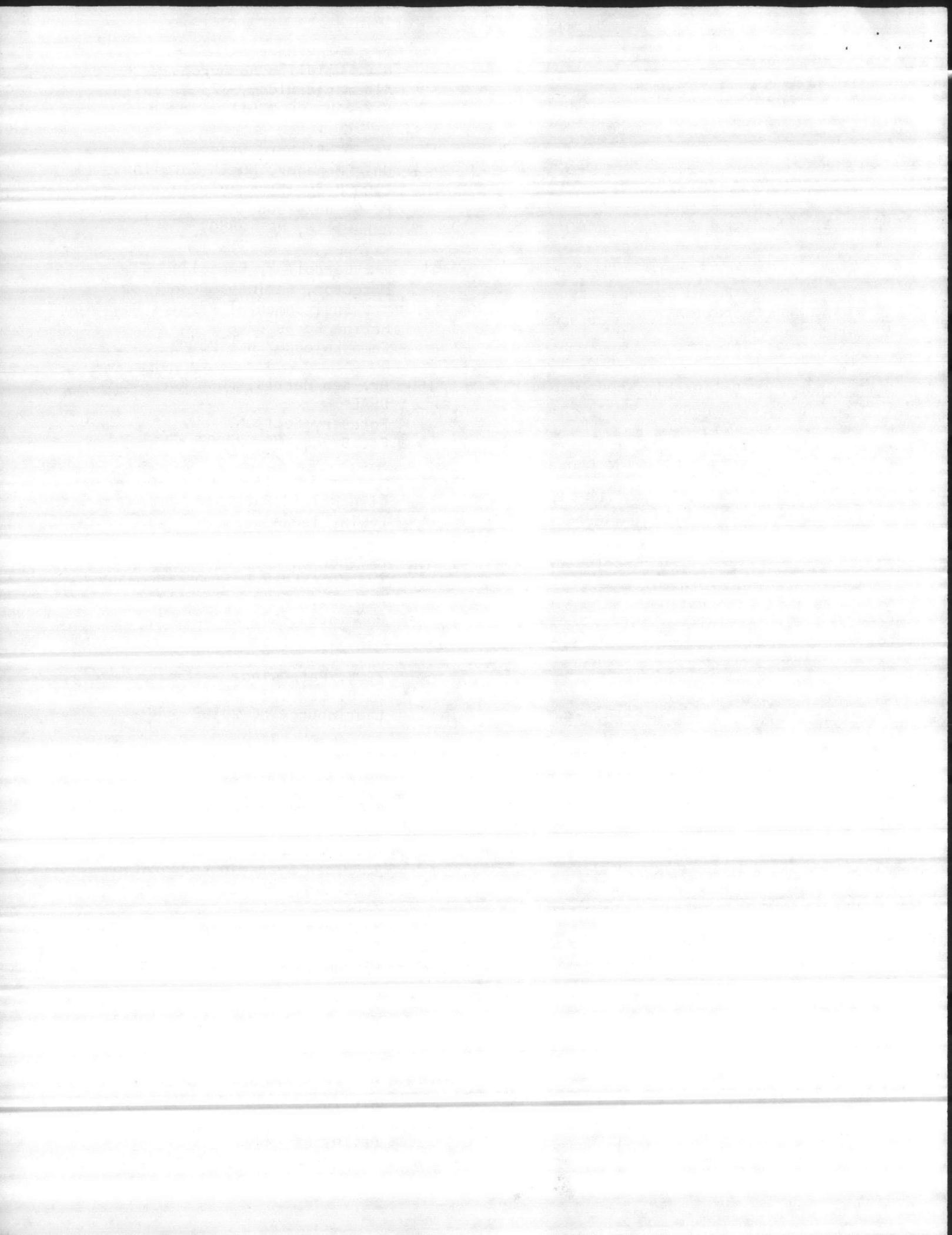
By: 
Leonard Kilian
Senior Staff Forester
Fire Control

LK/bjt
enclosures

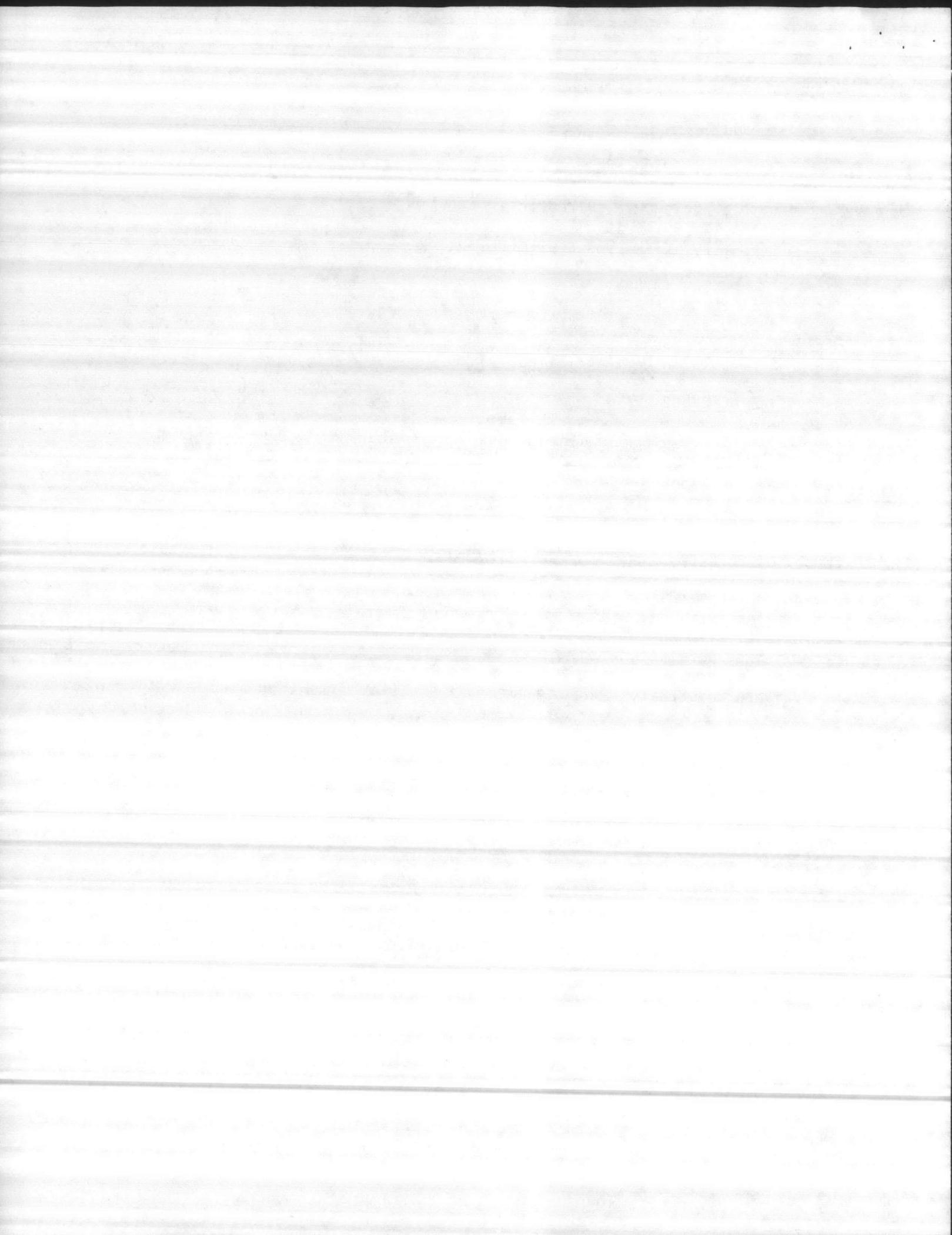


Interests and Cooperators in North Carolina)

1. Mr. Max V. Reger, Manager
Champion International
Carolina Timberlands
Canton, NC 28716
2. Mr. Frank Barrick
N.C. Wildlife Resources
Albemarle Bldg., 325 N. Salisbury St.
Raleigh, NC 27611
3. Mr. Quentin Bell, Manager
First Colony Farms
N. C. Woodlands Division
P. O. Box 307
Manteo, NC 27954
4. Mr. C. Richard Steeves
Unit Manager, North Carolina
Blue Ridge Parkway
P. O. Box 7606
Asheville, NC 28807
5. Mr. Martin F. Fox, Chief Forester
Federal Paper Board Company
Riegelwood Operations
P. O. Box 338
Bolton, NC 28423
6. Mr. Carroll F. Russell
Director, National Resources
& Environmental Affairs Division
Marine Corps Base
Camp Lejeune, NC 28542
7. Mr. Peter G. Belluschi, Woods Manager
Weyerhaeuser Company
Plymouth, NC 27962
8. Mr. Ken Harris, Post Forester
DFAE
Forestry Section
Ft. Bragg, NC 28307
9. Mr. Richard Mills, District Ranger
Croatan National Forest
435 Thurman Road
New Bern, North Carolina 28560
10. Mr. Tom Phillips, Contract Forester
Clinchfield Railroad Company
Erwin, Tennessee
11. Mr. E. A. Friend, Jr., Supervisor
Nansemond-Tuscarora Forests
Union Camp Corporation
Franklin, Virginia 23851
12. Mr. Herman Hermelink
Crescent Land & Timber Company
422 South Church Street
Charlotte, NC 28202
13. Mr. Bobby Womack
Catawba Timber Company
Rockingham, NC 28379
14. Mr. Coleman Dees
Z. V. Pate, Inc.
P. O. Box 1736
Laurinburg, NC 28352
15. Mr. W. E. Gibbons, Manager
Hoerner Waldorf Corporation
Halifax Timber Division
P. O. Box 580
Roanoke Rapids, NC 27870
16. Mr. L. E. Blickenderfer
Safety & Security Director
Texas Guld Sulphur Co.
Aurora, NC 27806
17. Mr. Bennett S. Rose, Jr.
Continental Woodlands
P. O. Box 1227
Aberdeen, NC 28315
18. Mr. Dick Wilson
American Cyanamid Corporation
Engelhard, NC 27824
19. Mr. Donnie P. Todd, District Supervisor
Waccamaw District
International Paper Company
4354 Market Street
Wilmington, NC 28401
20. Mr. Uniah Coulbourn
Coulbourn Lumber Company
Windsor, NC 27983
21. Mr. Bertrum Roberts, Superintendent
Cape Hatteras National Seashore
P. O. Box 457
Manteo, NC 27954
22. Mr. John Gentry, Land Mgt. Forester
Georgia - Pacific Corporation
Whiteville, NC 28472
23. Mr. Ed Listerman, Forester
Aluminum Co. of America
Badin Works, Box 576
Badin, NC 28009



24. Mr. Ross Smith
Georgia Timberlands Co.
Swan Quarter, NC 27885
25. Mr. Kenneth J. Seigworth, Director
Tennessee Valley Authority
Div. of Forestry, Fisheries & Wildlife
Development
Norris, Tennessee 37828
26. Forest Supervisor
Forest Service - USDA
National Forests in North Carolina
Box 2750
Asheville, NC 28802
27. Kerr Reservoir Development Commission
Route 3, Box KRDC
Henderson, NC 27536
28. Dean Charles W. Ralston
Attn: Fred White
School of Forestry
Duke University
Durham, North Carolina
29. Dr. Eric L. Ellwood
Attn: Larry Jervis
School of Forestry
N. C. State University
Box 5488
Raleigh, NC 27607



FILE: SF-FM
Practices

Raleigh, N. C.
Nov. 22, 1974

SUBJECT: Coordination of Prescribed Burning Activities

TO: All Districts

THROUGH: Line Supervisors

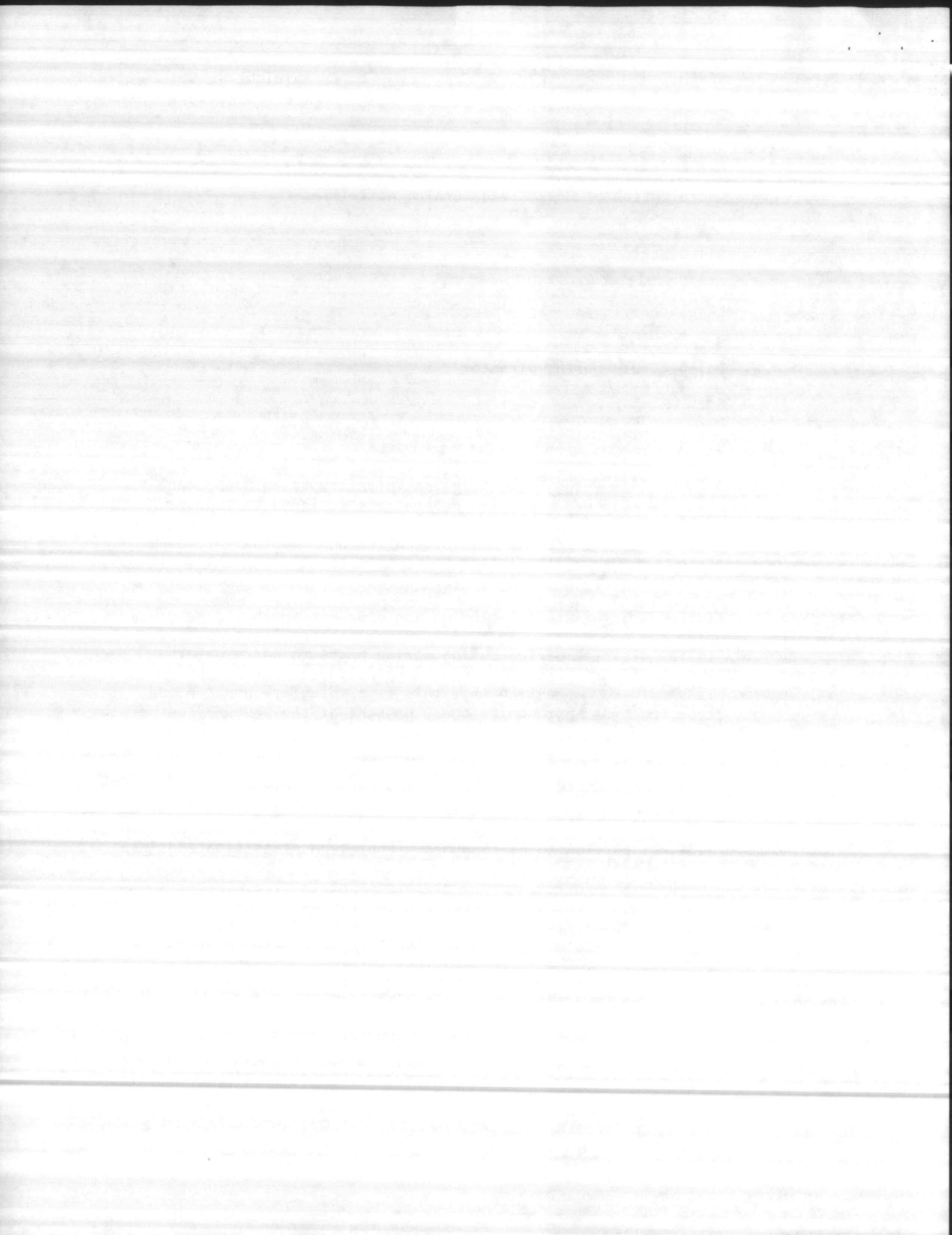
FROM: Ralph C. Winkworth, Director

As a result of the recent meetings with the regional and district foresters, the procedure for managing the North Carolina Voluntary Smoke Management Plan has been revised and updated. The changes are designed to improve technique, definitions and coordination. The attached notebook and the items included will provide one place for all information and records for ready reference and use. A copy of the letter being sent to all cooperators is also included for information.

All members of the district staff including the clerk-steno should be given an orientation on the procedure. This will ensure that at least one person is available in the district office during office hours to carry out the responsibilities outlined in item five of the guidelines. During the orientation, it should be emphasized that this is a voluntary program and was thought to be the best approach by those present at the industry cooperator training meetings.

All N. C. Division of Forest Resources personnel should be made aware that this system is not a final product and techniques are not exact. Items such as tons per acre are based on samples taken in North Carolina, oven dried and weighed. Using the guidelines available, estimates must be made of both total volume and that portion to be consumed. Fuel type classifications are not based on precise present vegetation composition, and minor variations in fuel type may occur within a few acres. At this point in time, operational need is ahead of available research information. This system will serve both as an interim measure of self-control for forestry interests and as feedback for research. This feedback will probably result in both more information and a source of questions for more information.

At last year's meetings, our cooperators and N. C. Division of Forest Resources service foresters were given training in the Smoke Dispersal Categories that are the keys to voluntary control, the guides that each district will use to determine how many burns can be safely allowed, and fuel classifications for both type and volume. If retraining or training for additional personnel is desired, contact either Bill Flanner or myself. Every effort will be made to schedule this as soon as possible.

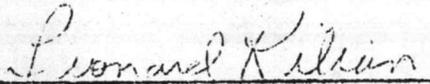


Memo to:
All Districts
Page 2
Nov. 22, 1974

N. C. Division of Forest Resources districts will continue to act as clearinghouses for prescribed burning in the district area. An additional aid, a form for recording requests, for keeping up with the situation is included in the notebook. Hopefully, this form is self-explanatory. However, if there are questions, please contact me.

As a general guide, use of the first come, first served concept is one way to be fair with all concerned should more than one cooperator or our own organization desire to burn in the same block on the same day.

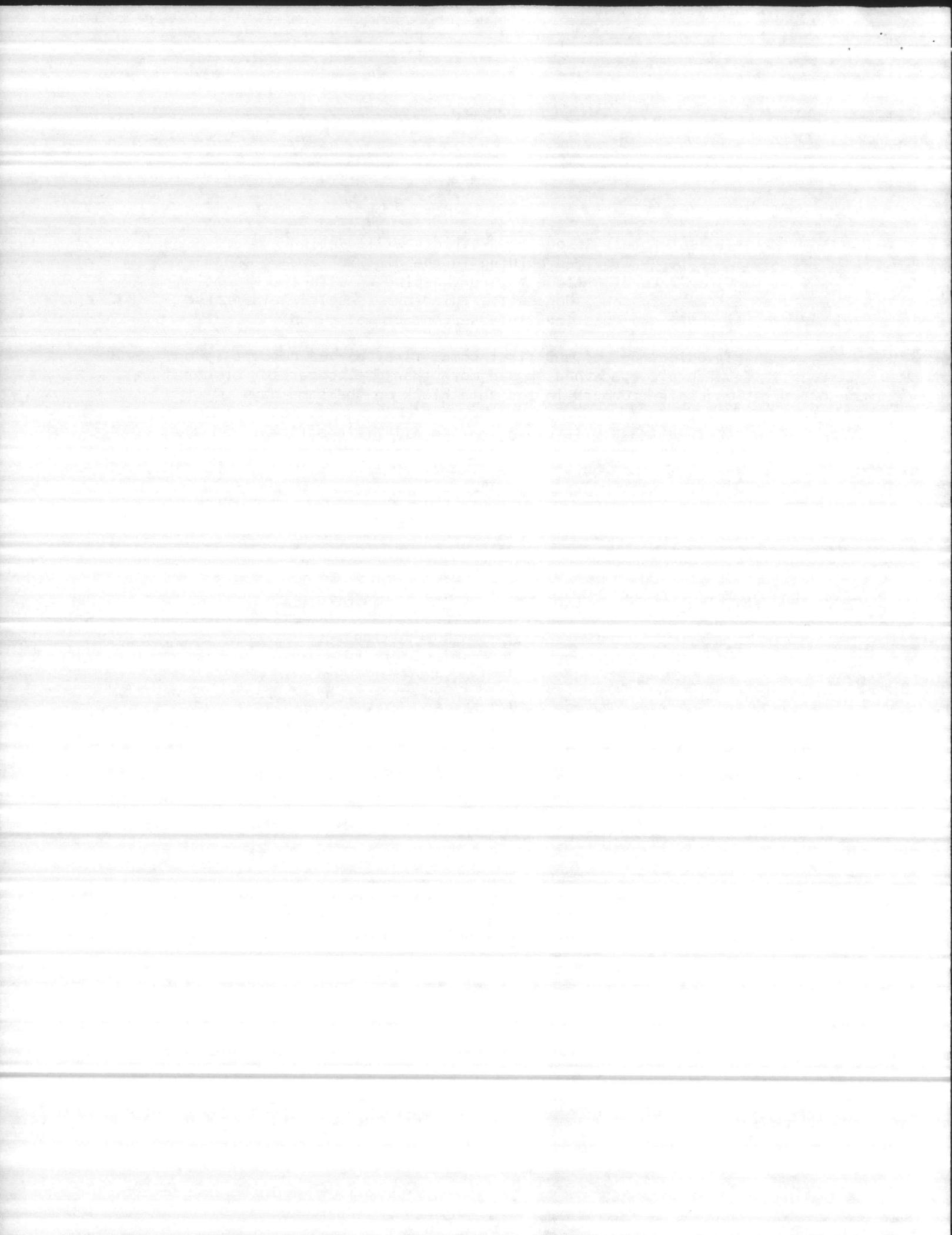
A copy of this memorandum is being sent to all field offices. Should questions or problems arise, it is suggested that they be worked out at the district level. However, if it is felt that we can help, do not hesitate to contact either Bill Flanner or me.



Leonard Kilian
Senior Staff Forester
Fire Control

LK/bjt

cc: Bill Flanner
All Field Offices



SMOKE MANAGEMENT GUIDELINES FOR FORESTRY BURNING OPERATIONS

Objective:

To minimize particulate concentrations and smoke in smoke-sensitive areas resulting from prescribed burning activities by defining those days and volumes of vegetative debris that may be burned.

Definitions:

Mixing height - the upper limit of a mixing layer of unstable air within which vigorous up and down movement of the atmosphere occurs. It is measured from the surface.

Transport wind speed and direction - the average wind speed through the mixing layer (from the surface to the mixing height) and the prevailing direction of the wind through the mixing layer. When used in conjunction with the observed or forecast surface wind, it is a smoke drift indicator.

(The mixing height and transport wind speed taken together are indicators of the capability of the lower atmosphere to diffuse and disperse smoke.)

Smoke drift away - Projected smoke plume will not intersect a potential smoke-sensitive area downwind from the fire.

Smoke drift towards - Projected smoke plume will intersect a potential smoke-sensitive downwind from the fire or when wind direction is undetermined due to transport wind speed less than 5 mph.

Stable layer of air - a layer of air having a temperature lapse rate of less than dry adiabatic (approximately 5.5 degrees F per 1,000 feet), thereby retarding either upward or downward mixing of smoke.

Tons, available fuel - an estimate of the tons of fuel that will be consumed by fire at the given time and place.

Residual smoke - smoke produced after the initial fire has passed through the fuel.

Potential smoke-sensitive area - any area where resulting smoke may be dangerous or offensive to concentrations of people (i.e., highway traffic).

Control:

The State Forester is responsible for the development and dissemination of the Smoke Management Guidelines. He will consult with the National Weather Service and the Office of Water and Air Resources of the Department of Natural and Economic Resources.

The State Forester is responsible for the coordination of forestry prescribed burning activities on state and private forest lands.



January 29, 1979

SMOKE MANAGEMENT

The Smoke Management Program is a voluntary program designed to minimize smoke in smoke-sensitive areas resulting from prescribed burning activities by defining those days and volumes of debris that may be burned.

Procedure:

Cooperators and Division of Forest Resources personnel should inform the New Bern District Office before they plan to burn. They should state: (1) date & time of planned burn (2) acres to be burned (3) estimate of tons/acre to be burned (4) estimate of total tons to be burned (5) location of burn (B,S,P), (6) reason for burn (7) person in charge and how to contact

The District Office informs the caller of the predicted burning category day, transport wind speed and direction and mixing height. The category days are:

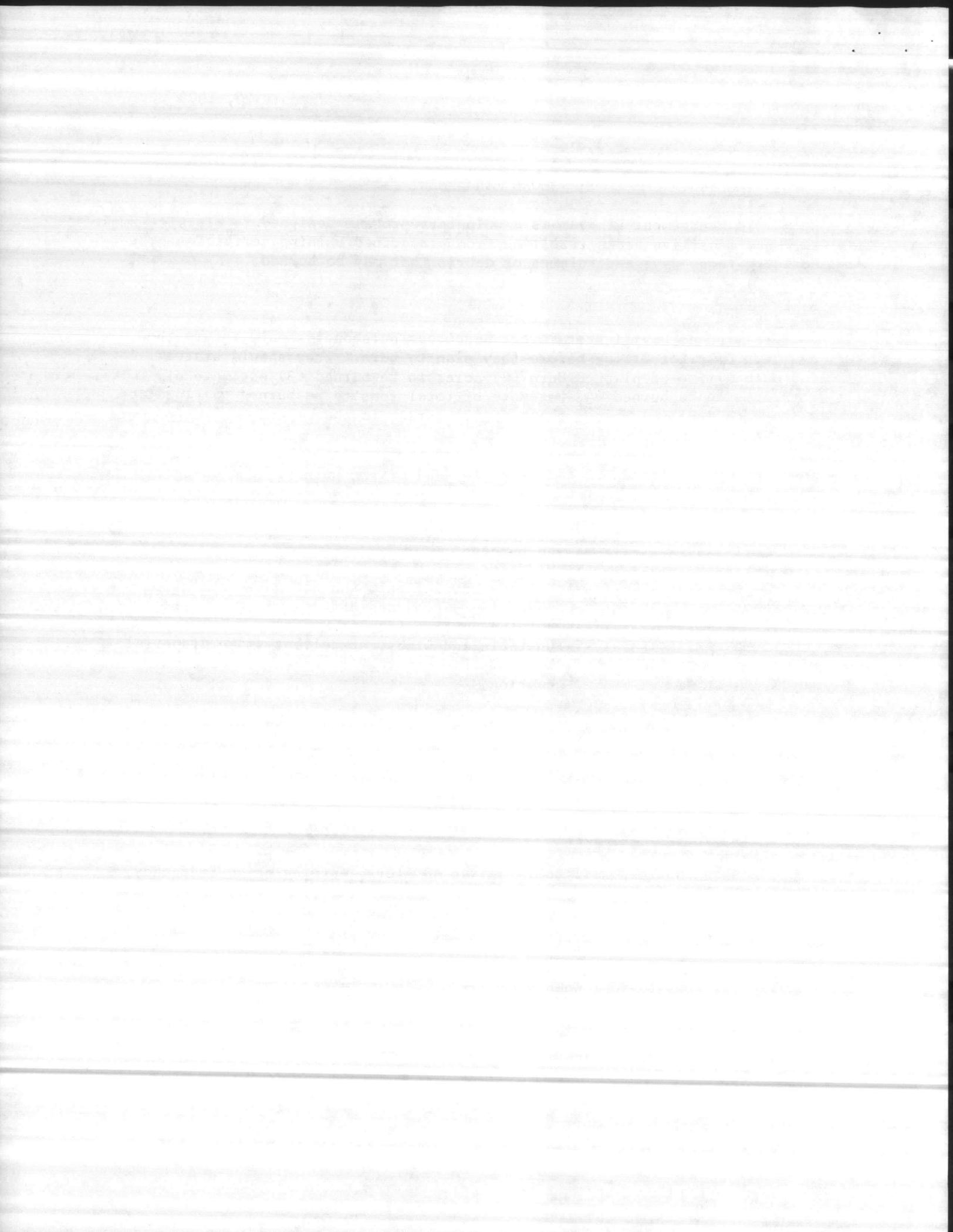
<u>CATEGORY</u>	<u>RECOMMENDATION</u>
1-----	No burning
2-----	Mid-afternoon burning only
3-----	Daytime burning only and not until radiation inversion has burned off.
4-----	Burning anytime (day or night)
5-----	Unstable and windy. Excellent smoke dispersal but possible severe fire weather. Burn with caution.

Also, there are varying limits of permissible tonnage to be burned per 16,000 acre block. As a general rule, the Division of Forest Resources will use a first-come, first served concept should more than one cooperator or the Division of Forest Resources decide to burn in the same block on the same day.

Air Pollution Episodes:

Air Pollution notices will be issued as an Alert, Warning or an Emergency. When any notice is broadcast, conditions will already be severe enough to warrant Smoke Management Category 1. No burning will be recommended during Air Pollution Notices. Burns already started should be terminated if possible.

Refer questions to your County Ranger.



Administration:

When prescribed burning has been determined to be the appropriate management measure, the person who prepares the prescribed burning plan should consider the location of all potential smoke-sensitive areas from the site of the prescribed burn. This information should be included in the burning plan.

The person in charge of the prescribed burn should manage his burning activities so as to maintain a satisfactory atmospheric environment in potential smoke-sensitive areas.

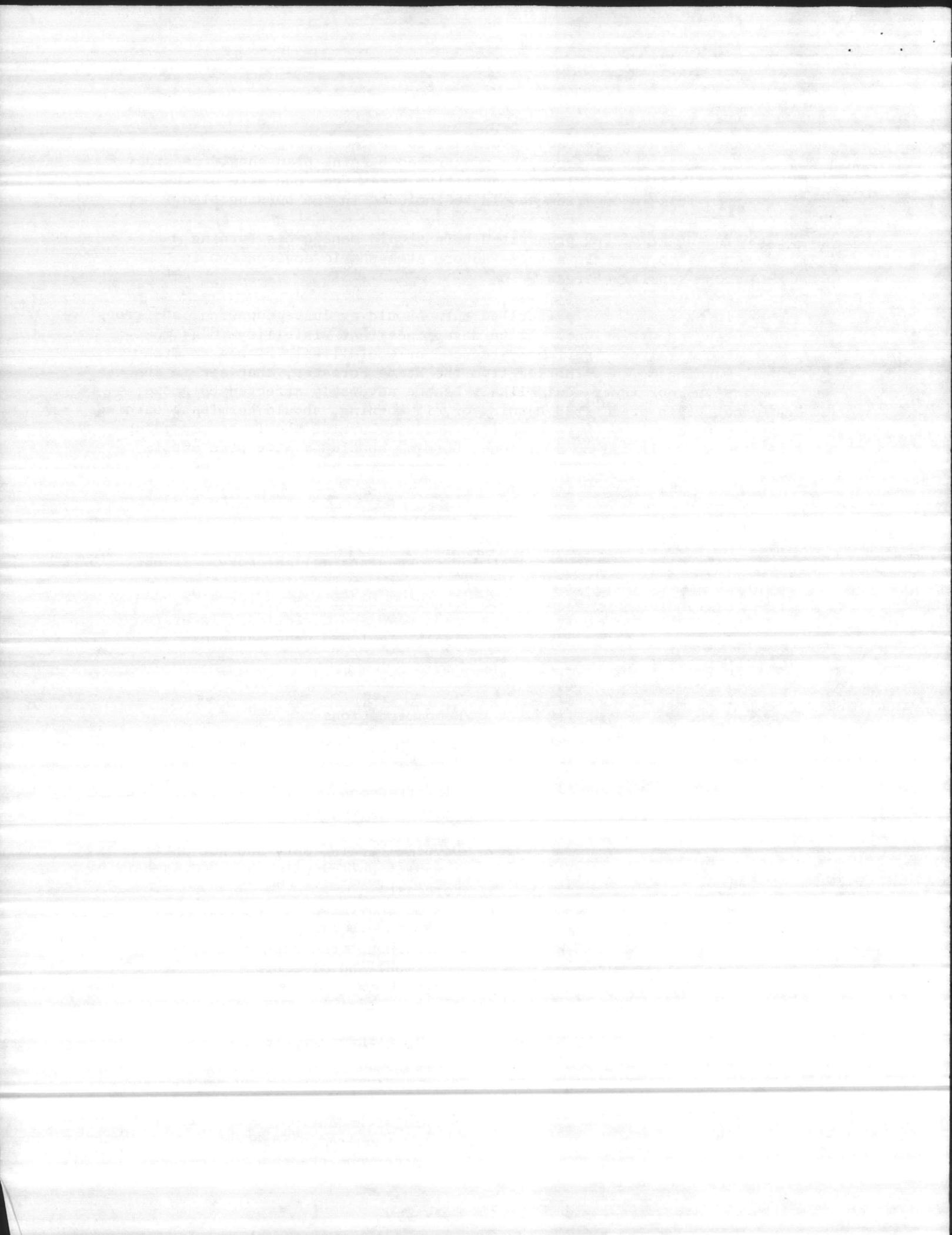
The person in charge of the prescribed burn should evaluate downwind conditions prior to beginning operations. If he determines that visibility in a smoke-sensitive area is already seriously reduced or would likely become so with additional burning or, upon notice from the State Forester, that air in the entire state thereof is or would likely become adversely affected by smoke, he should not begin prescribed burning or, if burning, should terminate burning as soon as practical. Upon termination residual burning should be mopped up as soon as practical, and no additional burning should be attempted until approval has been received from the State Forester.

Procedure:

1. Check daily fire weather forecast for smoke dispersal category. If out of fire season, request smoke dispersal category from fire weather forecaster, NWS, at Raleigh-Durham Airport. Under categories 3, 4, and 5, forecast will include transport wind speed and direction. Inversion burn-off time and temperature will also be included under category 3.

Smoke Dispersal Categories for Prescribed Burning

<u>Category No.</u>	<u>Recommendations</u>
1	No burning
2	Mid-afternoon burning only, with spot forecast required
3	Daytime burning only and not until radiation inversion has burned off. Forecast: Time and value of inversion burn-off temperature _____. Afternoon transport wind speed (mph) and direction _____.
4	Burning anytime. Forecast: Afternoon transport wind speed (mph) and direction _____.
5	Severe fire weather. "Unstable" and windy. Excellent smoke dispersal. Burn with caution, with spot forecast required. Forecast: Afternoon transport wind speed (mph) and direction _____.



It is understood that burning category will be issued only when forecast minimum afternoon surface relative humidity is less than 60%. Humidities in excess of 60% are normally associated with very stable or stagnant air masses.

2. If smoke dispersal category permits prescribed burning, refer to Smoke Management Guide for permissible tonnages to be burned per 16,000-acre block (25-square mile area as designated on N.C. Forest Service maps).

Smoke Management Guide

I. Smoke Drift Away from Potential Smoke-Sensitive Area

- A. No specific tonnage limitation will be placed on prescribed burning. Burning should be done to best accomplish maximum plume height and minimize nuisance effect on any segment of the public.

II. Smoke Drift Toward Potential Smoke-Sensitive Area

A. Smoke Dispersal Category 1

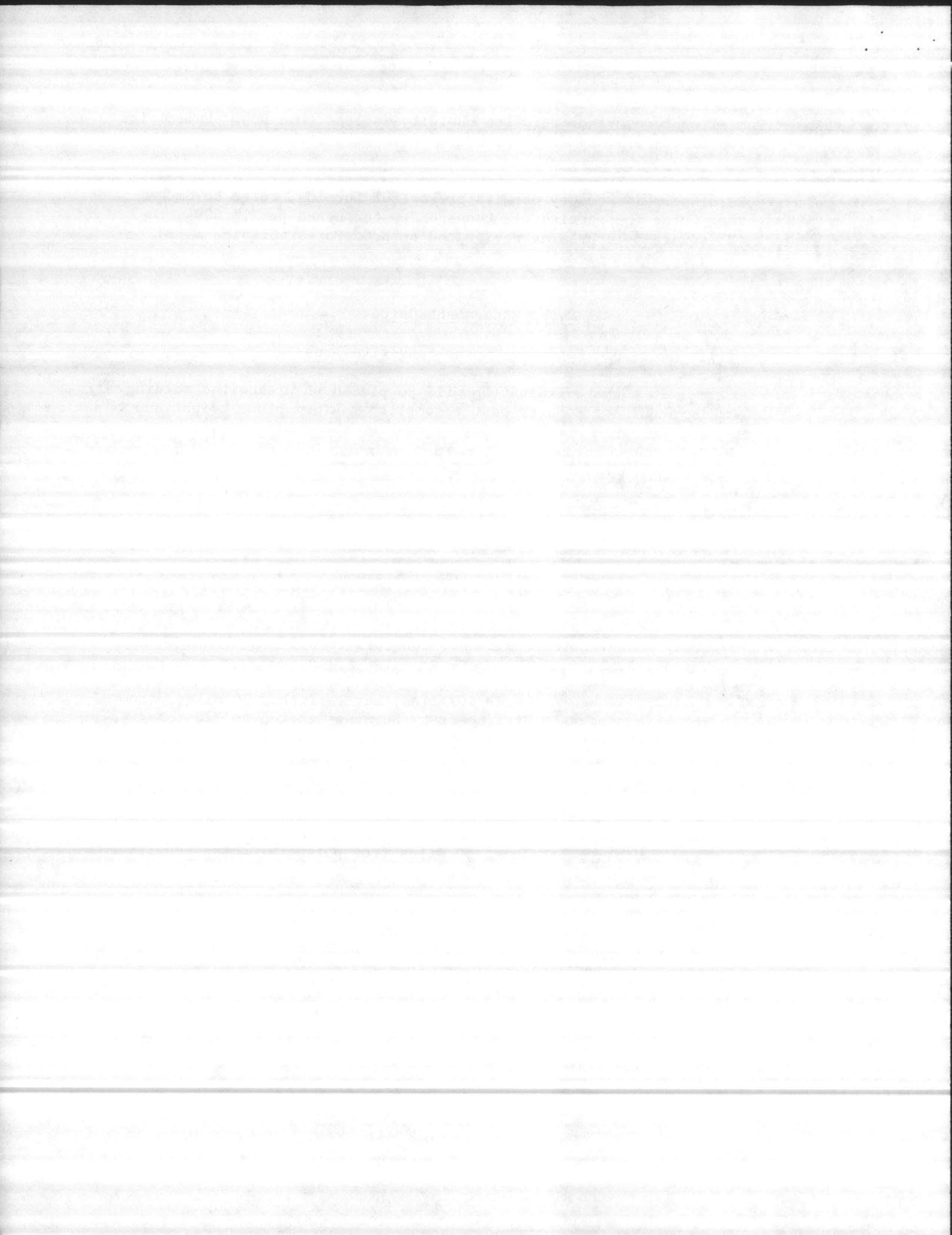
1. No new prescribed fires will be ignited.

B. Smoke Dispersal Category 2 (Favorable Spot Forecast Required)

1. Upwind distance less than 10 miles from potential smoke-sensitive area. Burning limited to 480 tons per 16,000-acre block on any one day. *Consumed*
2. Upwind distance at least 10 miles, but less than 30 miles, from potential smoke-sensitive area. Burning limited to 720 tons per 16,000-acre block on any one day.
3. Upwind distance at least 30 miles, but less than 60 miles, from potential smoke-sensitive area. Burning limited to 1,440 tons per 16,000-acre block on any one day.
4. Upwind distance at least 60 miles from potential smoke-sensitive area. No tonnage restriction.

C. Smoke Dispersal Category 3

1. Upwind distance less than 10 miles from potential smoke-sensitive area. Burning limited to 600 tons per 16,000-acre block on any one day.
2. Upwind distance at least 10 miles, but less than 30 miles, from potential smoke-sensitive area. Burning limited to 900 tons per 16,000-acre block on any one day.
3. Upwind distance at least 30 miles, but less than 60 miles, from potential smoke-sensitive area. Burning limited to 1,800 tons per 16,000-acre block on any one day.



4. Upwind distance at least 60 miles from potential smoke-sensitive area. No tonnage restriction.

D. Smoke Dispersal Category 4

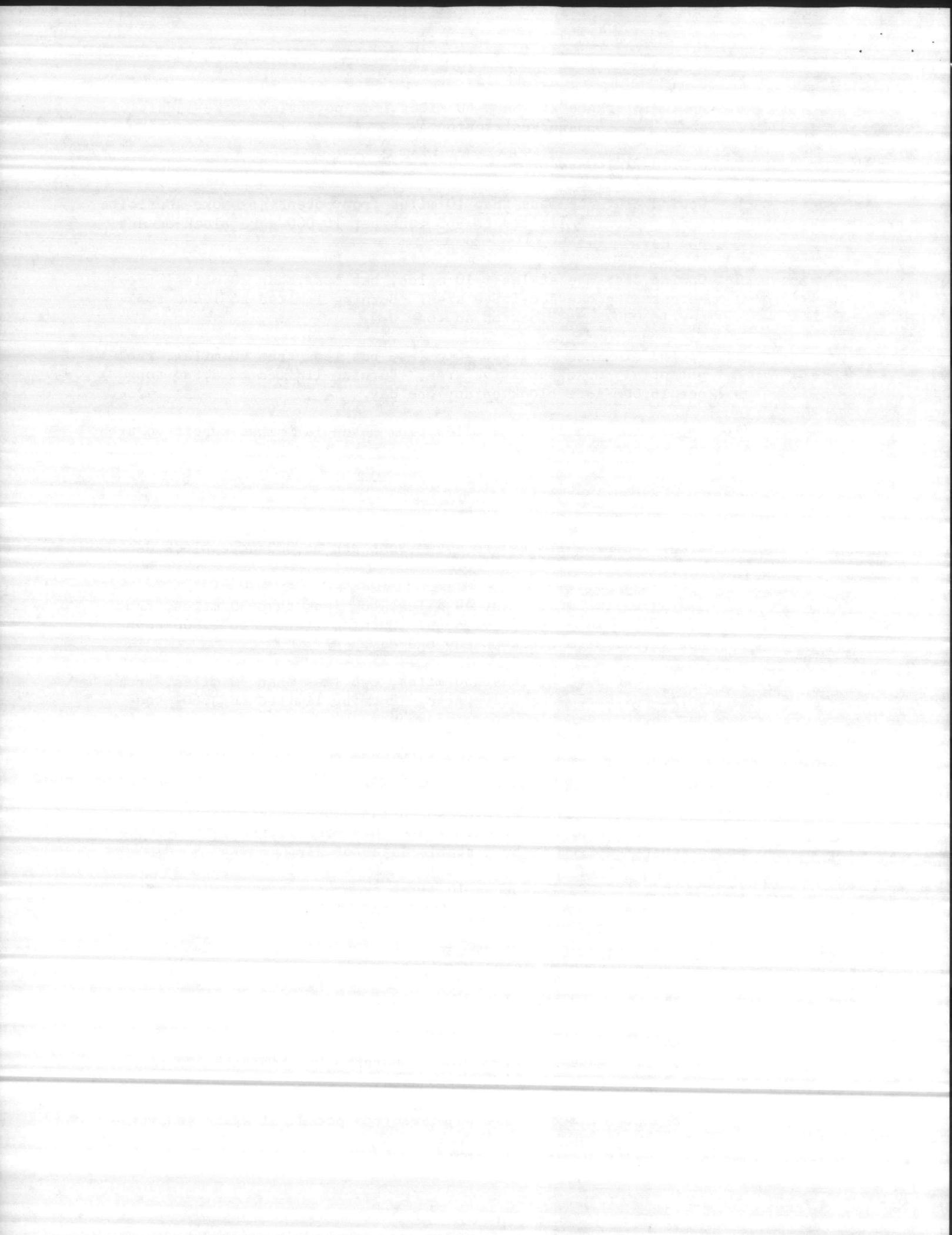
1. Upwind distance less than 10 miles from potential smoke-sensitive area. Burning limited to 960 tons per 16,000-acre block on any one day.
2. Upwind distance at least 10 miles, but less than 30 miles, from potential smoke-sensitive area. Burning limited to 1,440 tons per 16,000-acre block on any one day.
3. Upwind distance at least 30 miles, but less than 60 miles, from potential smoke-sensitive area. Burning limited to 2,880 tons per 16,000-acre block on any one day.
4. Up distance at least 60 miles from potential smoke-sensitive area. No tonnage restriction.

E. Smoke Dispersal Category 5

1. Upwind distance less than 10 miles from potential smoke-sensitive area. Burning limited to 1,200 tons per 16,000-acre block on any one day.
2. Upwind distance at least 10 miles, but less than 30 miles, from potential smoke-sensitive area. Burning limited to 1,800 tons per 16,000-acre block on any one day.
3. Upwind distance at least 30 miles, but less than 60 miles, from potential smoke-sensitive area. Burning limited to 3,600 tons per 16,000-acre block on any one day.
4. Upwind distance at least 60 miles from potential smoke-sensitive area. No tonnage restriction.

F. Smoke above a stable layer over potential smoke-sensitive area. Smoke in this group will remain above the potential smoke-sensitive area, separated from it by a stable layer of air.

1. Upwind distance less than 10 miles from potential smoke-sensitive area. Burning limited to 1,200 tons per 16,000-acre block on any one day.
2. Upwind distance at least 10 miles, but less than 30 miles, from potential smoke-sensitive area. Burning limited to 1,800 tons per 16,000-acre block on any one day.
3. Upwind distance at least 30 miles, but less than 60 miles, from potential smoke-sensitive area. Burning limited to 3,600 tons per 16,000-acre block on any one day.
4. Upwind distance at least 60 miles from potential smoke-sensitive area. No tonnage restriction.



- G. Smoke vented into a precipitation cloud system. When smoke can be vented to a height above the cloud base from which precipitation is falling, there will be no restriction to burning.

III. Changing Conditions

- A. When changing weather conditions that are adverse to smoke management objectives occur, the prescribed burn should be postponed. Accordingly, if under way, it should be promptly terminated and aggressively mopped up.

Analysis and Evaluation:

The State Forester will be responsible for an analysis and evaluation of the effectiveness of the Smoke Management Guidelines.



A COMPARISON OF AIR STAGNATION ADVISORY AND SMOKE MANAGEMENT CATEGORY

I. Background Information

- A. Predictions are made by the Weather Service for the Division of Water and Air Resources of air stagnation conditions and for the Division of Forest Resources for smoke management categories.
- B. The Smoke Management Category day is used in two (2) ways:
 - 1. It is used by district and forestation personnel to determine when to plan and execute prescribed or controlled burns, and
 - 2. As a service for forest industry, provided upon request, through N. C. Forest Resources districts, for use in similar planning by land management foresters.
- C. Occasionally, Water & Air Resources will issue an Air Pollution Emergency. This type of emergency will not be issued directly to the public by the Weather Service. It will normally be received by the public through television, commercial radios, and the newspapers.

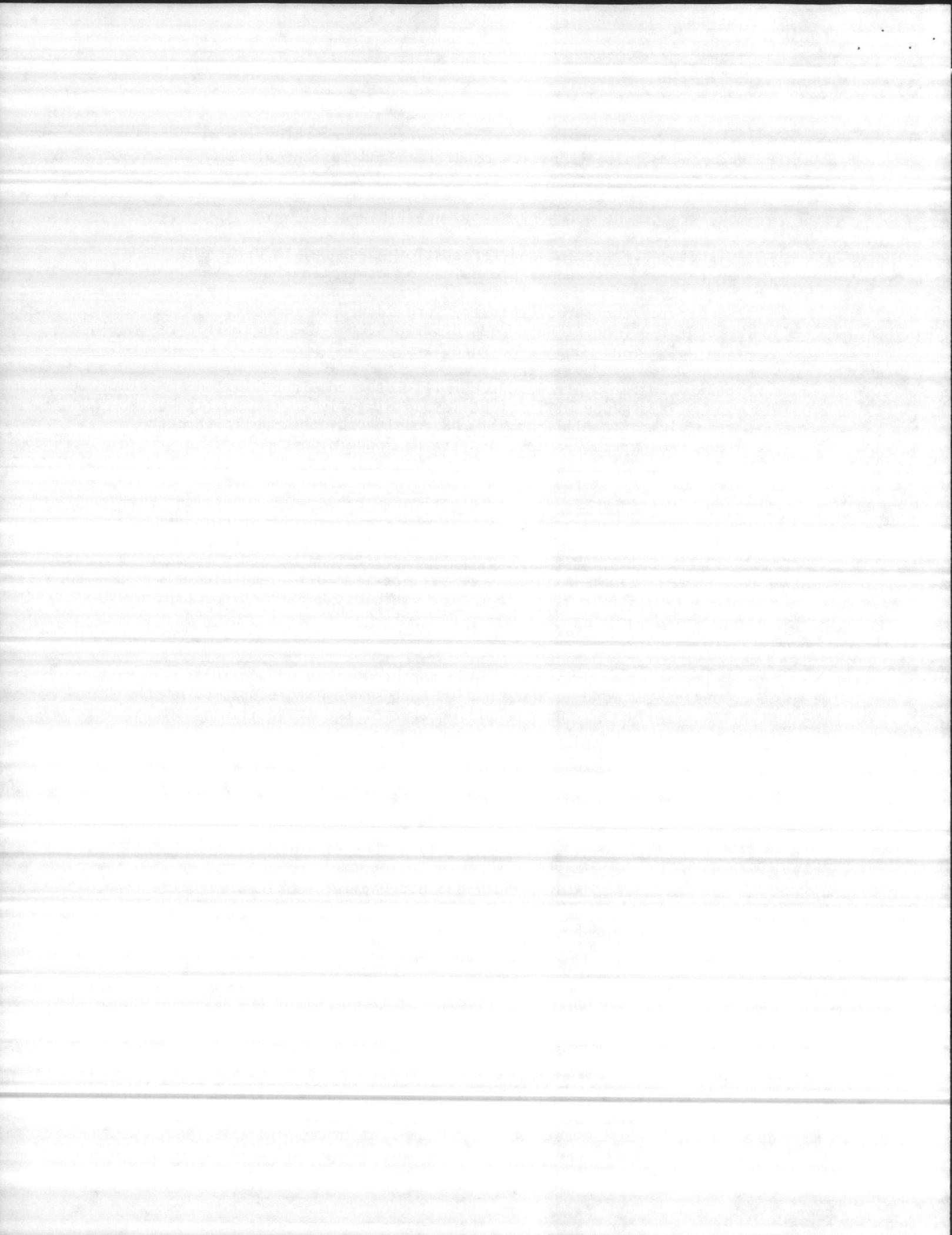
The Air Pollution notices will be issued as an Alert, a Warning, or an Emergency. When any Air Pollution notice is broadcast, conditions will already be severe enough to warrant Smoke Management Category 1 (no burning). These notices are further increased in the severity of the problem. The Pollution Emergency puts restrictions on other types of burning or pollution emissions such as: coal or oil fired electric generating facilities, operating motor vehicles, construction work, etc.

II. Smoke Dispersion Forecasts

"Smoke dispersion forecasts will be made for prescribed or controlled burning. A category designator will be attached to each 'today' forecast, or if the category is basically the same for all or much of the state it will be handled as part of the discussion. Forecast categories are as follows:

<u>Category</u>	<u>Recommendation</u>
1	No burning.
2	Mid afternoon burning only with spot forecast desirable.
3	Daytime burning only and not until radiation inversion has burned off. Nighttime burning OK in mountains above the surface inversion. Time and value of inversion burn-off temperature will be included in forecast as well as the afternoon mixing height and transport wind.
4	Burning anytime. Afternoon mixing height and transport wind speed to be included.
5	'Unstable' and windy. Excellent smoke dispersal but possible severe fire weather. Burn with caution spot forecast desirable. Afternoon mixing height and transport wind to be included in forecast.

Smoke dispersion categories will be given only when the relative humidity afternoon minimum is expected to be less than 60%."



PROCEDURE FOR OBTAINING SMOKE MANAGEMENT CATEGORY

Central Office Operations Officer Responsibilities

The Central Office Operations Officer is responsible for keeping the field offices informed of the "Smoke Management Category" that exists.

Procedure During Fire Season

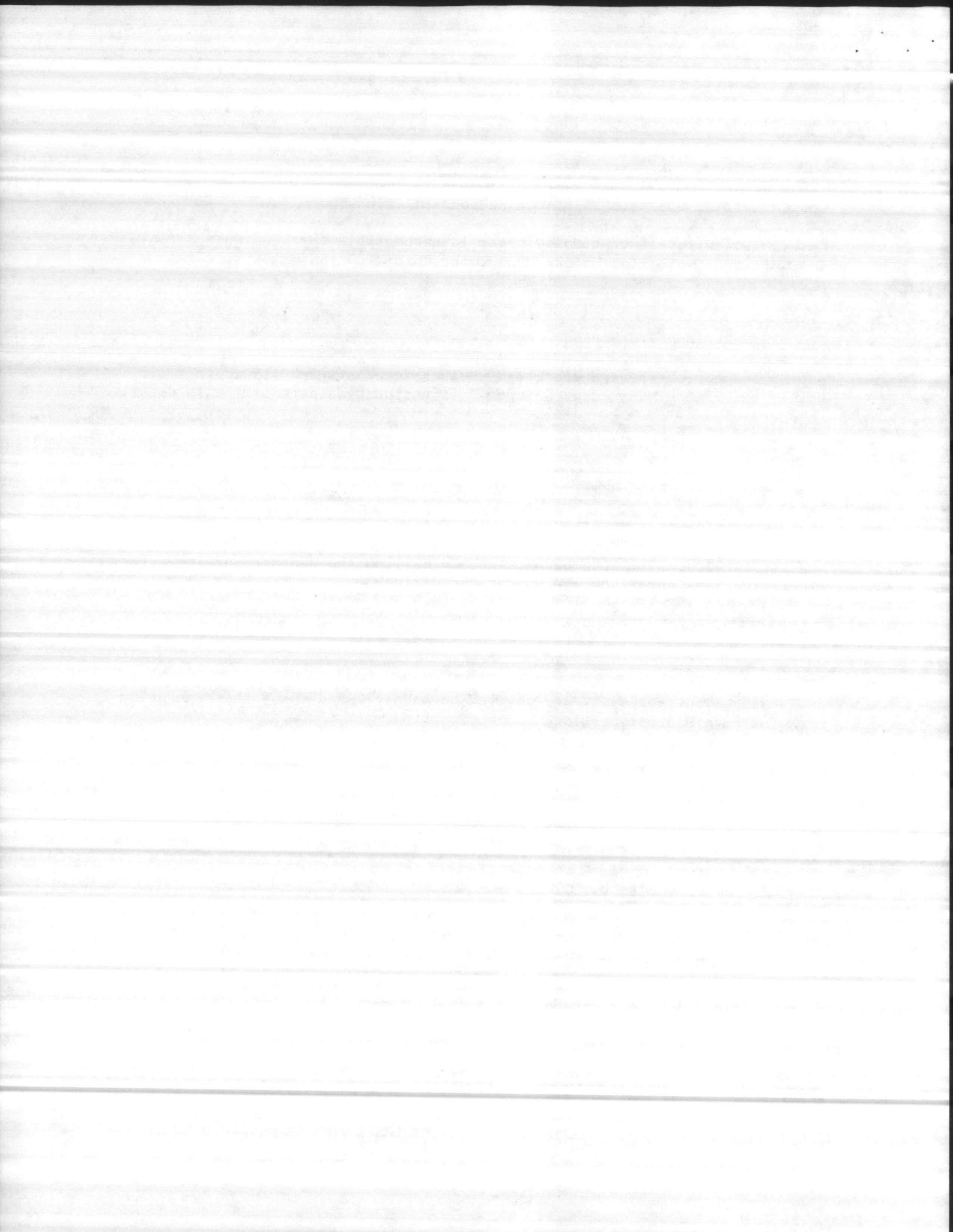
During the period that regular fire weather forecasts are issued to field units, the "Smoke Management Category" is included as part of the forecast.

Procedure During Other Periods

During the time that regular fire weather forecasts are not being issued if a Smoke Dispersion Category is needed, they can be obtained from the Weather Service. This can be obtained by calling the Weather Service direct or calling the Central Office Operations Officer.

References

Smoke Management Forecasts are covered on pages 12 and 13 of the "Operating Plan for Fire Weather Service."



COORDINATION PROCEDURES FOR SMOKE MANAGEMENT GUIDELINES

- I. The district forester shall designate an individual to be responsible for the coordination of prescribed burning activities within his district. The individual should be the one fulfilling the function of the district operations officer.

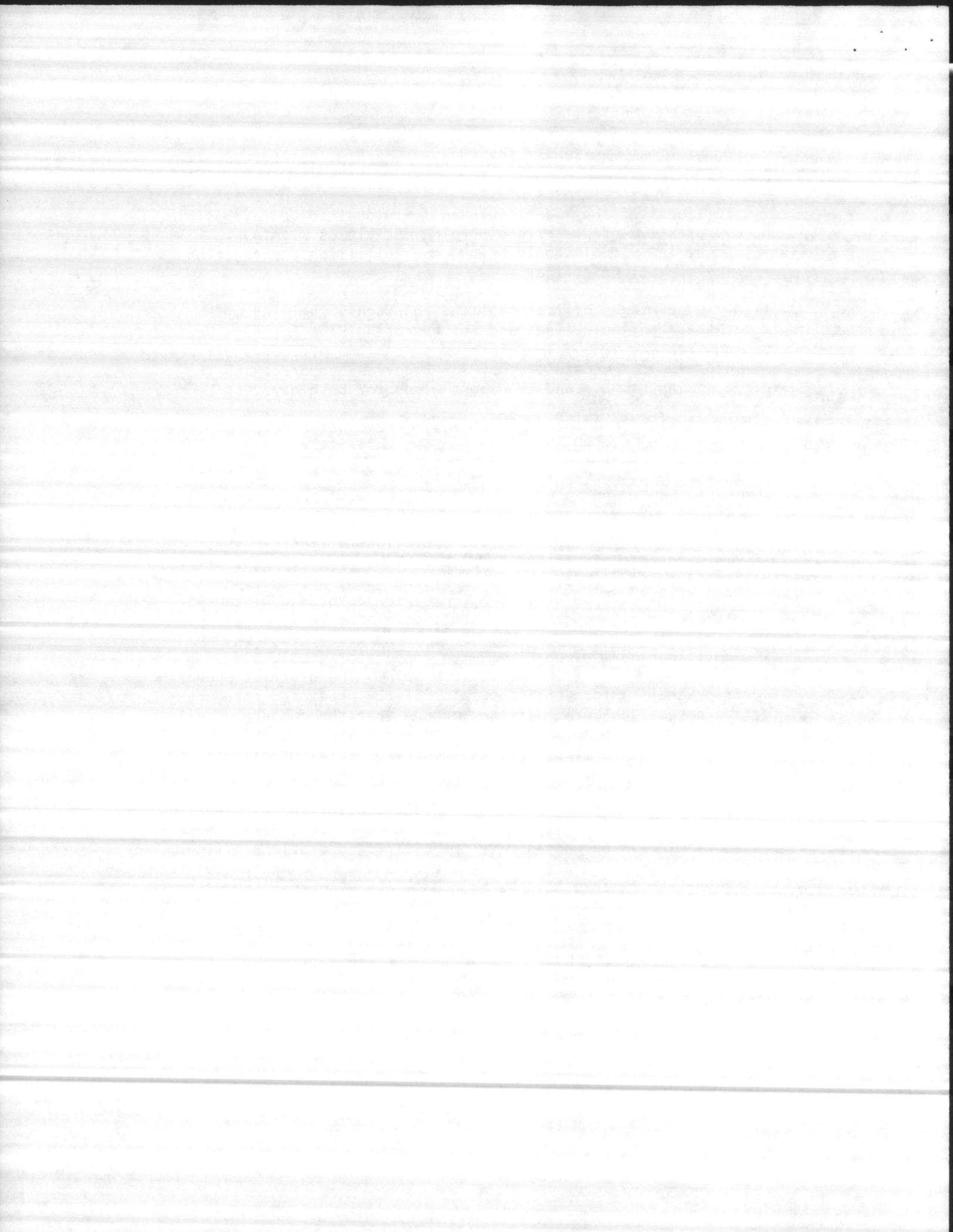
The district operations officer shall be thoroughly familiar with The Smoke Management Guidelines and the Operating Plan for Fire Weather Service in North Carolina. The district operations officer shall keep himself informed of the category day for today and tomorrow and the respective mixing heights and transport winds for both days.

He shall also maintain a record of the daily cumulative total of vegetative debris to be burned, by block number, as it is reported to him from cooperators. This is necessary to not exceed the permissible tonnage designated in the Guidelines.

- II. Cooperators should inform the district operations officer in the district in which the prescribed burn is to take place one day prior to the scheduled burn of the: purpose of the burn, acreage and tonnage of debris to be burned, location of the burn, and distance to smoke-sensitive area surrounding the site of the burn.

If prior notification is impossible, the cooperator should give notification on the day of the prescribed burn. The district operations officer shall inform the cooperator of the predicted category day for the day of the burn. If the tonnage that the cooperator plans to burn will exceed the permissible limits for that block, the district operations officer shall request that cooperator to alter his burning plan (by either delaying the burn or reducing the acreage to be burned).

On the day of the burn, the cooperator should contact the district operations officer for confirmation of the category day, mixing height, and transport winds. He should give the district operations officer the name of the person in charge of the burn and how he can be contacted if the weather should turn adverse to good smoke dispersal and diffusion.



PROBABLE FUEL TYPE OCCURRENCE BY DIVISION OF FOREST RESOURCES REGIONS

Region I

L-3	Litter-three tons per acre
G-5	Wire Grass-five tons per acre
G (M) 7	Marsh Grasses-seven tons per acre
RG-7	Reeds and Grass-seven tons per acre
RB-10	Reeds and Brush-ten tons per acre
R-10	Medium Reeds-ten tons per acre
R-14	Tall Reeds-fourteen tons per acre
GB (SR) 7	Grass and Low Brush-seven tons per acre
GB-7	Grass Brush-seven tons per acre
BG (SR) 10	Low Brush and Grass-ten tons per acre
BG-10	Medium Brush Grass-ten tons per acre
B (SR) 10	Brush-ten tons per acre
P-5	Low Open Pocosin-five tons per acre
P-10	Low Dense Pocosin-ten tons per acre
P-14	High Pocosin-fourteen tons per acre
G-20	High Brush-twenty tons per acre
B (S) 20	High Brush Swamp-20 tons per acre

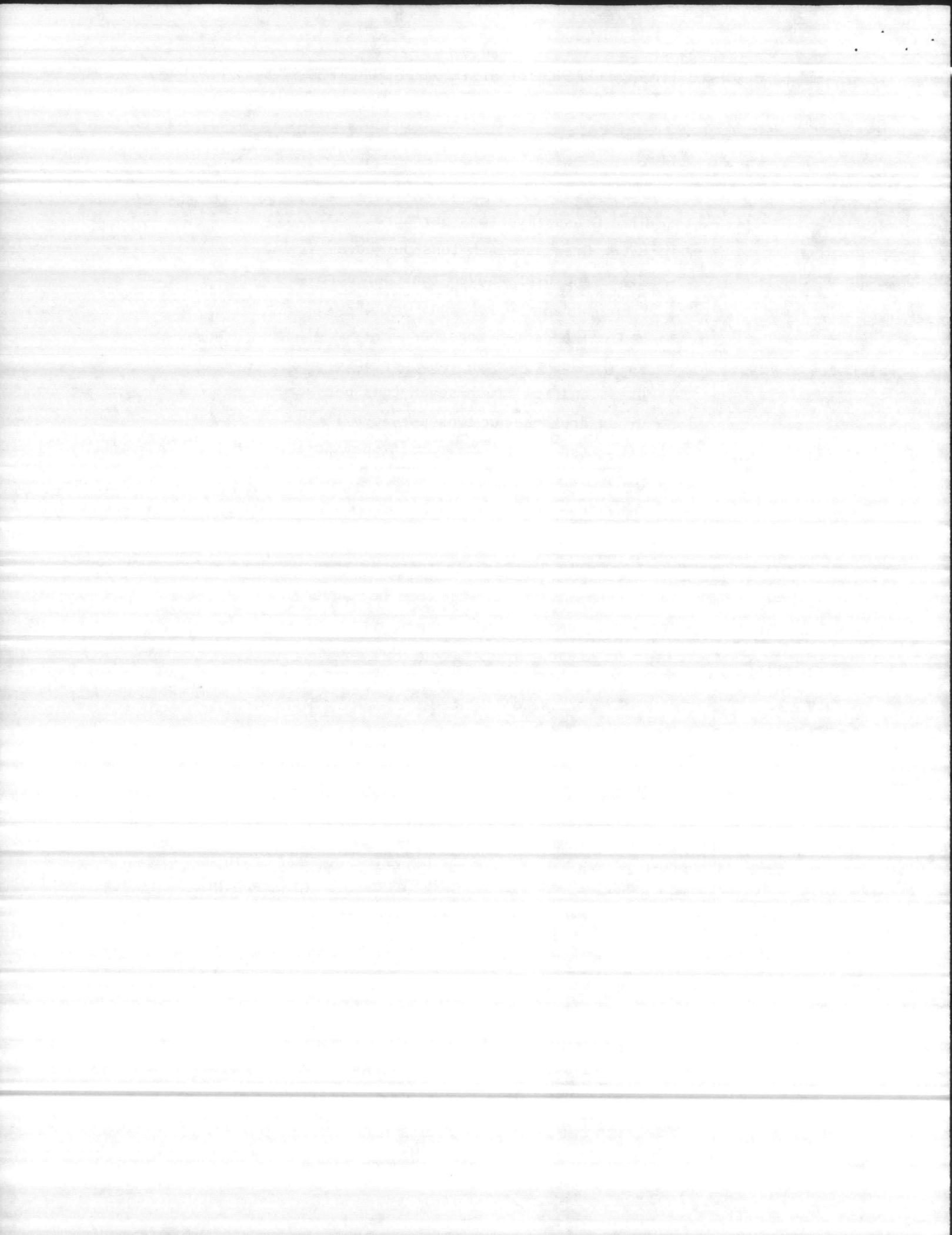
Region II*

Litter Conifer	
Litter Hardwood	
G-5	Wire Grass-five tons per acre
RB	Reeds and Brush
GB (SR)	Grass and Low Brush
BG (SR)	Low Brush and Grass
B (SR)	Brush
Bay Type	

Region III*

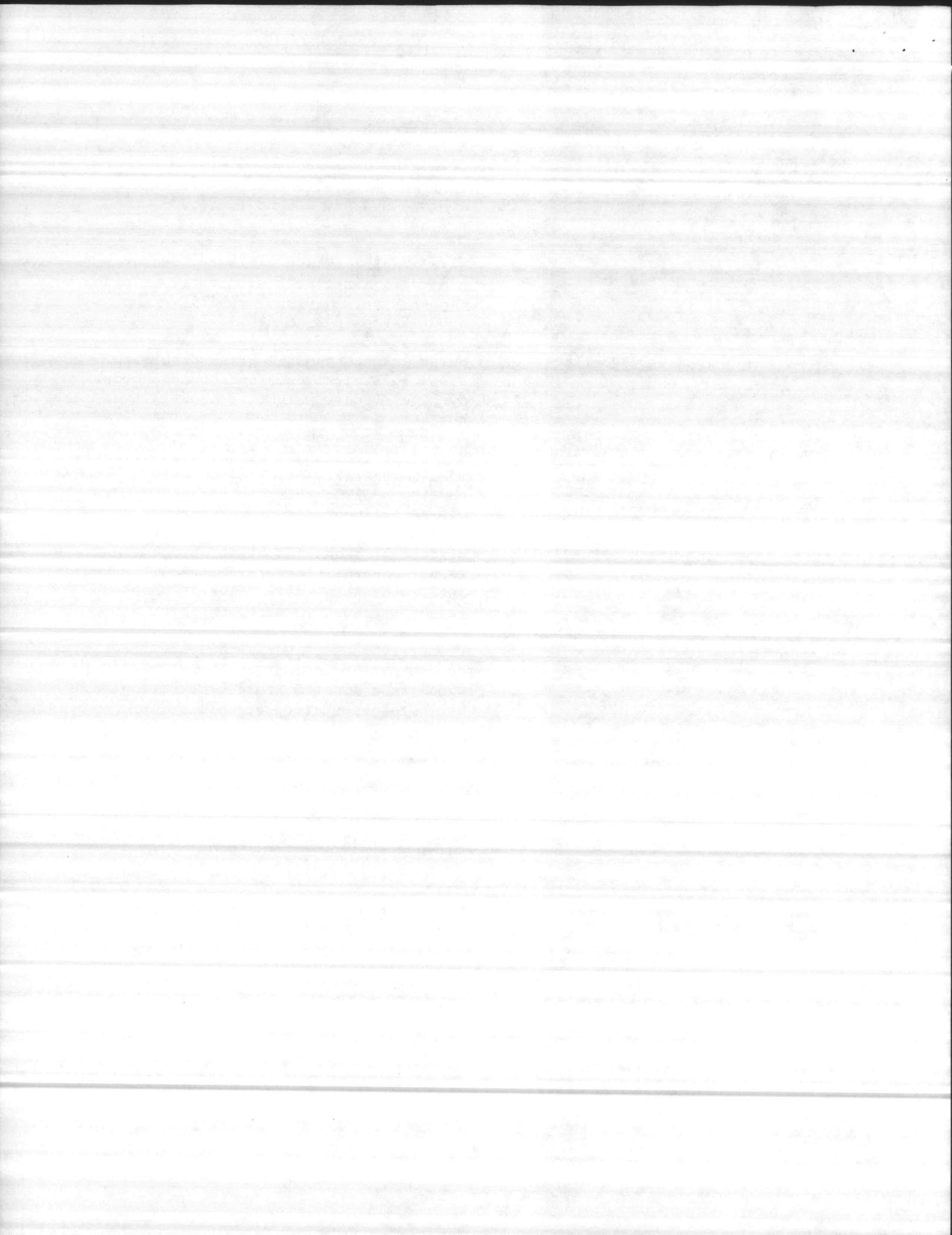
Litter Conifer	
Litter Hardwood	
GB (SR)	Grass and Low Brush
BG (SR)	Low Brush and Grass
B	High Brush
Laurel Slick	
Rhododendron Slick	

*Bill Flanner now working on fuel type composition and volumes per acre.



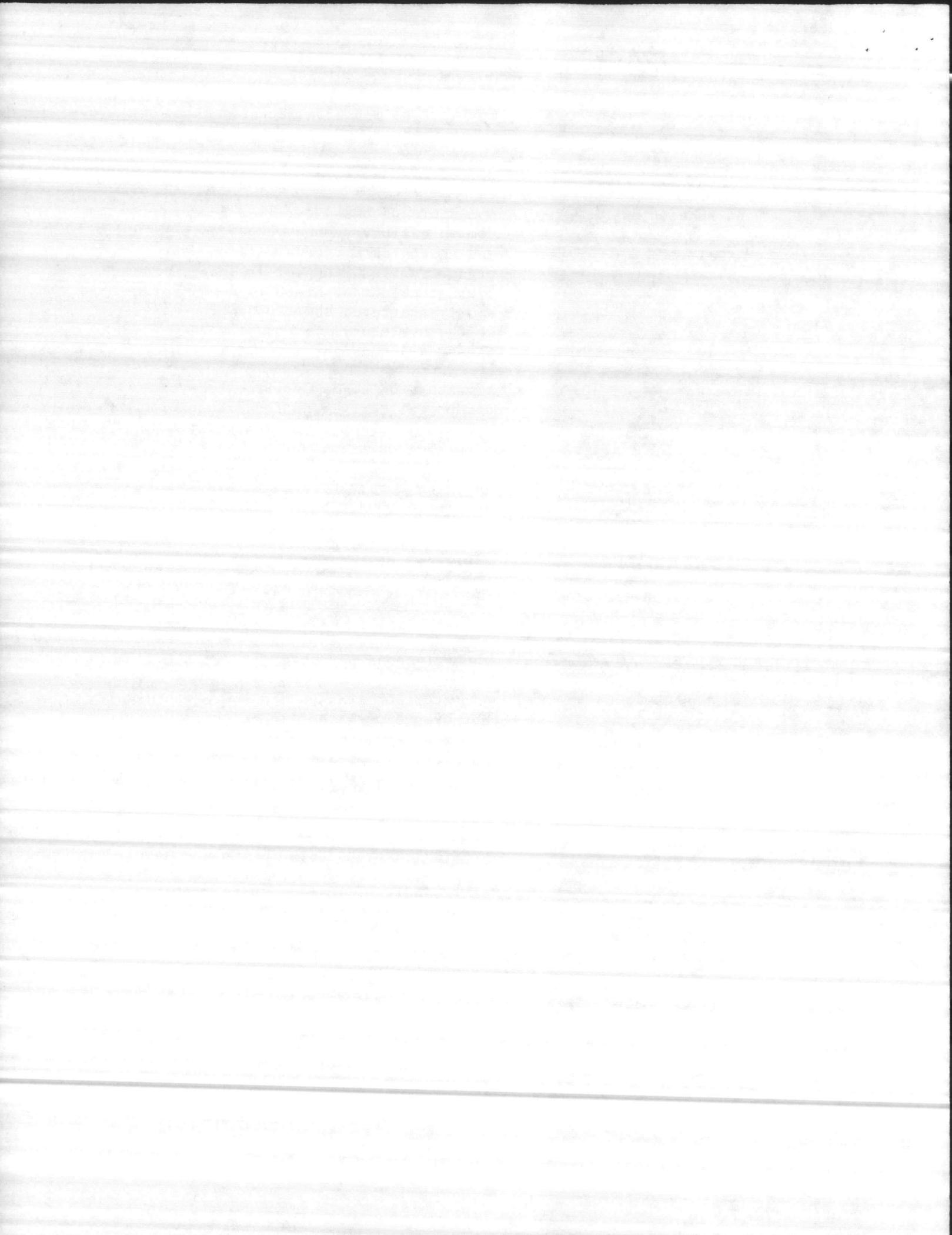
FUELS

<u>CODE</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
01	Litter Type (L-3) ✓	Occurring under dense or closed timber canopies with no understory vegetation. Average oven-dry weight is about 3 tons per acre.
02	Wire Grass (G-5) ✓	Wire grass. Common gallberry mixture, generally associated with longleaf pine timber type. Average oven-dry weight is about 5 tons per acre.
03	Marsh Grasses (G Marsh -7) ✓	Marsh grasses and saw grass occurring along coastal streams and sound shores. Average oven-dry weight is about 7 tons per acre.
04	Reeds and Grass (R ^G X-7) ✓	Mixture of reeds and grass, predominantly reeds, generally occurring on well drained shallow organic soils. Average oven-dry weight is about 7 tons per acre.
05	Reeds and Brush (RB-10) ✓	Mixture of reeds and brush, predominantly reeds, generally occurring on well drained shallow organic soils. Average oven-dry weight is about 10 tons per acre.
06	Medium Reeds (R-10) ✓	Primarily reeds, average height 7 feet, common gallberry and greenbriar may occur as a minor mixture. Occurring on well drained shallow organic soils. Average oven-dry weight is about 10 tons per acre.
07	Tall Reeds (R-14) ✓	Primarily reeds, average height 10 feet, common gallberry and greenbriar may occur as a mixture. Occurring on well drained shallow organic soils. Average oven-dry weight is about 14 tons per acre.
08	Grass and Low Brush [GB(SR)-7] ✓	Mixture of grasses and brush occurring on mineral soil. Primarily grasses on recently site prepared areas. Average oven-dry weight is about 7 tons per acre.
09	Low Brush and Grass [BG(SR)-10] ✓	Mixture of brush and grasses, primarily brush. Occurring on mineral soils on recently logged or site prepared areas. Rough is about 2 years old. Average oven-dry weight is about 10 tons per acre.



CODE TYPEDESCRIPTION

- 10 Brush [B(SR)-10] ✓
Medium brush occurring on mineral soils. A mixture of sweet gum, black gum, myrtle, and maple on recently logged areas. The rough is about 6 years old. Average oven-dry weight is about 10 tons per acre.
- 11 Low Open Pocosin (P-5) ✓
A mixture of swamp cyrilla, fedderbush, common gallberry, honeycup, leather leaf, and sheep laurel; occurring on deep organic soils with poor drainage. The average height of brush is about 3 feet. Widely scattered short pond pine makes up the overstory. Average oven-dry weight is about 5 tons per acre.
- 12 Low Dense Pocosin (P-10) ✓
A mixture of swamp cyrilla, honeycup, common gallberry, and fedderbush with an occasional clump of loblolly bay; occurring on deep poorly drained organic soil. Average height is about 4 feet and growth is very dense. Widely scattered pond pine overstory. Average oven-dry weight is about 10 tons per acre.
- 13 High pocosin (P-14) ✓
A mixture of swamp cyrilla, loblolly bay, common gallberry, greenbriar, white bay and red bay; occurring on deep organic soils. Average brush height is about 14 feet. Average oven-dry weight is about 14 tons per acre.
- 14 Grass Brush (GB-7) ✓
A mixture of grasses and low brush usually not over 3 or 4 feet in height. Usually found on shallow organic soils and is generally the result of recent logging, site preparation, or fire. Average oven-dry weight is about 7 tons per acre.
- 15 Medium Brush Grass (GB-10)
A mixture of brush of medium height and grasses, average height of brush about 5 feet. Occurs on shallow organic soils as a result of logging, site preparation or fires. Species are swamp cyrilla, red bay, greenbriar, common gallberry, and pepper bush. Average oven-dry weight is about 10 tons per acre.
- 16 High Brush (B-20) ✓
A mixture of fedderbush, tall gallberry, loblolly bay, dangleberry with minor associates of white bay, honeycup, honeysuckle, greenbriar, swamp cyrilla, and sheep laurel. Generally occurs on fringes of natural drainages on organic soils. Average height of this type is about 8 feet. Average oven-dry weight is about 20 tons per acre.

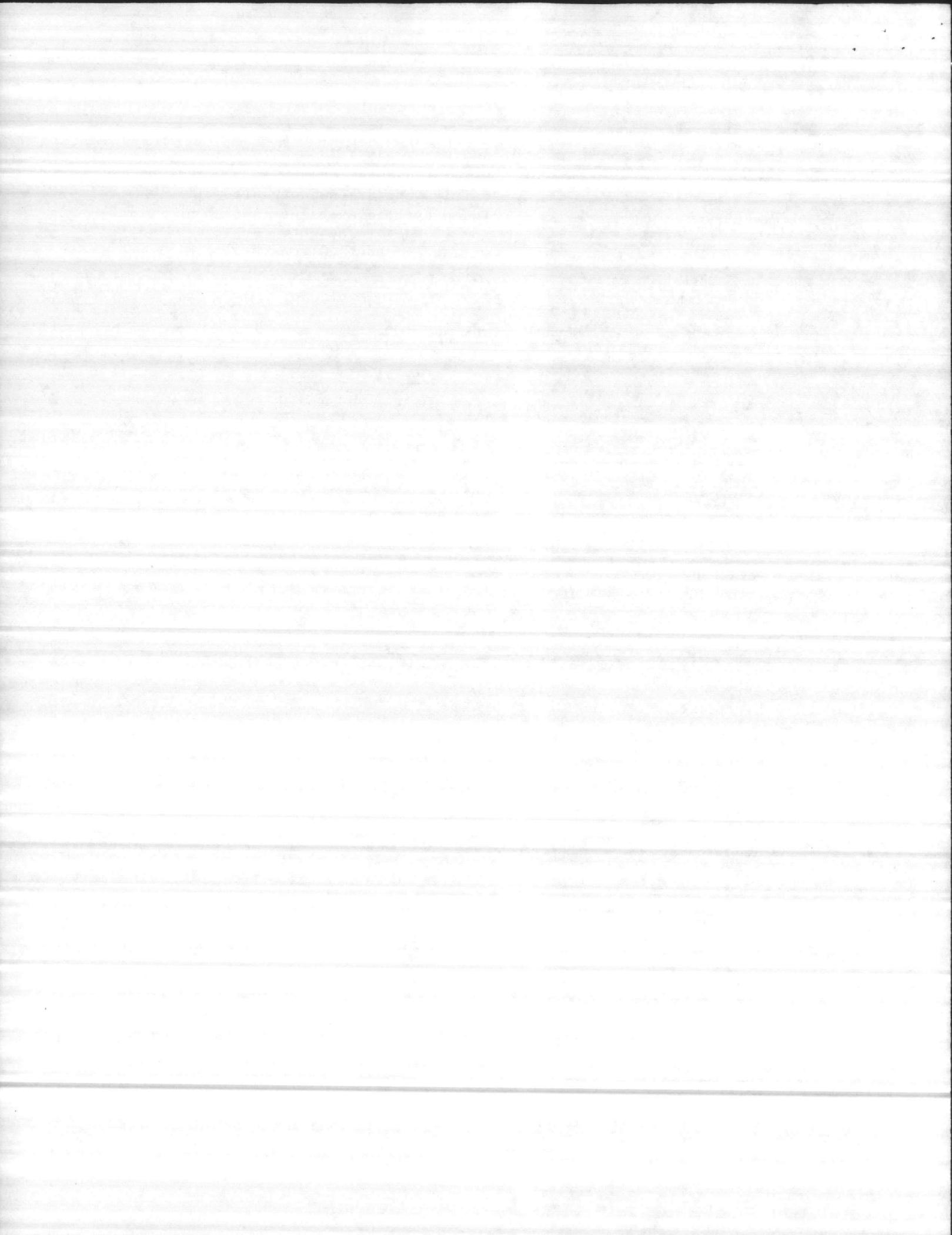


CODE TYPE

DESCRIPTION

17 High Brush Swamp [B(S)-20] ✓

Primarily a mixture of swamp cyrilla and black gum. Generally found at the head of natural drainages. Occurs on fairly well drained organic soils. Swamp cyrilla averages 14 feet and black gum 12 feet in height. Average oven-dry weight is about 20 tons per acre.



Tons Per Acre-Oven Dried (Average Samples)

Extreme
Ranges
(Low to High)
Tons Per Acre

Fuel Type	Litter	Vegetative	Total	
L-3	2.45		2.45	1-4
G-5	2.92	1.54	4.46	2-7
GM-7			6.8	
RG-7	2.57	3.91	6.48	4-8
RB-10	4.05	4.70	8.75	6-11
R-10	4.01	6.06	10.07	8-12
R-14	4.70	8.48	13.18	11-15
GB (SR)-7	3.44	3.24	6.68	2-8
BG(SR)-10	5.94	2.90	8.84	6-12
B(SR)-10	4.41	4.14	8.55	4-10
P-5	3.62	2.06	5.68	4-8
P-10	4.45	4.00	8.45	7-10
P-14	9.05	5.95	15.00	12-35
B-20	5.36	11.98	17.34	12-30
B(S)-20	5.36	15.64	21.00	18-30
GB-7	3.55	2.89	6.44	2-8
BG-10	4.59	4.78	9.37	6-12

