



The North Carolina Smoke Management Program

NC Prescribed Fire Council Annual Meeting
August 16th, 2016

Photo : Prescribed Burn,
Alligator River NWR, 2008

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Introduction and Background



- In development for at least a decade
- Years of on-the-ground research
- Includes traditional smoke management techniques and more recent developments
- Usable by the typical Certified Burner



Purpose

- Mitigate the effects of PB smoke
- Clean Air Act
- Regional Haze Rule
- NC Prescribed Burning Act
 - Provides liability protection
- Bring all of the guidelines, tables, etc. together into one document
- Not a “How to Burn” guide



Procedures Prescribed Burn Plan



Tract: _____

Latitude _____ Longitude _____

PRESCRIBED FIRE PLAN

Date: _____
NCFS District: _____
County: _____

PART 1: GENERAL INFORMATION

<p>Landowner: _____ Address: _____ _____ _____ Phone: _____ Agent: _____ Agent Phone: _____</p>	<p>Estimates</p> <p>Acres to Burn: _____ Bladed Line (miles): _____ Plowed Line (miles): _____ Hand Line (feet): _____ Other: _____ Other: _____</p>	<p>Purpose of Burn</p> <p><input type="checkbox"/> Site Preparation <input type="checkbox"/> Silviculture <input type="checkbox"/> Hazard Reduction <input type="checkbox"/> Wildlife Habitat <input type="checkbox"/> Other: _____</p>
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PART 2: PRE-BURN PLANNING

Specific Objectives: _____

Overstory Species: _____ Avg. Hgt. (ft.): _____ Avg. DBH(in.): _____

Age of Dominant Species: _____ Understory Species: _____

Fine Fuels: _____ Litter Depth (in.): _____ Fuel Type(Model): _____

% Slope: _____ Aspect: _____ Elevation (ft.): _____ Soil: _____

For In-Stand Burning: Basal Area (ft²/acre): _____ Ht. to Live Crown (ft.): _____ Allowable Scorch Height (ft.): _____

Smoke Management:

Direction to Smoke Sensitive Area (SSA)	N	NE	E	SE	S	SW	W	NW
Distance to SSA (miles)								

Tonnage: Estimated Acres _____ X Estimated Available Tons/Acre _____ = _____ Estimated Total Tons to be Burned

Acceptable Range of Weather Parameters:

Temp. (°F): _____ to _____ RH(%): _____ to _____ NWS 20' Wind Speed (MPH): _____ to _____

Wind Direction (Surface): N NE E SE S SW W NW

Mix Height (ft.): _____ to _____ Wind Direction (Transport): N NE E SE S SW W NW



Procedures (Continued)



Method 1-Ventilation Index System (VIS)

- Original part of NC SM Guidelines
- Limited burning on BC 1.
 - Minimum mixing height=1,640 ft.
 - Minimum transport wind=9 MPH
- Moving from BC 1 to BC 2 eliminated

Smoke Management Allowable Tonnage

Burn Category	1 ¹	2	2	2	2
Burn Type	Under story	Open	Under story	Open	Under story
Night Smoke Dispersion	Any	Poor to Very Poor	Poor to Very Poor	Good to Fair	Good to Fair
Time of Burn	Day Only	Day Only	Day Only	Day or Night	Day or Night
Miles to SSA					
0<1/2	0	0	0	0	0
1/2 <5	50	360	720	720	1080
5<10	100	720	1440	1440	2160
10<20	150	1080	2160	2160	3024
20<30	150	1200	2400	2400	3600
30+	200	1440	2880	2880	4320

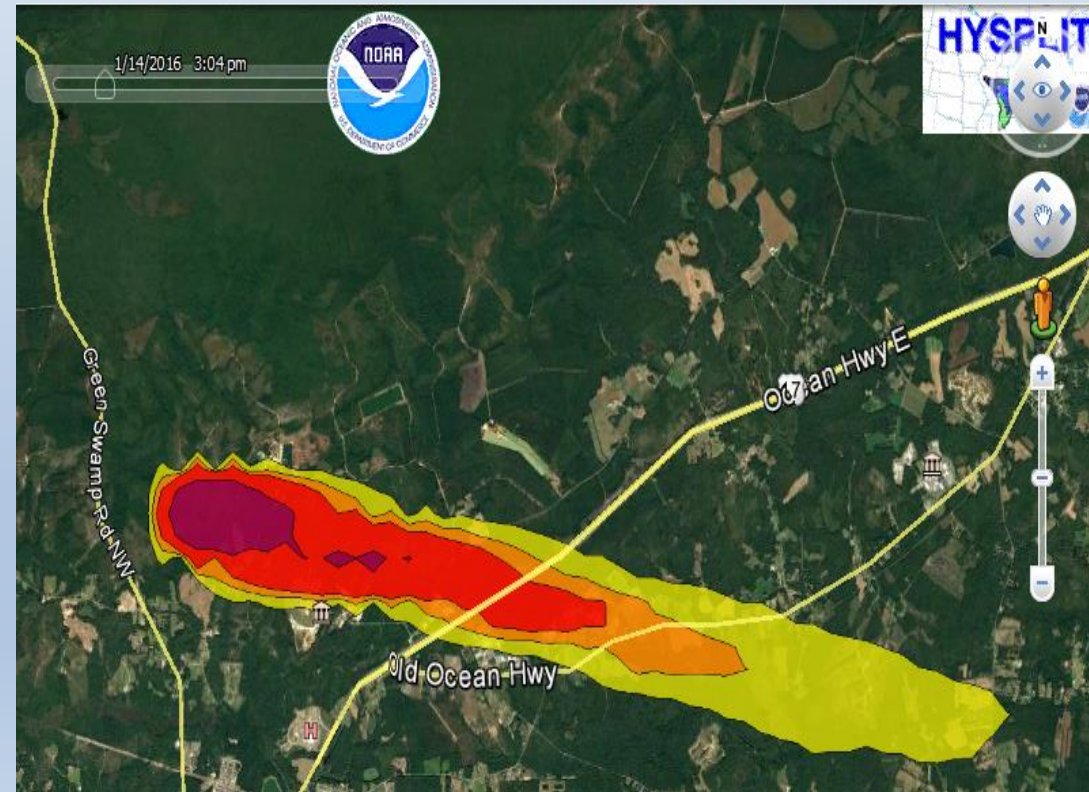


Procedures (Continued)



Method 2-Atmospheric Dispersion Modeling (ADM)

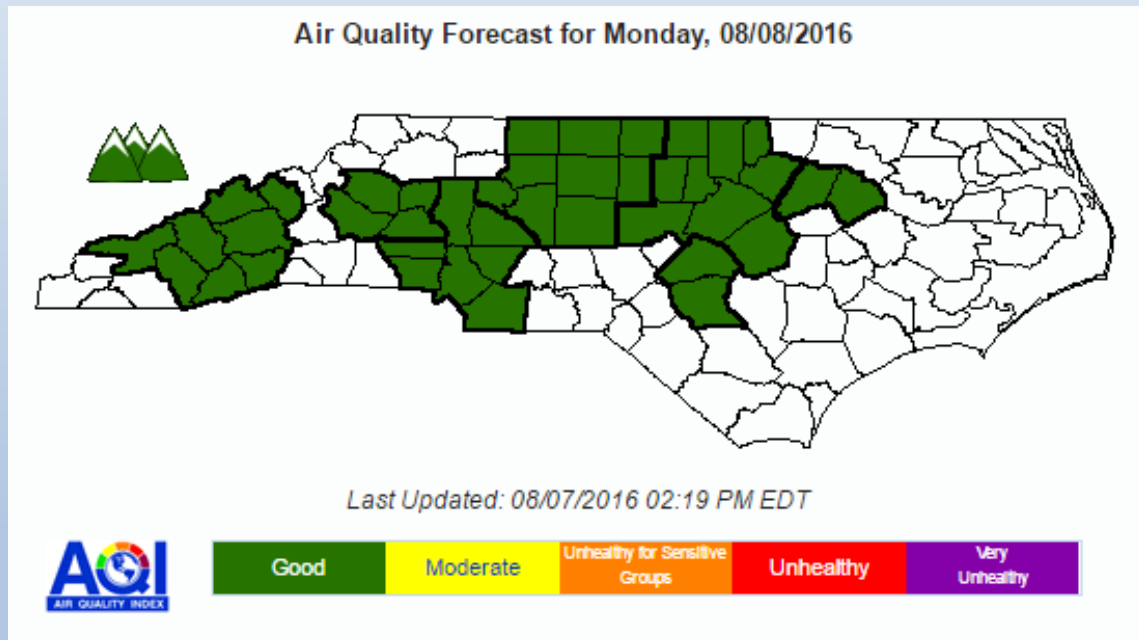
- Use approved smoke models
- Modelers must be trained and certified
- Must show that EPA 24 hour $PM_{2.5}$ standard not exceeded over 24 hour average.





Procedures (Continued)

Air Quality Index



- NC DAQ forecasts for several NC Metro areas
- Uses color coded system
- If Code Red or Purple is forecast, burning not recommended.

<https://xapps.ncdenr.org/aq/ForecastCenter>



Procedures (Continued)

Additional Considerations



- High surface or transport winds
- Smoke moves over water body
- Smoke plume shades fire area
- Smoke rolls over ridge top
- Smoke moves down drainage
- Temperature inversions
- Burning in organic soil



Procedures (Continued)

Notification and Reporting



- Call NCFS on morning of burn
- Prefer call District Office
- Burner name and cell number
- Distance to nearest downwind SSA
- Ignition time
- Changes to written plan
- Model results (if applicable)



Review and Updating



- Initial review in June 2017
- Every 2 years after that
- New SM models or methods will be vetted for inclusion in the SMP by the NC Fire Environment Working Group



FAQs



1. Can the NCFS run smoke models for me?
2. Can I be fined or cited if I don't follow the SMP?
3. If a Burner has a tract that would exceed the allowable tonnage, can they break it up into smaller pieces that individually would not exceed the allowable tonnage, burn one, allow the smoke to disperse, then burn another one on the same day?
4. If the VIS or ADM show that a burn will be in compliance, does that mean there will be no impacts downwind?
5. Why is burning now allowed on some Category 1 days?



The Big Picture?



Allow for more burning opportunities while continuing to meet EPA standards and protect public health and safety.



HAPPY BURNERS!



Acknowledgements

- Partners and Cooperators
- FEWG Members
- NCFS SMP Team
- Previous FE Foresters

Photo : Black Forest Fire,
Colorado, June 2013



QUESTIONS???

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Photo : Prescribed Burn, Holly
Shelter Game Land, June 2016