Occoneechee Mountain
ADM Burns
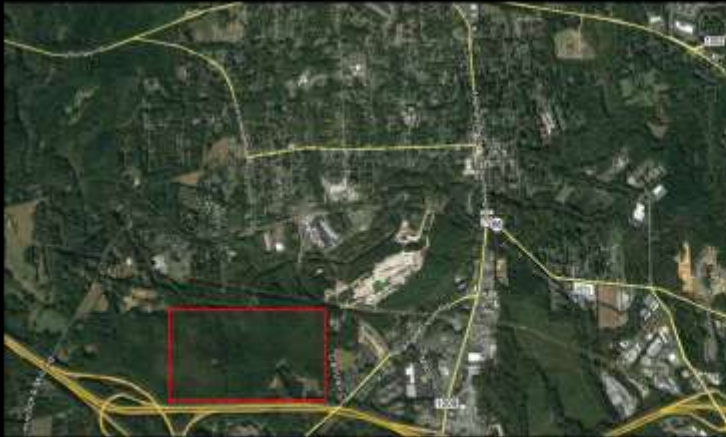
Kenny Griffin
D-11 District Ranger
NC Forest Service
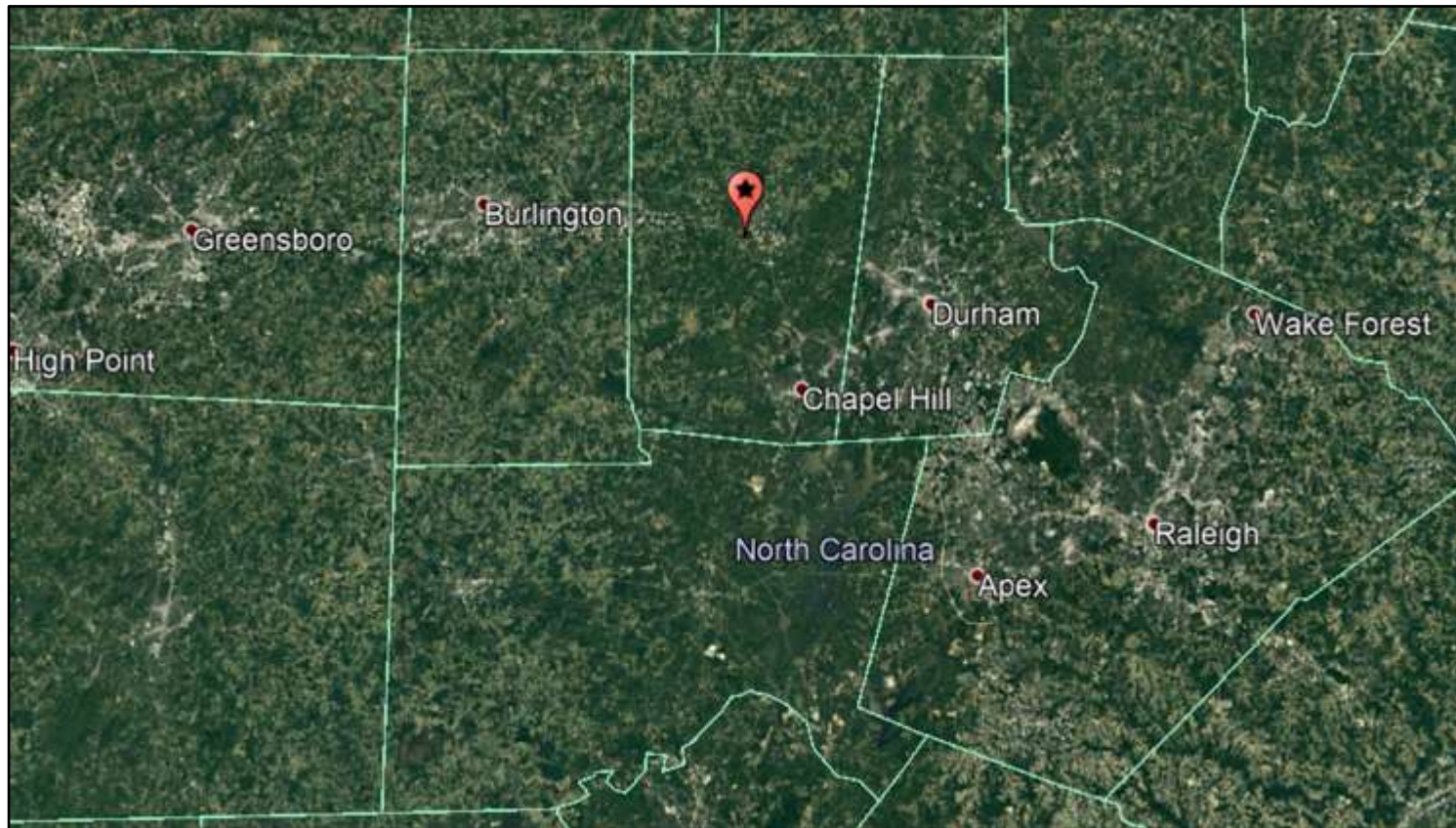
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Most people in this area are very environmentally sensitive!

- Occoneechee Mountain State Natural Area (OCMO) close to urban areas
- Its in Hillsborough, 11 miles to C.H., 13 mi to Durham, 30 mi Raleigh, Wake forest, Apex, Greensboro.
- 96,000 visitors last year – 190 acres
- Why burn?
    - Hazard from I85/I40
    - Wildlife benefit – stimulate growth in stagnant mature chestnut oak stand
    - Also use as a I&E opportunity to the 100,000 visitors. Parks plan to hold hikes and put up info boards.

Overall Plan
- Hazard Reduction
- Ecological/Wildlife Benefits

Objectives
- remove 75% of 1 hour fuels
- remove 50% of 10 hour fuels
- top kill 40-50% hardwoods less than 6 inches in diameter

Total acres to potentially burn within 5 years: 96 acres
4 burns completed to date: total of 71 acres

- 71 acres may not seem like much but that's about 40% of this park. And consider the exposer and awareness of RX burning these burns created.
- 100,000 people visit per year!
- Adding units 5 and 6 will result in 50% of the park being in a burning program.

- No SSA within ½ mile to NE so we didn't need ADM. But wanted the extra reassurance.
- Reassurance to locals and myself
- Cover Your Bases? Yes but it's worth it.

- You can see how everything slope uphill away from I85/40. Slope and winds will align pulling smoke off 85/40

2016 Burn Area

- Use N lines as base line on each block.
- Use "holding boss" to coordinate all holding resources. – multi agency coordination
- Wanted all fire to be backing fire as much as possible.
- Over cautious because we wanted to get it right.

PART 2 PRE-BURN PLANNING

Specific Objectives: Reduce fuel loading by removing 75% of 1hour and 50% of 10 hour fuels. Top Kill 40-50% of hdwd <6" diam.

Overstory Species: Upland hardwoods – chestnut oak   Avg. Hgt. (ft.): 50-70   Avg. DBH(in.): 10-20

Age of Dominant Species: 80   Understory Species: Maple, gum, cedar, dogwood, holly, sourwood, various oaks

Fine Fuels: Hardwood leaf litter   Litter Depth (in.): 3-6   Fuel Type(Model): 9   [X] Continuous   [ ] Patchy

% Slope: 5-20   Aspect: S   Elevation (ft): 600   Soil: Clay loam   [X] Mineral   [ ] Organic

For In-Stand Burning: Basal Area (sq ft): 120-180   Ht. to Live Crown (ft): 30'   Allowable Scorch Height (ft): 6'

Smoke Management:

Direction to Smoke Sensitive Area (SSA)	N	NE	E	SE	S	SW	W	NW
Distance to SSA (miles)	.5	.5	.1	.1	.1	.1	.1	.5

Smoke Mngt./Tonnage: Estimated Acres 26 X Est. Total Available Tons/Acre 5 = 130 Est. Total Tons to be Burned

Acceptable Range of Weather parameters (To Be Completed By, Or In Consultation With, A Burn Boss):
Temp. (°F): 40 to 70   RH(%): 25 to 45   NWS 20' Wind Speed (MPH): 2 to 15
Wind Direction (Surface): [ ] N   [ ] NE   [ ] E   [X] SE   [X] S   [X] SW   [ ] W   [ ] NW

Mix Height (ft): 2000 to 5000   Wind Direction (Transport): [ ] N   [ ] NE   [ ] E   [X] SE   [X] S   [X] SW   [ ] W   [ ] NW

Night-time Smoke Dispersion (minimum): VP   Acceptable Burn Categories: [ ]1 [ ]2 [X]3 [X]4 [X]5

KBDI: 20 to 300   Fine Fuel Moisture (%): 6 to 20

Type of Burn: [X] VIS Burn [X] ADM Burn [ ] FEPS with other ADM docs
Note: ADM Burns can be conducted outside VIS parameters except Mix Ht. must be ≥ 1640ft

Other Weather Considerations: Run ADM to verify no smoke impacts on town of Hillsborough. Do not burn with combination of min RH and Max winds.

Special Situations or Instructions: (note on map) Coordinate local P.R. with State Park prior to and day of burn. Place smoke signs on 85 N and S of burn due to visibility of burn/smoke. Do not burn with LVORI >7 or if winds are predicted to be from the N, NW or NE within 24 hours of burn.

Note: ADM Burns: 1. They are permissible by those persons who have attended the DFR's Advanced Smoke Modeling WS. 2. Presently they cannot be approved or disapproved by DFR persons who review District Burn Plans. 3. Project File needs to be complete.

- You can see by the parameters that we didn't want to burn this block "hot".
- Learned from burning block earlier in the week.

WEATHER FIRST BURN

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ORANGE-
INCLUDING THE CITIES OF...CHAPEL HILL...CARRBORO
713 AM EST WED MAR 9 2016
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	TODAY	TONIGHT	THU
CLOUD COVER	MCLEAR	PCLDY	PCLDY
PRECIP TYPE	NONE	NONE	NONE
CHANCE PRECIP (%)	0	U	0
MIN/MAX TEMP	80	54	79
MAX/MIN RH %	33	91	42
AM 20-FT WIND (MPH)	SW 4-8		SW 4-8
PM 20-FT WIND (MPH)	SW 8-12	SW 3-7	SW 9-13 G18
PRECIP AMOUNT	0.00	0.00	0.00
MIXING HGT (FT-AGL)	3700	300	3800
TRANSPORT WND (MPH)	SW 18	SW 12	SW 21
VENT RATE (FT-MPH)	66600	3600	79800
DISPERSION		POOR	
LAL	1	1	1
HAINES INDEX	4	5	4
ADI EARLY	37 FAIR	4 VERY POOR	52 GEN GOOD
ADI LATE	43 GEN GOOD	7 POOR	62 GOOD
MAX LVORI EARLY	3	3	4
MAX LVORI LATE	1	5	1

- The decision was made that the max temp would be late enough in the day to keep us within our parameters

- This is screen shot of ADM run from day of burn.
- Smoke is going right were we want it

Smoke Impacts?

-Smell of smoke was in the air in city of Hillsborough

-One complaint from a homeowner to the NW of burn. Only house impacted in that subdivision??

-Light drift smoke – as ADM run predicted

Actual photo from the time of the burn, note the burn unit is over the knob.

Drift Smoke (YELLOW) in town of Hillsborough

Another photo from the time of the burn

- Next unit to be burned

PART 2 PRE-BURN PLANNING

Specific Objectives: Reduce fuel loading by removing 75% of 1hour and 50% of 10 hour fuels. Top Kill 40-50% of hdwd <6" diam.

Overstory Species: Upland hardwoods – chestnut oak   Avg. Hgt. (ft.): 50-70 Avg. DBH(in.): 10-20

Age of Dominant Species: 80 Understory Species: Maple, cedar, dogwood, holly, sourwood, mtn. laurel on north facing.

Fine Fuels: Hardwood leaf litter   Litter Depth (in.): 3-6   Fuel Type(Model): 9   [X] Continuous   [ ] Patchy

% Slope: 10-40   Aspect: S, W, N   Elevation (ft): 600   Soil: Clay loam   [X] Mineral   [ ] Organic

For In-Stand Burning: Basal Area (sq ft): 100-160   Ht. to Live Crown (ft): 30'   Allowable Scorch Height (ft): 6'

Smoke Management:

Direction to Smoke Sensitive Area (SSA)	N	NE	E	SE	S	SW	W	NW
Distance to SSA (miles)	.5	.5	.1	.1	.1	.1	.1	.5

Smoke Mngt./Tonnage: Estimated Acres 22 X Est. Total Available Tons/Acre 4 = 88 Est. Total Tons to be Burned

Acceptable Range of Weather parameters (To Be Completed By, Or In Consultation With, A Burn Boss):
Temp. (°F): 40 to 80   RH(%): 25 to 50   NWS 20' Wind Speed (MPH): 2 to 15
Wind Direction (Surface):   [ ] N   [ ] NE   [ ] E   [X] SE   [X] S   [X] SW   [ ] W   [ ] NW

Mix Height (ft): 1640 to 6000 Wind Direction (Transport): [ ] N [ ] NE [ ] E [X] SE [X] S [X] SW [ ] W [ ] NW

Night-time Smoke Dispersion (minimum): VP   Acceptable Burn Categories: [X] 1 [X] 2 [X] 3 [X] 4 [X] 5

KBDI: 10 to 300   Fine Fuel Moisture (%): 8 to 20

Type of Burn: [X] VIS Burn [X] ADM Burn [ ] FEPS with other ADM docs

Other Weather Considerations: Run ADM to verify no smoke impacts on town of Hillsborough. Do not burn with combination of min RH and Max winds.

Special Situations or Instructions: (note on map) Coordinate local P.R. with State Park prior to and day of burn. Do not burn with LVORI >7.

Note: Treats may be burned outside of VIS parameters by using Atmospheric Dispersion Modeling(ADM). ADM may only be used by those certified as an Atmospheric Dispersion Modeler by the NCFS. Model run data must be submitted to NCFS prior to ignition. Refer to the Smoke Management Program for details.

WEATHER
Second BURN

- Pretty benign day but take a look at Wednesday…….. Concerned?
- Remember I-85 – why is NW wind not a problem?

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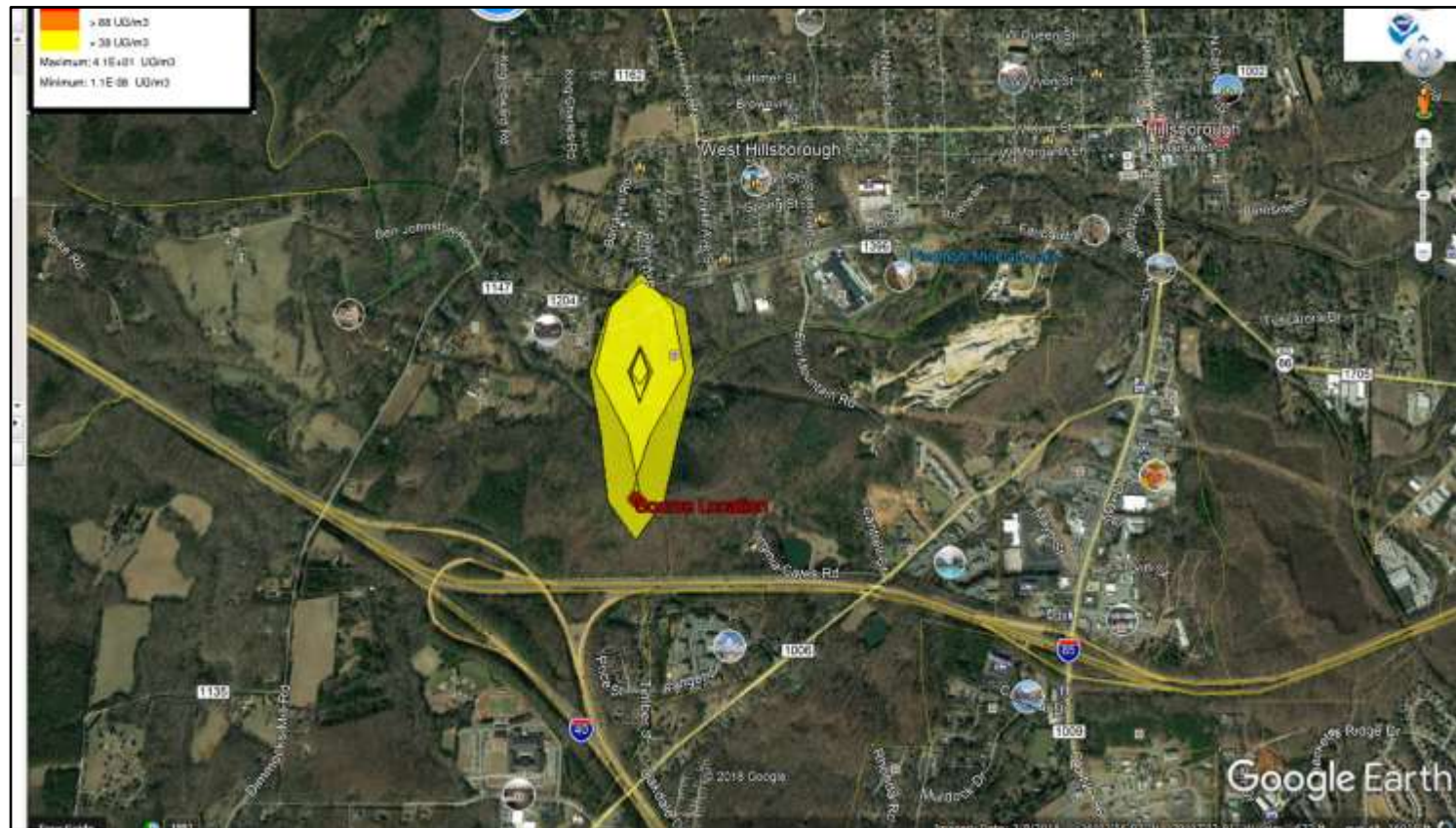
- ADM predicts "yellow" smoke. Mitigated road by placing "smoke ahead" signs
- Also notified Town PIO to put out on Facebook

- Smoke on left of picture laying in the river bed again.
- Otherwise there is "yellow" smoke everywhere else.

Were Objectives Met?

- Reduce Fuel Load

- Promote Hardwood Sprouting

- Improve Wildlife Habitat

We're talking about successful ADM burns, so how do we know if it's successful?
1. No or minimal smoke impacts. Also – give feedback to the modeler. Did the smoke do what was predicted? Let them know one way or the other. We've already talked about the lack of smoke impacts and how the smoke mimicked the model.
2. Go back to the objectives of the burn. Even if smoke did what it was suppose to do, it isn't successful unless you meet your objectives. Don't burn just because something will burn. Wait until the right day so you meet your objectives.

Burned on left – unburned on right. Fuel load obviously reduced.

Pre Burn   1 Year Post Burn

Notice the area's without leaves? Wind has blown them away. One of our objectives was to remove 50% of 10hour fuels. That's what keeps those leaves from blowing around and holds them in place. Looks like we accomplished that.

40% desirable stump sprouting on hardwood

Sourwood sprouting browsed by deer.

Pre Burn   1 Year Post Burn

- Blueberry was suppressed before burns were conducted. They were there, but not thriving.

2 Years Post Burn

Continue to thrive 2 years after burning. Thicker and taller.

Created Receptive Seed Bed

More for deer to brows on and baby trees are just cute.

- More burns planned for this year – Umstead SP, Town of Cary has inquired about burning some areas, Eno river SP……
- This is not just for urban areas. It will open your window and give you more burning days even in rural areas without SS issues.

Kenny Griffin
D-11 District Ranger
NC Forest Service
336-504-1309