

Fall 2007/Spring 2008 Fire Weather Operations Plan

for Eastern

Kentucky



*National Weather Service
Forecast Office
Jackson, KY*

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I. INTRODUCTION

This Annual Operating Plans identifies services provided by the National Weather Service (NWS) Office in Jackson, KY. The area of responsibility or County Warning Area (CWA) includes 33 counties in the eastern portion of KY. This includes nearly the entire Daniel Boone National Forest as well as a very small section of the Jefferson National Forest lying right along the VA/KY border in Pike and Letcher counties. Portions of the Cumberland Gap National Historical Park and the Big South Fork National River and Recreation Area also lie in the area of responsibility. The Jackson CWA is covered by the Southern Area Geographic Coordination Center. The Southern Area Cache is located within the CWA at London, KY.

The National Weather Service's Fire Weather Program is designed to provide forecasts, warnings, and consultation services for the prevention, suppression, and management of forest and rangeland fires and for a host of land management activities. These meteorological services are built to meet the weather requirements of federal and state wild land managers. Hazmat forecasts issued for county, city, or other local government officials are also considered part of the Fire Weather Program.

The program is customer-oriented and is not limited to just wild fire management, but also includes all forest and range management weather support (such as prescribed burns and spot forecasts). Weather support is available throughout the year, 24/7. Services fall into two categories, basic and special.

This Operations Plan complements the **Geographic Area Coordinating Center Memorandum of Understanding (MOU)**, by defining the services provided by the Jackson, KY National Weather Forecast Office. The plan covers how special weather services can be requested, such as weather-related courses or an on-site Incident Meteorologist (IMET), how they will be provided, and how compensation will be rendered if need be. Please refer to the Geographic Area Mobilization Guide and/or the National Mobilization Guide for further details about these special services.

This plan will be reviewed annually by all parties. Any intermediate changes or amendments will be coordinated with all parties involved before the changes are incorporated.

II. Service Area and Organizational Directory

A. National Weather Service Offices

1. National Weather Service Office, Jackson

1329 Airport Rd.
Jackson, KY 41339

Phone:

1-606-666-8000

1-606-666-4168 (fax)

Online:

<http://www.weather.gov> (NWS)

<http://www.crh.noaa.gov/jkl/?n=fire> (Jackson Fire Weather Page)

<http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=ijkl> (Jackson Spot Request Page)

Meteorologist in Charge:

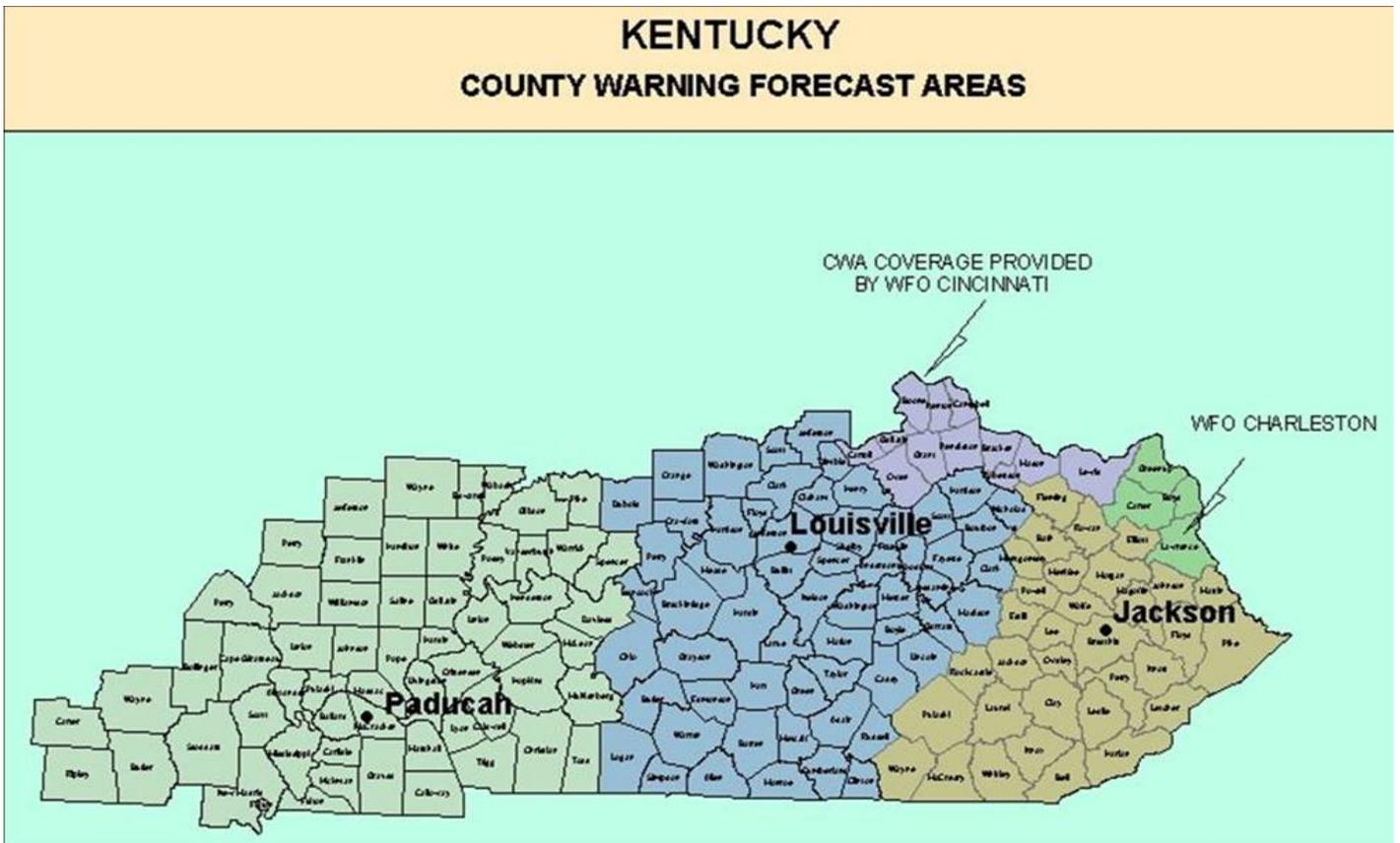
Shawn B. Harley shawn.harley@noaa.gov

Fire Weather Program Leader

Jon Pelton (IMET) jonathan.pelton@noaa.gov

Tony Edwards (IMET) tony.edwards@noaa.gov

John Jacobson (IMET) john.jacobson@noaa.gov



KY Areas of Responsibility

2. Surrounding Offices

a. National Weather Service, Louisville

6201 Theiler Lane
Louisville, KY 40229

Phone:

1-502-989-8842
1-502-968-5663 (fax)

Online:

<http://www.crh.noaa.gov/lmk/?n=fireweather> (Fire Weather Page)
<http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=lmk> (Spot Requests)

Meteorologist in Charge

John Gordon john.gordon@noaa.gov

Fire Weather Program Leader

Joe Ammerman joseph.ammerman@noaa.gov

b. National Weather Service, Paducah

8250 U.S. Highway 60
West Paducah, KY 42086

Phone:

1-270-744-6440
1-270-744-3828 (fax)

Online:

<http://www.crh.noaa.gov/pah/?n=firewx> (Fire Weather Page)
<http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=pah> (Spot Requests)

Meteorologist in Charge

Beverly Poole beverly.poole@noaa.gov

Fire Weather Program Leader

Kelly Hooper (IMET) kelly.hooper@noaa.gov

Greg Meffert (IMET) gregory.meffert@noaa.gov

c. National Weather Service, Wilmington

1901 South State Route 134
Wilmington, OH 45177

Phone:

1-937-383-0031
1-937-383-0033 (fax)

Online:

<http://www.nws.noaa.gov/er/iln/fireweather.htm> (Fire Weather Page)
<http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=iln> (Spot Requests)

Meteorologist in Charge

Kenneth Haydu kenneth.haydu@noaa.gov

Fire Weather Program Leader

John J. Franks (IMET) john.j.franks@noaa.gov

d. National Weather Service, Charleston

400 Parkway Road
Charleston, WV 25309

Phone:

1-304-746-0189?
1-304-746-0193 (fax)

Online:

<http://www.erh.noaa.gov/rlx/firewx.html>
<http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=rlx> (Spot Requests)

Meteorologist in Charge

Alan Rezek alan.rezek@noaa.gov

Fire Weather Program Leader

Mark Pellerito (IMET) mark.pellerito@noaa.gov

Assistant Fire Weather Program Leader

Jeffrey Hovis jeffrey.hovis@noaa.gov

e. National Weather Service, Morristown

5974 Commerce Boulevard
Morristown, Tennessee 37814

Phone:

1-423-586-3771
1-423-586-4931 (fax)

Online:

<http://www.srh.noaa.gov/mrx/firewx.php>
<http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=mrx> (Spot Requests)

Meteorologist in Charge
George Mathews george.mathews@noaa.gov

Fire Weather Program Leader
David Gaffin david.gaffin@noaa.gov

B. Participating Agencies/User Contact Information:

**1. Daniel Boone National Forest Supervisors Office/Kentucky
Interagency Coordination Center**

a. Contact Information:

**1700 Bypass Road
Winchester, KY 40391
859-745-3171
859-745-7086 (fax)**
<http://www.fs.fed.us/r8/boone/> (Daniel Boone NF)
<http://www.fs.fed.us/r8/boonefire> (KICC Page)

b. Personnel

Mike Catron, Acting Assistant Forest Fire Management Officer and Center
Manager

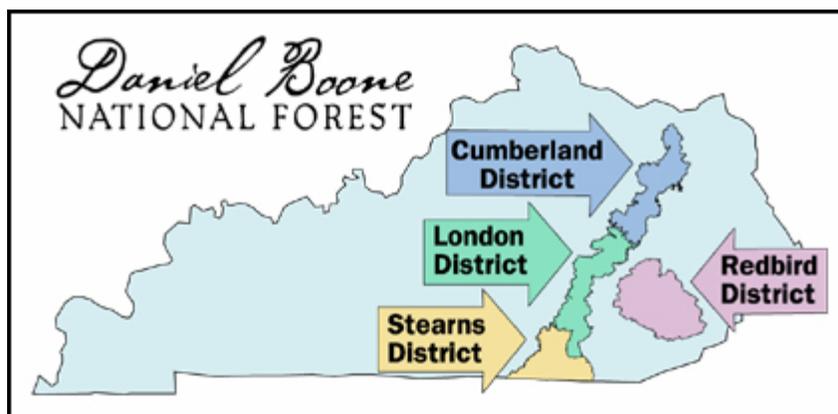
EJ Bunzendahl, Assistant Forest Fire Management Officer and Center Manager
(effective 10/15/2007)

Bonny Truett, Interagency Assistant Center Manager

Mitch Gandy, Fire Management Officer

Robin Acciaro, Forest Dispatcher

Jeff Smith, Forest Technician III/Coordination Center State Liaison



c. Daniel Boone National Forest Ranger District Offices

1. Cumberland District

a. Contact Information:

2375 KY 801 South
Morehead, KY 40351
606-784-6428

<http://www.fs.fed.us/r8/boone/districts/cumberland/index.shtml>

705 W. College Avenue
Stanton, KY 40380
606-663-2852

b. Personnel:

District Ranger: James Dave Manner

c. Area Covered

-north of the KY River

-**counties included:** Bath, Menifee, Morgan, Powell, Rowan, and Wolfe

-Acreage: 182,642

2. London District

a. Contact Information

761 S. Laurel Road
London, KY 40744
606-864-4163

<http://www.fs.fed.us/r8/boone/districts/london/index.shtml>

b. Personnel:

District Ranger: John Strojan

c. Area Covered:

-north of the Cumberland River and south of the KY River

-Counties included: Estill, Jackson, Laurel, Lee, Owsley, Pulaski, Rockcastle, and Whitley

-Acreage: 184,386

3. Stearns District

a. Contact Information

3320 US 27 North

Whitley City, KY 42653

606-376-5323

<http://www.fs.fed.us/r8/boone/districts/stearns/index.shtml>

b. Personnel:

District Ranger: Fred Noack

c. Area Covered:

-north of the TN line to south of the Cumberland River

-Counties included: McCreary, Wayne, and Whitley

-Acreage: 114,860

4. Redbird District

a. Contact Information

91 Peabody Road

Big Creek, KY 40914

606-598-2192

<http://www.fs.fed.us/r8/boone/districts/redbird/index.shtml>

b. Personnel:

District Ranger: John Kinney

c. Area Covered

- Counties Included: Clay, Harlan, Knox, Leslie, Owsley, and Perry

-Acreage: 145,840

2. Southern Area Interagency Fire Cache

a. Contact Information:

788 Sublimity School Road

London, KY 40744

606-878-7430

Fax: 606-864-9559

b. Personnel:

Ken Huff, Cache Manager

Angela Taulbee Graham, Cache Clerk

3. Kentucky Division of Forestry

a. Contact Information:

627 Comanche Trail

Frankfort, KY 40601-1798

502-564-4496

Fax: 502-564-6553

b. Personnel:

Bernie Anderson, Fire Management Chief

b. Personnel:

District Forester: Herman Slone

c. Area Covered: Breathitt, Estill, Knott, Lee, Letcher, Owsley, Perry, Powell, and Wolfe counties.

3. Eastern

a. Contact Information:

P.O. Box 189
Betsy Layne, KY 41605
606-478-4495
Fax: 606-478-4491

b. Personnel:

District Forester: Dexter Conley

c. Area Covered: Floyd, Johnson, Magoffin, Martin and Pike counties

4. South-Central

a. Contact Information:

120 Gaines Drive
Campbellsville, KY 42718
270-465-5071
Fax: 270-465-3575

b. Personnel:

District Forester: Brian Yager

c. Area Covered: Pulaski and Wayne counties

5. Southeastern

a. Contact Information:

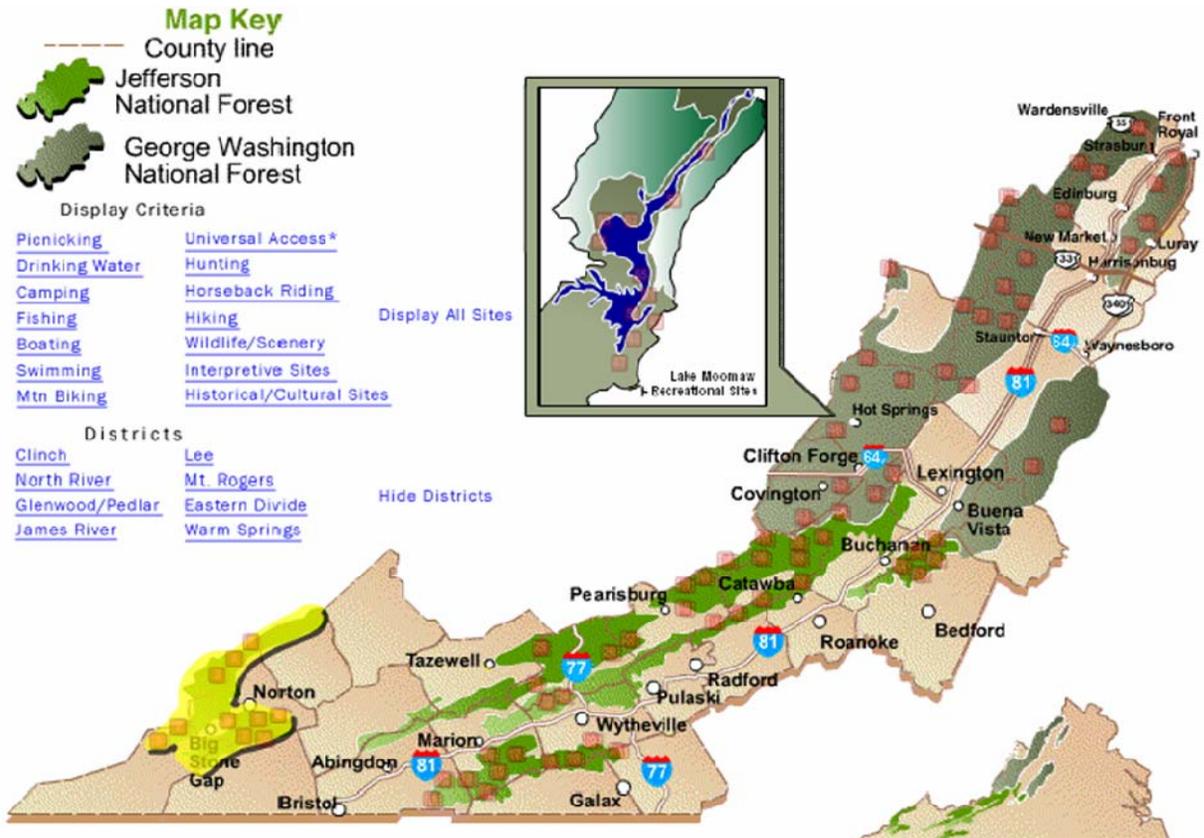
P.O. Box 130
Pineville, KY 40977
606-337-3011
Fax: 606-337-1630

b. Personnel:

District Forester: Harold Williams

c. Area Covered: Bell, Clay, Harlan, Jackson, Knox, Laurel, Leslie, McCreary, Rockcastle, and Whitley counties

4. Jefferson National Forest-Clinch Ranger District



George Washington and Jefferson National Forests (Yellow Shaded Area is the Clinch Ranger District)

a. Contact Information

9416 Darden Drive
Wise, VA 24293
276-328-2931
<http://www.fs.fed.us/r8/gwj/clinch/>

b. **Personnel:**

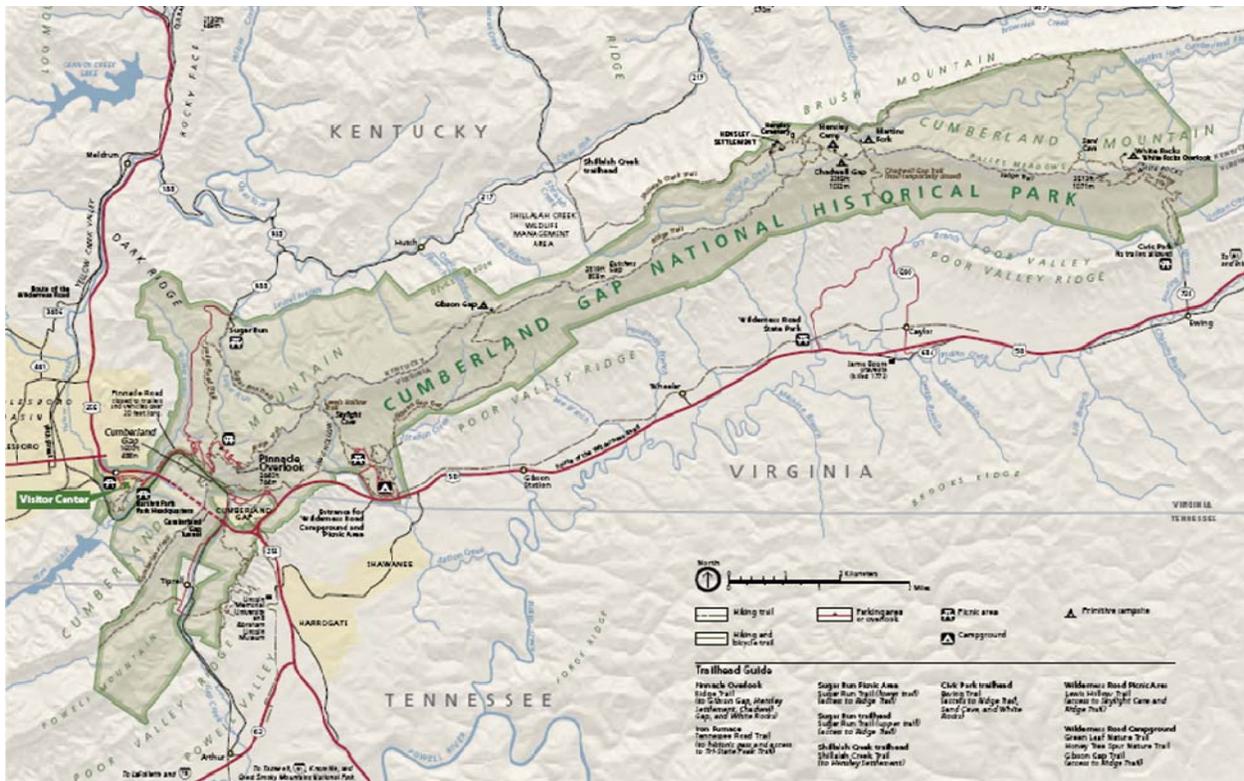
District Ranger: Ron Bush

c. **Area Covered:**

Small Portions of Pike and Letcher Counties in the vicinity of Pine Mountain along the VA/KY borders

5. National Park Service

a. **Cumberland Gap National Historical Park**



1. Contact Information:

US 25E South
P.O. Box 1848
Middlesboro, KY 40965-1848
606-248-2817
Fax: 606-248-7276
<http://www.nps.gov/cuga/>

2. Personnel:

Mark Woods, Superintendent
606-248-2817 Ext. 1050

Shane Sturgill, Park Ranger
606-248-2817

Dirk Wiley, Park Ranger
606-248-2817 Ext. 1054 or 606-246-1054

3. Area Covered:

-tri state area of TN, VA and KY (Bell County)

b. Big South Fork National River and Recreation Area

Superintendent
Big South Fork NRRA
4564 Leatherwood Road
Oneida, TN 37841
423-569-9778
Fax: 423-569-5505
<http://www.nps.gov/biso>

2. Personnel:

Reed Detring, Superintendent
423-569-9778

Frank Graham, Chief Ranger
423-569-9778

Tommy Barnes, Ranger

3. Area Covered:

-TN and KY (McCreary County)

6. Southern Area Coordination Center

a. Contact Information:

1200 Ashwood Parkway, Suite 230,
Atlanta, GA 30338
678-320-3000

Fax: 678-320-3036
<http://gacc.nifc.gov/sacc/>

b. Personnel:

Predictive Services Program Manager/Meteorologist - Denver Ingram
denver_ingram@nps.gov
Assistant/Meteorologist - Kevin Scasny
kevin_scasny@fws.gov

III. Services Provided by the National Weather Service (NWS)

A. Basic Services

1. Fire Weather Planning Forecast (FWF)

a. Issuance Time:

The narrative forecast will normally be issued daily by 700 AM Eastern Time, seven days a week and updated as warranted outside of the fire seasons. During the fire seasons, the narrative forecast will be issued twice daily around 700 AM Eastern Time and 400 PM Eastern Time and updated as necessary.

b. Viewing the Forecast

Forecasts will be available through the Weather Information Management System (WIMS) and online from our website at:

<http://www.crh.noaa.gov/jkl/fire.php>

Experimental fire weather forecast images are posted at:

<http://www.crh.noaa.gov/ndfd/graphical/sectors/jklFireDay.php#tabs>

c. Content:

A headline may be added to the top of the forecast, denoting significant weather, or for the issuance of a Red Flag Warning or Fire Weather Watch. The synopsis will briefly cover locations of fronts and systems which produce the weather along with highlighting significant trends or changes that the forecaster anticipates.

The near term forecast will cover specific weather elements mentioned below. The Morning Issuance will contain the next three periods in the near term portion (today, tonight, and tomorrow) in detail. The afternoon issuance will contain four periods in the near term period (tonight, tomorrow, tomorrow night, and the following day) in detail.

An extended forecast out to seven days will be included at the end of the forecast. The extended forecast portion of the narrative forecast will pick up where the short term left off and continue out through day seven. The extended portion is a general forecast which mentions the possibility of precipitation, expected high and low temperatures for each day, and afternoon winds for days 1 through 5.

d. Forecast Elements:

1. SKY COVER

- A. Clear (or Sunny) -- < 1/8th cloud cover.
- B. Mostly Clear/Mostly Sunny -- 1/8th to 2/8ths of cloud cover.
- C. Partly Cloudy/Partly Sunny-- 3/8ths to 5/8ths of cloud cover.
- D. Mostly Cloudy -- 6/8ths to 7/8ths cloud cover.
- E. Cloudy -- 8/8ths cloud cover.
- F. Increasing Cloudiness -- the clouds are increasing in amount (this also implies thickening of clouds).
- G. Decreasing Cloudiness-- A progressive decrease in the amount of sky covered with clouds.
- H. Variable Cloudiness-- A constant variation in the amount of clouds covering the sky with respect to time and space.

2. PRECIPITATION TYPE

- A. Rain--General, not showery, usually in a stable atmosphere. Small to medium sized water droplets.
- B. Drizzle--General precipitation in a stable atmosphere. Very small water droplets that appear to float in the atmosphere.
- C. Freezing Rain/Drizzle-- Liquid precipitation that freezes upon impact with the ground or vegetation.
- D. Sleet--Precipitation that falls in the form of frozen rain or partially frozen rain.
- E. Snow--Frozen precipitation of relatively long duration, general or patchy, not showery.
- F. Snow Flurries--Light snowfall of short duration with some clearing between occurrences. Accumulation, if any, is slight.

- G. Showers--Rain/snowfall of short duration and varying intensity, usually beginning and ending abruptly.
- H. Thundershowers--Same as a shower but accompanied by thunder.
- I. Thunderstorms--Downpour of rain, often with strong gusty winds. Small hail may also be present.
- J. Severe Thunderstorm-- Heavy downpours of rain, accompanied by wind gusts to 50 Knots (58 mph) or greater, hailstones of 3/4 inch or larger, and/or a tornado.

3. **TEMPERATURE**

The temperature will be in degrees Fahrenheit. The maximum and minimum temperatures are forecast for the day and night time periods, respectively. Local variations due to terrain (e.g. ridge/valley temperature splits) will be mentioned in the narrative.

4. **RELATIVE HUMIDITY**

The Relative Humidity (RH) is the ratio, in percent, of the amount of moisture in the air compared to the amount the air could hold if fully saturated (100%). The range of RH is from 0% to 100%. Usually, the minimum RH occurs at the time of the maximum temperature and the maximum RH occurs at the time of the minimum temperature.

Because of the dependency of the relative humidity upon temperature, it should be noted that if the temperature is under forecast (the actual temperature is higher than forecast), then the forecasted relative humidity will likely will be too high.

5. **WIND - DIRECTION AND SPEED**

The wind direction applies to the direction from which the wind will blow. The direction will be listed using the 16 point compass (e.g. NE, S, WSW, etc.). Any significant changes expected during the forecast period will be mentioned in the narrative.

The wind speed will be in miles per hour (mph). The speed is the forecast for the 20-foot level. Speeds pertain to the two minute averages while gusts pertain to the maximum instantaneous value expected.

6. **Wind Shift**

If a shift in wind direction associated with a frontal passage is expected during the period, the new direction and wind speed will be forecast. Wind shifts may also be mentioned in the synopsis.

Because a front may take several hours to move through a zone, the approximate time of the wind shift will be encoded (i.e. Northeast 10 to 15 mph after midnight).

7. **Lightning Activity Level**

A single digit (1 through 6) will be used. The meaning of each number is as follows:

- 1 No thunderstorms.
- 2 Few building cumulus with isolated thunderstorms. Occasional light rain reaching the ground.
- 3 Widely scattered thunderstorms with much building cumulus. Light to moderate rain reaching the ground.
- 4 Scattered thunderstorms, not obscuring the sky. Moderate rain reaching the ground.
- 5 Numerous thunderstorms, occasionally obscuring the sky. Moderate to heavy rain reaching the ground.
- 6 Same as 3 above, but dry, no rain.

8. **Haines Index**

The Haines Index that the Jackson National Weather Service Forecast Office will compute for the Fire Weather Planning Forecast is the mid elevation Haines Index. The mid elevation Haines Index is normally used for locations with elevations between 1,000 and 3,000 feet above sea level. Values of the Haines Index range from 2 to 6. The Haines index correlates large plume dominated fire growth.

Interpreting the Haines Index

- 2 Very Low Potential (Moist and Stable Lower Atmosphere)
- 3 Very Low Potential
- 4 Low Potential
- 5 Moderate Potential
- 6 High Potential (Dry Unstable Lower Atmosphere)

9. **POPS and Type (CWR \geq 0.01)**

The probability of precipitation, or POP, expresses the chance that measurable rainfall will occur at any given point within a county zone group. Measurable rainfall is 0.01 inches or greater. Probability is expressed in percent. A forecast of the predominate type of precipitation will accompany a probability of precipitation

forecast (i.e. 40 percent chance of showers, 60 percent chance of rain, 90 percent chance of light snow).

10. **Smoke Management Forecast Parameters**

Note: One consequence of the Clean Air Act, is that land managers must practice principles of careful smoke management. This is done by combining favorable meteorological conditions with a variety of prescribed fire techniques so that smoke will be readily dispersed.

A. Afternoon Mixing Height

Mixing height is the extent or depth to which smoke will be dispersed by means of turbulence and diffusion. The forecast of mixing height is expressed in feet above ground level (AGL). The Jackson office will normally express this value as the average over the entire zone. Deviations from this can be computed upon request.

B. Transport Wind

Transport wind is the average wind speed in miles/hour (MPH) in the mixing depth above the surface. These winds are a good indication of the horizontal dispersion of suspended particles. The transport wind is the forecast wind at the time of maximum mixing of the atmosphere, normally during the mid afternoon. Usually a wind of less than 3 mph restricts an agency from burning. Transport wind directions are typically given to eight compass points (e.g. northeast, east southwest, etc.)

Note: Transport winds are not encoded for the nighttime portion of the forecast.

C. Dispersion Index

The Dispersion Index is a number that gives a relative indication of how well smoke will disperse in the atmosphere. It is calculated by taking the Mixing Height divided by 1000 and then multiplying the result by the transport winds in knots. See the table on the following page for how to interpret a given Dispersion Index value.

Dispersion Index	Interpretation
> 100	Very Good
60-100	Good
41-60	Fair to Good
21-40	Fair
13-20	Poor to Fair
7-12	Poor
1-6	Very Poor

D. Vent Rate

The Vent Rate is a number that gives a relative indication of how well smoke will disperse in the atmosphere. It is calculated by taking the Mixing Height(in FT AGL) multiplied by the transport winds in knots. Units are in KNOT-FT. The table below gives an interpretation for a given value of Vent Rate:

Vent Rate	Interpretation
< 29,000	Poor
≥ 29,000 & < 38,000	Marginal
≥ 38,000 & < 50,000	Fair
≥ 50,000 & < 95,000	Good
≥ 95,000	Excellent

11. QFF

The average amount of rain that is expected if precipitation occurs.

d. Example:

An example of the FWF can be found in Appendix 2.

2. INDIVIDUAL STATION FORECASTS (FWM)

The point forecast will be issued by 3:15 PM daily during the fire weather season. The National Fire Danger Rating System (NFDRS) is a quantitative means for evaluating the fire danger across a vast area such as a forest. This complex model of fuel and weather parameters processes daily weather observations and fuel moisture as input, and fire managers receive numeric output that suggest the severity of fire danger over a large area.

Maps and tables showing the locations and descriptions of NFDRS stations are on the following page:

Automated Weather Station Locations



Station No.	Station Name	Station Owner	County
150703	Crittenden	Kentucky Division of Forestry	Grant
151191	Greenville	Kentucky Division of Forestry	Muhlenberg
152001	Triangle Mountain	Morehead RD, Daniel Boone NF	Rowan
154401	Koomer	Stanton RD, Daniel Boone NF	Wolfe
154801	Big Sandy	Kentucky Division of Forestry	Martin
156001	Jackson	Kentucky Division of Forestry	Breathitt
156502	Mammoth Cave	Mammoth Cave NP	Edmonson

Station No.	Station Name	Station Owner	County
157002	Somerset	Somerset RD, Daniel Boone NF	Pulaski
157201	Cherry Tree	Redbird RD, Daniel Boone NF	Clay
159501	Alpine	Kentucky Division of Forestry	Cumberland
159801	Yellow Creek	Cumberland Gap NHP	Bell
159901	LBL	Land Between the Lakes NRA	Trigg
400902	Big South Fork	Big South Fork NRRRA	Scott (Tenn.)

Name	Station ID	County	Elev. (ft)	Lat.	Lon.
Crittenden	150703	Grant	935	38:46:09	-84:36:07
Greenville	151191	Muhlenberg	552	37:16:02	-87:12:10
Triangle Mountain*	152001	Rowan	1360	38:10:30	-83:24:30
Koomer Ridge*	154401	Wolfe	1300	37:46:08	-83:38:00
Big Sandy*	154801	Martin	1180	37:45:00	-82:37:58
Jackson*	156001	Breathitt	1388	37:35:31	-83:19:04
Mammoth Cave	156502	Edmonson	766	37:07:51	-86:08:52
Somerset*	157002	Pulaski	927	37:03:18	-84:36:54
Cherry Tree/ Peabody*	157201	Clay	1475	37:08:00	-83:34:00
Alpine	189501	Cumberland	853	36:47:44	-85:22:49
Yellow Creek*	159801	Bell	1090	36:36:55	-83:45:45
KYLBL	159901	Trigg	649	36:46:35	-88.03:47
Big South	400902	Scott, TN	1445	36:28:30	-84:39:15

Name	Station ID	County	Modem Number	Modem Type	Baud Rate
Crittenden	150703	Grant	859-428-1565	TM Ultra	9600
Greenville	151191	Muhlenberg	502-607-7426	TM Ultra	9600
Triangle Mountain*	152001	Rowan	606-784-9365	TM4000	1200
Koomer Ridge*	154401	Wolfe	606-668-7234	TM Ultra	9600
Big Sandy*	154801	Martin	606-298-6710	TM Ultra	1200
Jackson*	156001	Breathitt	606-666-9625	TM4000	1200
Mammoth Cave	156502	Edmonson	270-597-2376	TM Ultra	2400
Somerset*	157002	Pulaski	606-677-9186	TM4000	1200
Cherry Tree/ Peabody*	157201	Clay	606-847-4095	TM4000	1200
Alpine	189501	Cumberland	270-864-9105	TM Ultra	9600
Yellow Creek*	159801	Bell	DAPS download	Not Available	Not Available
KYLBL	159901	Trigg	DAPS download	Not Available	Not Available
Big South*	400902	Scott, TN	DAPS download	Not Available	Not Available

* = WFO JKL Forecast Point

Note: All fire weather stations have been assigned numbers to be used as the identification number when entering into the Weather Information Management System (WIMS). If a new station is established, or a present Station is moved, a new identification number should be requested from the GACC Meteorologists. Also, please notify the Jackson NWS Office Fire Weather Program Manager of this change.

Point Forecast Terminology

- A. STATION NAME**
Each location will have a name. This name will be provided by the agency requesting the observation site.
- B. STATION NUMBER**
Before a forecast will be made for a station, it must have a valid station number in WIMS.
- C. VALID DATE**
The valid date will be the next day in the order: YYMMDD

D. VALID TIME

The valid time will be 1300 (1:00 PM LST)

E. State of the Weather

A single digit number from 0 to 9.

- 0 Clear (Less than 1/10th of sky is cloud covered).
- 1 Scattered Clouds (1/10th to 5/10ths of sky cloud covered).
- 2 Broken Clouds (6/10ths to 9/10ths of sky cloud covered).
- 3 Overcast (More than 9/10ths of sky cloud covered).
- 4 Foggy
- 5 Drizzle
- 6 Rain
- 7 Snow or Sleet
- 8 Showers (In sight or at station and reaching the ground).
- 9 Thunderstorms/Hail

E. TEMPERATURES

Temperature forecast for 1:00 PM the next day.

F. RELATIVE HUMIDITY

Relative Humidity forecast for 1:00 PM the next day.

G. LIGHTNING ACTIVITY

- 1. Period 1 (L1) is from 2 PM until midnight that night (a 10 hour period).
- 2. Period 2 (L2) is from midnight the night of the forecast until midnight the next night (24 hour period.)
- 3. A single digit (1 through 6) will be used.

The meaning of each number is as follows:

- 1 No thunderstorms
- 2 Few building cumulus with isolated thunderstorms

- 3 Much building cumulus with scattered thunderstorms, light to moderate rain reaches the ground.
- 4 Thunderstorms common but do not obscure the sky, moderate rain reaches the ground.
- 5 Thunderstorms common and occasionally obscure the sky, moderate to heavy rain reaches the ground.
- 6 Same as 3 above but dry, no rain

H. WIND DIRECTION AND SPEED

Wind forecast at 1 PM the next day. The wind speed is a 10 minute average at 20 feet above the ground measured to 16 compass points (e.g. WSW, NW, NNE, E, etc).

I. TEN HOUR TIME LAG FUEL MOISTURE

Since the fire weather meteorologist does not typically have access to fuel moisture information, an M will be entered for missing.

J. TEMPERATURE

The 24 hour maximum and minimum temperature forecast from 1:00 PM the day of the forecast until 1:00 PM the next day. This will typically be the maximum temperature of the current day and the overnight low expected in the next 12 to 16 hours.

The temperature in the maximum temperature column must be at least equal to or higher than the temperature given in part (6) above. If not, WIMS will not process a forecast for that station.

K. RELATIVE HUMIDITY

The 24 hour maximum and minimum Relative Humidity forecast from 1:00 PM the day of the forecast until 1:00 PM the next day.

The maximum RH value listed must equal or exceed the value given in part (7.) above. Similarly, the minimum RH value must equal or be less than the value in part (7) above.

Either error will cause WIMS to not process a forecast for that station.

L. PRECIPITATION DURATION

The number of hours for which precipitation is forecast. Period 1 is from 1:00 PM the day of the forecast until 5:00 AM the next day (16 hours). Period 2 runs from 5:00 AM the next day until 1:00 PM that same day (8 hours).

M. WET FLAG

Wet flag is used to indicate "fuels wet". All indices will be forced to zero if Y=yes is used. NOTE: in most cases a N=no will be used unless there is snow on the ground or the ground is extremely wet. If the duration of precipitation is 3 hours or greater between 500 am to 100 pm of the next day, the Wet Flag should be tripped to a Y value. Also if rain or snow is expected to be occurring at 1300, the Wet Flag should be tripped to a Y value.

3. Site-Specific Wildland Fire Forecasts/Prescribed Burn Forecasts (FWS)

SPOT forecasts are issued when requested by Interagency Wildland Fire Agencies for wildland fires or planned burn operations or by federal, state, or local officials or agencies responding to hazardous material releases. They are available 24 hours a day. They differ from routine fire weather forecasts by incorporating greater detail in timing, higher resolution of terrain influences, as well as other small-scale weather influences impacting the site. They should be requested within 18 hours of a prescribed burn. Beyond 18 hours, the Fire Weather Planning Forecast (FWF) should be utilized

NWS offices will not provide spot forecasts to private citizens or commercial entities not acting as an agent of a government agency.

a. Criteria

Federal or state agencies requesting prescribed burn or spot forecasts should provide as much information as possible about the location and nature of the site. This should include the following information about the prescribed burn or wildland fire site:

1. location
2. elevation
3. slope

4. aspect
5. **Whenever possible, it is requested that agencies provide maps of the prescribed burn area from the prescribed burn plan.** This information will aid the forecaster in providing a more specific forecast tailored to the local terrain.
6. **A current observation at the time a wildfire forecast is requested. For prescribed burn forecast, an observation or observations around 1300 from the previous afternoon is requested.**

b. Contents

All Spot or Prescribed burn forecasts will contain at least items 1 through 5

1. sky condition
2. weather
3. temperature
4. relative humidity
5. 20 foot wind and significant/sudden changes in wind speed or direction
6. mixing heights
7. transport winds shall be provided.

c. Procedure

1. Requests for Spot or Prescribed Burn forecasts will be made using the internet based NWSSPOT request form (instructions are below).
2. As a courtesy, land management agencies are requested to call the National Weather Service Office in Jackson, KY, to confirm receipt of the spot or prescribed burn forecast request.
3. Once the forecast is completed, it will be available on the NWSSPOT website.
4. If the NWSSPOT server is down, requests for a spot forecast should be called in or faxed to the forecast office. Faxed requests should be made using WS Form D-1 in Appendix D or available online at <http://nimbo.wrh.noaa.gov/pih/firewx/D1-V2005.pdf>. In this case, the Jackson Weather office will send the forecast by fax or may give it verbally over the phone

upon request (i.e., when only a few weather elements are necessary by the user).

5. The National Weather Service Headquarters has directed that NWS forecasts should not be forecasting eye-level winds. Forecasters don't know exact sheltering, vegetation or exposure at the forecast location and thus don't know what conversion factors to use. It is better to let land management agencies take the forecast 20-ft winds and do the conversion themselves to get a better value for eye level winds.

6. Instructions for requesting a forecast:

a. Spot or Prescribed Burn Forecasts can be requested at the following website:

<http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=jk1>

b. Fill in as much information as possible (items in red are required) an example of the web entry form is on the following page:

1. Project Name: (Name of fire or prescribed burn)
2. Select Wildfire or Prescribed Burn, etc. as appropriate
3. Input your agency
4. Requesting Official (Your Name)
5. Phone number
6. Select "Wildfire" or "Non Wildfire" as appropriate
7. Input your Lat and Lon
8. Input Elevation (highest and lowest if available)
9. Input Aspect (valley, ridgetop, North, South etc. as appropriate)
10. Hit "Submit Request" at the bottom of the page. Once your request is submitted, it will alarm on the computer system at the Jackson National Weather Service office and the National Weather Service will put together a weather

forecast specifically for the location of the wildfire or prescribed burn.

Jackson Fire Weather Spot Request - Microsoft Internet Explorer

Address: http://spot.nws.noaa.gov/cgi-bin/spot/spotform?site=jk

JACKSON SPOT FORECAST REQUEST

Required Elements in RED

<p>PROJECT NAME</p> <p>Project Name: <input type="text"/></p> <p> <input type="radio"/> Wildfire <input type="radio"/> WFU <input type="radio"/> HAZMAT <input checked="" type="radio"/> Prescribed Fire <input type="radio"/> SAR </p> <p>Ignition Time: <input type="text" value="1155"/> <input checked="" type="radio"/> Eastern Local Time</p> <p>Date: <input type="text" value="8/17/06"/></p>	<p>REQUESTING AGENCY</p> <p>Requesting Agency: <input type="text"/></p> <p>Requesting Official: <input type="text"/></p> <p>Phone Number: <input type="text"/> Ext. <input type="text"/></p> <p>FAX Number: <input type="text"/></p> <p>Contact Person: <input type="text"/></p>
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REASON FOR SPOT FORECAST REQUEST

Must choose either Wildfire or one of the Non-Wildfire reasons

<p><input type="radio"/> Wildfire</p>	<p>Non-Wildfire</p> <p><input type="radio"/> Under the Interagency Agreement for Meteorological Services (USFS, BLM, NPS, USFWS, EIA).</p> <p><input type="radio"/> State, tribal or local fire agency working in coordination with a federal participant in the Interagency Agreement for Meteorological Services.</p> <p><input type="radio"/> Essential to public safety, e.g. due to the proximity of population centers or critical infrastructure.</p>
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For NWS Spot forecast policy, see section 4.0 in NWS Instruction 10-401 at <http://www.nws.noaa.gov/directives/010/010.htm>

<p>LOCATION</p> <p>Lat: <input type="text"/> Elevation: <input type="text"/> <input type="text"/> <input type="text"/> (Top Bottom)</p> <p>Lon: <input type="text"/> Drainage: <input type="text"/></p> <p>7.5' Quad: <input type="text"/> Aspect: <input type="text"/></p> <p>Size: <input type="text"/> (Acres)</p>	<p>FUEL</p> <p>Type: <input type="text"/></p> <p>Sheltering</p> <p><input type="radio"/> Full</p> <p><input type="radio"/> Partial</p> <p><input type="radio"/> Unsheltered</p>
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OBSERVATIONS

Place	Elev	Time	Wind	Temp	Wetbulb	RH	Dewpt.	Sky/Weather
<input type="text"/>								
<input type="text"/>								

Done Internet

4. FIRE SEASON

The normal fire season will be broken into two separate periods. The spring fire season will run from **February 1 through May 15**. The fall fire season will begin on **October 1 and end on December 15**. These dates may be changed depending on the severity of the fire season and the needs of the users per coordination. Normally, the KICC/USDA Forest Service will notify the office of any extensions to the fire weather season(s) that they require.

5. RED FLAG FORECASTS

Specific conditions must be met for a Fire Weather Watch and/or a Red Flag Warning to be issued. These conditions are as follows:

- a. Ten hour fuel moisture values must be 8% or less. In addition to this fuel moisture criterion, both of the following must occur or have a high probability of occurring:
- b. Afternoon relative humidity levels are expected to fall to 25% or lower
- c. 20 foot sustained winds are expected to reach or exceed 15 mph.

If the forecast office issues a Fire Weather Watch or Red Flag Warning for a specific forest or national park, the fire weather forecaster will highlight the watch or warning in the narrative forecast by using a headline and will also call the KICC.

A "**Fire Weather Watch**" is used to alert the user to the possible development of a Red Flag event in the near future. This could be up to 72 hours in advance.

A "**Red Flag Warning**" will be issued to warn the user of an impending or ongoing Red Flag event. A Red Flag Warning will be issued immediately when Red Flag Conditions are occurring. Otherwise, it will be issued for impending Red Flag Conditions when there is a high degree of confidence that conditions will develop.

6. VERIFICATION OF RED FLAG FORECASTS

Verification of Red Flag Warnings and Fire Weather Watches will be conducted. The methodology is devised in accordance with The National

Weather Service Central Region Policy and in coordination with the KICC/USFS.

a. Methodology of CR Verification for Red Flag Warnings and Fire Weather Watches

The Red Flag Warning/Fire Weather Watch Verification program is divided into four parts:

1. Red Flag Warnings/events for dry thunderstorms.
2. Red Flag Warnings/events for synoptic-scale (i.e. strong winds and low humidity and dry fuels
3. The Total of both 1 and 2.
4. Fire Weather Watch Forecasts/events.

Verification of Red Flag Warnings and Fire Weather Watches will be “tracked” for each fire weather zone (or county). For example, if a Red Flag Warning is issued for an area comprised of five fire weather zones, it will count as five Red Flag Warnings – one for each zone (or county).

A Red Flag Warning issued at the request of a land management agency will NOT be considered for verification purposes. However, such warnings issued will be tallied separately and, for the purpose of workload indication, will be included in the number of total warnings issued by the office.

Data/information from surface observations (ASOS, RAWS, AWOS, etc.), supplementary and complementary weather sources, satellite and radar imagery, etc. may be used to verify (or to not verify) Red Flag Warnings and Fire Weather Watches. Experience, judgment, objectivity, consistency, and ethics will be used in verifying.

The Jackson Weather Forecast Office (WFO) will establish, with coordination of local users its locally-specific criteria and procedures to verify the red flag warnings/events. The local verification methodology will be included in the Annual Fire Weather Operations Plan.

After coordination with users, the Jackson Weather Office will define a “Red Flag Event” where all of the following occur for one hour (one observation) or more:

1. Ten hour fuel moisture of 8% or less.

2. Afternoon relative humidity levels of 25% or less.
3. 20 foot sustained winds are 15 mph or higher.

7. NOAA ALL HAZARDS RADIO

Kentucky has a statewide network of NOAA All Hazard Radio Transmitters. These 24-hour broadcasts provide continuous up-to-date weather information directly from the National Weather Service. Weather messages are typically repeated every three to six minutes with longer cycles possible during periods of active weather. The broadcast is routinely monitored and revised every few hours. The broadcasts are tailored to the weather needs of the people within the receiving area. These broadcasts can usually be heard as far as 40 miles or more from the antenna site depending on terrain, receiver quality, and other factors.

The quality of the reception of broadcasts may depend greatly upon the quality of the receiver. Receivers vary in cost from around \$20 to more than \$100. Specially designed receivers sound an alarm activated by the National Weather Service to warn of severe weather, or that an emergency exists. Specific Area Message Encoder (SAME) radios are available for around \$40 that will allow the user to program in which county or group of counties he wants to hear the alarm tone for.

Fire Weather Watches are not typically broadcast on NOAA Weather Radio. The Jackson office **will** broadcast Red Flag Warnings for counties in the Jackson, Morristown, and Charleston CWAs that fall in the Jackson NOAA All Hazards Radio broadcast reach.

A listing of NOAA All Hazards Radio transmitter locations serving Kentucky are included in the tables below.

NOAA Weather Radio Information for Kentucky

<u>COUNTY/CITY/AREA</u>	<u>SAME #</u>	<u>NWR TRANSMITTER</u>	<u>FREQ.</u>	<u>CALL SIGN</u>	<u>WATTS</u>	<u>REMARKS</u>
Adair	021001	Bowling Green	162.400	KIH45	1000	
Adair	021001	Horse Cave	162.500	WNG570	1000	
Adair	021001	Somerset	162.550	KIH44	1000	
Allen	021003	Bowling Green	162.400	KIH45	1000	
Anderson	021005	Lexington	162.400	KIH41	1000	
Ballard	021007	Mayfield	162.475	KIH46	1000	
Barren	021009	Bowling Green	162.400	KIH45	1000	
Barren	021009	Horse Cave	162.500	WNG570	1000	
Bath	021011	Lexington	162.400	KIH41	1000	
Bath	021011	Morehead	162.425	WWG71	500	
Bell	021013	Hazard	162.475	KIH40	1000	
Bell	021013	Pineville	162.525	WWG62	300	
Bell	021013	Stanton	162.550	WWG61	300	
Boone	021015	Covington	162.550	KIH42	1000	

Boone	021015	Owenton	162.450	KZZ48	300	
Bourbon	021017	Lexington	162.400	KIH41	1000	
Boyd	021019	Ashland	162.550	KIH39	1000	
Boyle	021021	Horse Cave	162.500	WNG570	1000	
Boyle	021021	Lexington	162.400	KIH41	1000	
Bracken	021023	Covington	162.550	KIH42	1000	
Bracken	021023	Maysville	162.425	KZZ49	300	
Breathitt	021025	Hazard	162.475	KIH40	1000	
Breathitt	021025	Jackson	162.425	WWG26	300	
Breckinridge	021027	New Albany, IN	162.475	KIH43	1000	
Bullitt	021029	New Albany, IN	162.475	KIH43	1000	
Butler	021031	Bowling Green	162.400	KIH45	1000	
Caldwell	021033	Madisonville	162.525	WXJ91	1000	
Calloway	021035	Mayfield	162.475	KIH46	1000	
Campbell	021037	Covington	162.550	KIH42	1000	
Carlisle	021039	Mayfield	162.475	KIH46	1000	
Carroll	021041	Owenton	162.450	KZZ48	300	
Carter	021043	Ashland	162.550	KIH39	1000	Central/E
Casey	021045	Horse Cave	162.500	WNG570	1000	
Casey	021045	Somerset	162.550	KIH44	1000	
Christian	021047	Clarksville, TN	162.500	WWH37	300	
Christian	021047	Hopkinsville	162.450	KXI26	300	
Christian	021047	Madisonville	162.525	WXJ91	1000	
Clark	021049	Lexington	162.400	KIH41	1000	
Clay	021051	Hazard	162.475	KIH40	1000	
Clay	021051	Manchester	162.400	WWG66	300	
Clinton	021053	Bowling Green	162.400	KIH45	1000	
Clinton	021053	Somerset	162.550	KIH44	1000	
Crittenden	021055	Madisonville	162.525	WXJ91	1000	
Crittenden	021055	Mayfield	162.475	KIH46	1000	
Cumberland	021057	Bowling Green	162.400	KIH45	1000	
Cumberland	021057	Burkesville	162.475	KZZ62	300	
Cumberland	021057	Somerset	162.550	KIH44	1000	
Daviess	021059	Madisonville	162.525	WXJ91	1000	
Daviess	021059	Whitesville	162.475	KZZ61	300	
Edmonson	021061	Bowling Green	162.400	KIH45	1000	
Edmonson	021061	Horse Cave	162.500	WNG570	1000	
Elliott	021063	Ashland	162.550	KIH39	1000	Central/E
Elliott	021063	Morehead	162.425	WWG71	500	
Elliott	021063	West Liberty	162.450	WWG79	300	
Estill	021065	Irvine	162.475	WNG727	300	
Estill	021065	Lexington	162.400	KIH41	1000	
Fayette	021067	Lexington	162.400	KIH41	1000	
Fleming	021069	Lexington	162.400	KIH41	1000	
Fleming	021069	Morehead	162.425	WWG71	500	
Floyd	021071	Hazard	162.475	KIH40	1000	
Floyd	021071	Paintsville	162.525	WWG28	100	
Floyd	021071	Pikeville	162.400	WWG69		
Franklin	021073	Lexington	162.400	KIH41	1000	
Franklin	021073	Owenton	162.450	KZZ48	300	
Fulton	021075	Mayfield	162.475	KIH46	1000	
Gallatin	021077	Covington	162.550	KIH42	1000	
Gallatin	021077	Owenton	162.450	KZZ48	300	
Garrard	021079	Lexington	162.400	KIH41	1000	

Grant	021081	Covington	162.550	KIH42	1000	
Grant	021081	Owenton	162.450	KZZ48	300	
Graves	021083	Mayfield	162.475	KIH46	1000	
Grayson	021085	Bowling Green	162.400	KIH45	1000	
Grayson	021085	Horse Cave	162.500	WNG570	1000	
Green	021087	Bowling Green	162.400	KIH45	1000	
Green	021087	Horse Cave	162.500	WNG570	1000	
Green	021087	Somerset	162.550	KIH44	1000	
Greenup	021089	Ashland	162.550	KIH39	1000	
Hancock	021091	Whitesville	162.475	KZZ61	300	
Hardin	021093	Elizabethtown	162.550	KIH43A	300	
Hardin	021093	New Albany, IN	162.475	KIH43	1000	
Harlan	021095	Harlan	162.450	WWG68	300	
Harlan	021095	Hazard	162.475	KIH40	1000	
Harrison	021097	Lexington	162.400	KIH41	1000	
Harrison	021097	Owenton	162.450	KZZ48	300	
Hart	021099	Bowling Green	162.400	KIH45	1000	
Hart	021099	Horse Cave	162.500	WNG570	1000	
Hart	021099	Somerset	162.550	KIH44	1000	
Henderson	021101	Evansville, IN	162.550	KIG76	1000	
Henderson	021101	Madisonville	162.525	WXJ91	1000	
Henry	021103	New Albany, IN	162.475	KIH43	1000	
Henry	021103	Owenton	162.450	KZZ48	300	
Hickman	021105	Mayfield	162.475	KIH46	1000	
Hopkins	021107	Madisonville	162.525	WXJ91	1000	
Jackson	021109	Hazard	162.475	KIH40	1000	
Jackson	021109	McKee	162.450	WWG64	300	
Jefferson	021111	New Albany, IN	162.475	KIH43	1000	
Jessamine	021113	Lexington	162.400	KIH41	1000	
Johnson	021115	Ashland	162.550	KIH39	1000	N
Johnson	021115	Paintsville	162.525	WWG28	100	
Johnson	021115	Pikeville	162.400	WWG69		
Kenton	021117	Covington	162.550	KIH42	1000	
Knott	021119	Hazard	162.475	KIH40	1000	
Knox	021121	Hazard	162.475	KIH40	1000	
Knox	021121	Somerset	162.550	KIH44	1000	
Larue	021123	Bowling Green	162.400	KIH45	1000	
Larue	021123	Horse Cave	162.500	WNG570	1000	
Larue	021123	New Albany, IN	162.475	KIH43	1000	
Laurel	021125	London	162.475	WWG65	300	
Laurel	021125	Somerset	162.550	KIH44	1000	
Lawrence	021127	Ashland	162.550	KIH39	1000	
Lee	021129	Beattyville	162.500	WWG67	300	
Lee	021129	Hazard	162.475	KIH40	1000	
Leslie	021131	Hazard	162.475	KIH40	1000	
Letcher	021133	Hazard	162.475	KIH40	1000	
Lewis	021135	Ashland	162.550	KIH39	1000	NE
Lewis	021135	Maysville	162.425	KZZ49	300	
Lewis	021135	Otway, OH	162.525	WXM69	1000	
Lincoln	021137	Somerset	162.550	KIH44	1000	
Livingston	021139	Mayfield	162.475	KIH46	1000	
Logan	021141	Bowling Green	162.400	KIH45	1000	
Lyon	021143	Madisonville	162.525	WXJ91	1000	
Lyon	021143	Mayfield	162.475	KIH46	1000	

Madison	021151	East Madison County	162.525	WWF82A	100	
Madison	021151	Lexington	162.400	KIH41	1000	
Madison	021151	Madison County	162.525	WWF82C	100	
Madison	021151	West Madison County	162.525	WWF82B	100	
Magoffin	021153	Hazard	162.475	KIH40	1000	
Magoffin	021153	Paintsville	162.525	WWG28	100	
Magoffin	021153	Pikeville	162.400	WWG69		
Marion	021155	Somerset	162.550	KIH44	1000	
Marshall	021157	Mayfield	162.475	KIH46	1000	
Martin	021159	Ashland	162.550	KIH39	1000	N
Martin	021159	Paintsville	162.525	WWG28	100	
Martin	021159	Pikeville	162.400	WWG69		
Mason	021161	Maysville	162.425	KZZ49	300	
Mason	021161	Otway, OH	162.525	WXM69	1000	
McCracken	021145	Mayfield	162.475	KIH46	1000	
McCreary	021147	Somerset	162.550	KIH44	1000	
McLean	021149	Madisonville	162.525	WXJ91	1000	
Meade	021163	Ekron	162.450	KZZ64	300	
Meade	021163	New Albany, IN	162.475	KIH43	1000	
Menifee	021165	Frenchburg	162.475	WWG63	300	
Menifee	021165	Lexington	162.400	KIH41	1000	
Mercer	021167	Lexington	162.400	KIH41	1000	
Metcalfe	021169	Bowling Green	162.400	KIH45	1000	
Metcalfe	021169	Horse Cave	162.500	WNG570	1000	
Metcalfe	021169	Somerset	162.550	KIH44	1000	
Monroe	021171	Bowling Green	162.400	KIH45	1000	
Monroe	021171	Somerset	162.550	KIH44	1000	
Montgomery	021173	Lexington	162.400	KIH41	1000	
Morgan	021175	Hazard	162.475	KIH40	1000	
Morgan	021175	West Liberty	162.450	WWG79	300	
Muhlenberg	021177	Bowling Green	162.400	KIH45	1000	
Muhlenberg	021177	Madisonville	162.525	WXJ91	1000	
Nelson	021179	New Albany, IN	162.475	KIH43	1000	
Nicholas	021181	Lexington	162.400	KIH41	1000	
Ohio	021183	Bowling Green	162.400	KIH45	1000	
Ohio	021183	Whitesville	162.475	KZZ61	300	
Oldham	021185	New Albany, IN	162.475	KIH43	1000	
Owen	021187	Covington	162.550	KIH42	1000	
Owen	021187	Owenton	162.450	KZZ48	300	
Owsley	021189	Hazard	162.475	KIH40	1000	
Pendleton	021191	Covington	162.550	KIH42	1000	
Pendleton	021191	Owenton	162.450	KZZ48	300	
Perry	021193	Hazard	162.475	KIH40	1000	
Pike	021195	Hazard	162.475	KIH40	1000	
Pike	021195	Paintsville	162.525	WWG28	100	
Pike	021195	Phelps	162.500	WWG81	300	
Pike	021195	Pikeville	162.400	WWG69		
Powell	021197	Lexington	162.400	KIH41	1000	
Powell	021197	Stanton	162.550	WWG61	300	
Pulaski	021199	Somerset	162.550	KIH44	1000	
Robertson	021201	Lexington	162.400	KIH41	1000	
Robertson	021201	Maysville	162.425	KZZ49	300	
Rockcastle	021203	Mount Vernon	162.425	WWG70	300	
Rockcastle	021203	Somerset	162.550	KIH44	1000	

Rowan	021205	Lexington	162.400	KIH41	1000
Rowan	021205	Morehead	162.425	WWG71	500
Russell	021207	Bowling Green	162.400	KIH45	1000
Russell	021207	Somerset	162.550	KIH44	1000
Scott	021209	Lexington	162.400	KIH41	1000
Scott	021209	Owenton	162.450	KZZ48	300
Shelby	021211	New Albany, IN	162.475	KIH43	1000
Shelby	021211	Owenton	162.450	KZZ48	300
Simpson	021213	Bowling Green	162.400	KIH45	1000
Spencer	021215	New Albany, IN	162.475	KIH43	1000
Taylor	021217	Campbellsville	162.525	KZZ63	300
Taylor	021217	Somerset	162.550	KIH44	1000
Todd	021219	Bowling Green	162.400	KIH45	1000
Todd	021219	Clarksville, TN	162.500	WWH37	300
Todd	021219	Hopkinsville	162.450	KXI26	300
Todd	021219	Madisonville	162.525	WXJ91	1000
Trigg	021221	Hopkinsville	162.450	KXI26	300
Trigg	021221	Madisonville	162.525	WXJ91	1000
Trigg	021221	Mayfield	162.475	KIH46	1000
Trimble	021223	New Albany, IN	162.475	KIH43	1000
Union	021225	Evansville, IN	162.550	KIG76	1000
Union	021225	Madisonville	162.525	WXJ91	1000
Warren	021227	Bowling Green	162.400	KIH45	1000
Washington	021229	New Albany, IN	162.475	KIH43	1000
Washington	021229	Somerset	162.550	KIH44	1000
Wayne	021231	Monticello	162.425	WWG80	300
Wayne	021231	Somerset	162.550	KIH44	1000
Webster	021233	Madisonville	162.525	WXJ91	1000
Whitley	021235	Somerset	162.550	KIH44	1000
Whitley	021235	Williamsburg	162.500	WWG78	300
Wolfe	021237	Hazard	162.475	KIH40	1000
Woodford	021239	Lexington	162.400	KIH41	1000

8. Participation in Interagency Groups

The National Weather Service encourages the formation of and participation in Interagency Groups and Interagency Partnerships. Such groups foster technology transfer and serve in public educational efforts. Please contact the Fire Weather Program Leader about ideas for such partnerships and when interagency groups are formed.

B. Special Services

1. Incident Meteorologists (IMETs)

The AMRS units, composed of the Atmospheric Theodolite Meteorological Unit (ATMU) and Fire RAWs (Fire Remote Automated Weather Station) are the main pieces of equipment used by IMETS on deployment and like IMETs are considered national fire fighting resources.

These units are intended for use by a trained Incident Meteorologist (IMET). All costs incurred by the National Weather Service to have an IMET at a fire (overtime, travel, per diem, tolls, vehicle rental, motels, etc.) will be billed to the requesting agency. This cost generally runs from \$300 to \$400 a day. If Satellite Communications are used by the IMET a daily charge (\$236.42 for FY 2006) will be billed also. These units can be used anywhere in the United States. The ATMU provides the equipment and supplies for field meteorological operations. The success of these operations depends on the user agency providing a relatively clean and dry working environment as well as a normal and reliable supply of electrical power.

Most of these units are stored in the western United States. However, two units are stored in London, Kentucky at the US Forest Service's Southern Area (Region 8) CACHE site.

Federal agencies desiring the use of the ATMU should request it through their normal local or regional dispatch channels. If the request reaches the regional headquarters level it will then normally relay the request back to NIFC in Boise, ID.

State agencies that have a need for the ATMU will request it through the federal agency in their state. If a state asks for the ATMU, all National Weather Service costs will be charged to the Forest Service, who will then charge the state agency.

The IMET will receive his normal pay based on his fixed schedule at the home office; including Sunday, night, and holiday differentials; from the NWS. The requesting agency will be billed for any overtime incurred and for any hazard differentials due the IMET while dispatched to an incident.

a. REQUEST AND DISPATCH OF AN INCIDENT METEOROLOGIST (IMET)

National Weather Service Instruction 10-402 (NWSI 10-402) outlines the procedures and policies of Mobile Unit Services. The following provides a summary of section 2 of this Instruction relating to the procedure that land management agencies should follow when requesting an IMET.

Request and dispatch of IMETs and the equipment they use to provide their services (ATMUs and FireRaws) should be accomplished through the National

Resource Coordination System.

b. National Resource Coordination System

The major elements of the **National Resource Coordination System** as related to support of land management consists of:

1. Incidents: Orders for NWS assets are generated at the incident and forwarded to the local dispatch center.
2. Dispatch Centers: Dispatch centers are responsible for providing logistical support to initial attack and project fires at the unit level. A dispatch center requests support from a Geographic Area Coordination Center (GACC) when resources on a unit are unavailable or are exhausted.
3. Expanded Dispatch: During periods of increased fire activity, an expanded dispatch center may be established to provide enhanced support to large or complex incidents.
4. Geographic Area Coordination Centers: GACCs act as focal points for internal and external requests not filled at the local dispatch centers. If the resource is not available within their geographic area, the resource request is forwarded to the National Interagency Coordination Center (NICC) at Boise, ID.
5. National Interagency Coordination Center: NICC is responsible for coordination movement of all resources between GACCs. NICC is located on the campus of the National Interagency Fire Center (NIFC).

c. Procedure for requests for IMETS from Land Management Agencies

Resource orders for an IMET in support of a wildland fire incident will follow a similar path as the one presented above. The only difference is that the GACC will not try to fill the order if the IMET cannot be found at the dispatch (WFO) level. The GACC will forward the order immediately to the NICC

and the Staff Meteorologist to NIFC (SMN). The process is as follows:

1. An incident will request an IMET from the WFO with fire weather service responsibility for the area. The request will be handled by a dispatch or expanded dispatch center. (If an IMET is not assigned to the local WFO, the dispatch center will send the order directly to the GACC and part 3 below is followed).
2. Meteorologists In Charge (MICs) are responsible for responding to all user agency requests for IMETs to support wildland fires within his/her area of responsibility. Hence, the MIC will either promptly dispatch his/her IMET or notify the dispatch center that he/she is unable to fill the order.
3. In the case where the MIC is unable to dispatch an assigned IMET, the dispatch center will forward the request to the GACC. The GACC will notify the SMN who will try to locate an available IMET within the GACC's area of responsibility. If an IMET is located, the GACC will then initiate the order for the IMET. If no IMET can be located, the order will be sent by the GACC to the NICC. The NICC will contact the SMN to find an available IMET outside of the GACC's area.

Note: If the NICC is at National Preparedness Level 5, then all orders will go straight to NICC and the SMN.

Note: Requests for IMET/ATMU support for non-wildland fire events (e.g., insect eradication or seeding projects, etc.) are left to the discretion of the local MIC. The SMN can be contacted if assistance is needed in filling these requests from outside the fire weather service area.

d. Procedure for requests for IMETS from Non-Land Management Agencies

Since IMETs, ATMUs, and FireRaws are all national resources, requests from non-land management personnel (such as emergency managers in a HAZMAT incident) should be handled in a manner similar to the procedure described above. In the case of an emergency manager, the dispatch

center may be a city, county, or state center. Requests may be received at the closest WFO. Since only a portion of the WFOs have IMETs, the WFO should coordinate with their these type of requests. If the closest WFO cannot fill the request, the MIC will contact the responsible Region and the SMN should be notified of the dispatch as soon as possible.

2. FIRE WEATHER STATION VISITS

A fire weather forecaster may be requested to accompany an official on a fire weather station visitation. A letter or email message requesting the meteorologist should be mailed or emailed to WFO about 2-3 weeks in advance of the planned trip. The letter does not need to be specific about dates, this can be arranged over the phone. If the trip involves an overnight stay, the letter should state that the requesting agency will pay travel expenses. A one day trip will not incur any costs to the requesting agency.

Supplies, equipment, and maintenance of the fire weather station are the responsibility of the land management agency.

C. TRAINING

When the land management agency wishes for a fire weather forecaster to attend a course or be an instructor for a course, the same procedure for requesting a forecaster to a station visitation should be followed, except that specific dates should be given in the letter. The letter or email request will be forwarded to NWS Central Region Headquarters so that a reimbursable task code can be assigned for the trip.

IV. Wildland Fire Agency Responsibilities

Further Information and details can be found in Section 5.0 B of the Interagency Agreement for Meteorological Services.

Responsibilities consist of Operational support and predictive services.

- A. Program Management**
- B. Monitoring, feedback and improvement**
- C. Technology Transfer**
- D. Agency Computer Systems**
- E. Fire Weather Observations**
- F. On-site support**
- G. Training**

V. Joint Responsibilities

Service boundaries, fire weather zones, fire weather forecast areas and groupings may be negotiated to meet customer and forecaster need. Further information can be found in Section 6.0 of the Interagency Agreement for Meteorological Services.

VI. BACKUP PROCEDURES (for users)

From time to time NWS offices need to go into backup mode. This is usually during a period of software or hardware upgrading or perhaps a power or communications failure. If forecasters are unable to be reached, our primary backup office is Wilmington, OH (ILN). The secondary backup office is Charleston, WV (RLX). Phone numbers and additional information on these offices are located near the front of this AOP.

VII. Signature Page

Signature Page

This Operating Plan becomes effective when all parties have signed the approval letters and will be effective until superseded by the 2007 Operating Plan.

An approval letter will be sent to the agency listed below. Copies of these letters will be kept on file at the National Weather Service Forecast Office (Jackson).

National Weather Service		
Office	Approving Authority	Date Signed
NWS Jackson, KY	MIC	
Central Region Headquarters Kansas City, MO	Regional Operations Services Meteorologist	

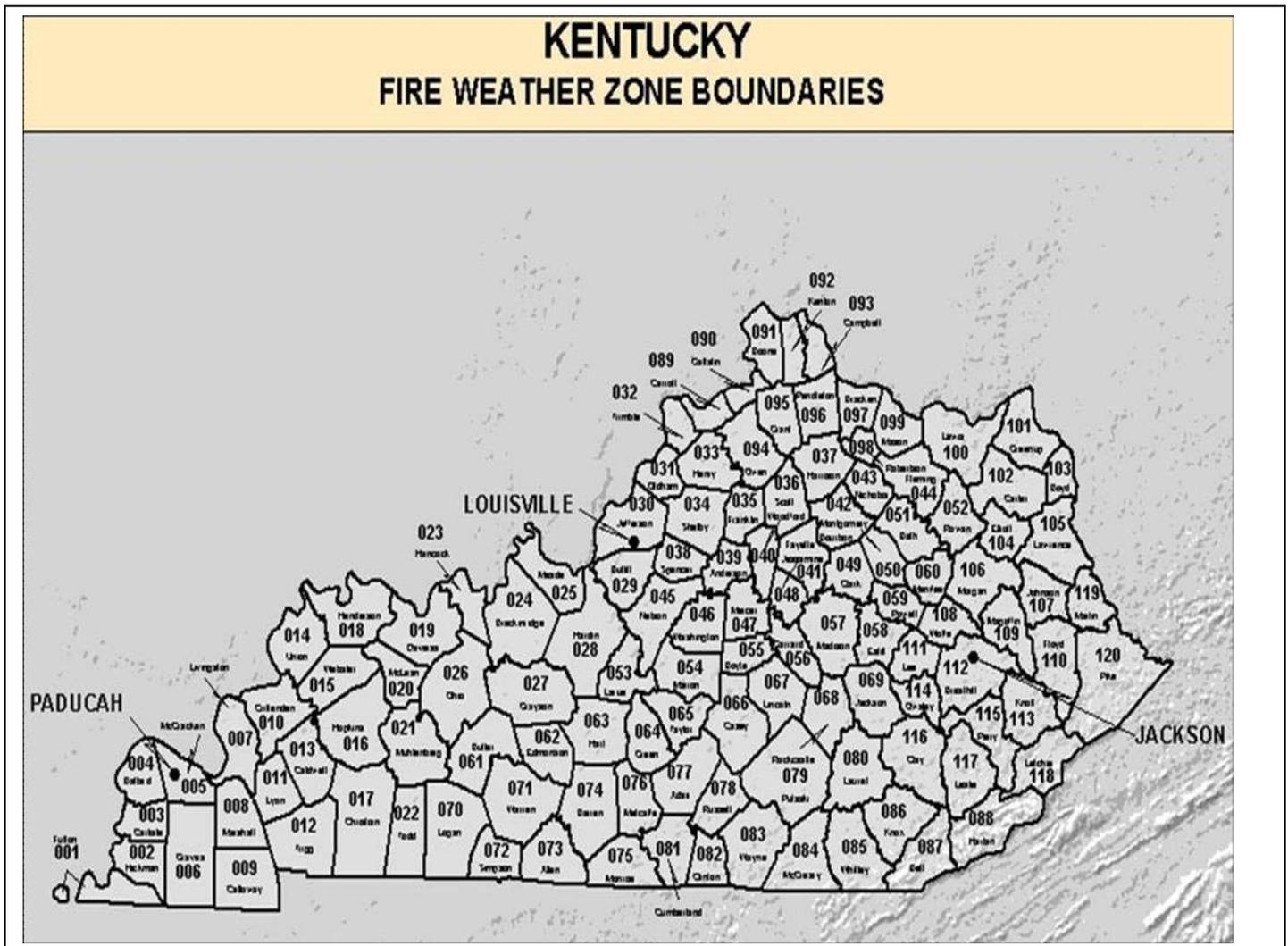
User Agencies: The Kentucky Coordination Center represents federal and state users such as the Department of Agriculture (USFS), National Park Service and Kentucky Division of Forestry.

Office	Approving Authority	Date Signed
KICC Winchester, KY	KICC Center Manager or designee	

VIII. Appendices

A. Appendix 1

Kentucky Fire Weather Zones



B. Appendix 2-Example of an FWF

FNUS53 KJKL 171112
FWFJKL

FIRE WEATHER PLANNING FORECAST FOR EASTERN KENTUCKY
NATIONAL WEATHER SERVICE JACKSON KY
711 AM EDT THU AUG 17 2006

.DISCUSSION...HIGH PRESSURE WILL BRING FAIR WEATHER AND LIGHT WINDS
TODAY AND TONIGHT. WITH THE SURFACE HIGH TO OUR EAST...THE CLOCKWISE
WIND FLOW AROUND IT WILL BRING HIGHER HUMIDITY NORTH INTO THE AREA.
THIS WILL ESPECIALLY BE THE CASE ON FRIDAY AND SATURDAY...WITH THE
RETURN OF SULTRY AIR POSSIBLY FUELING SOME SHOWERS OR THUNDERSTORMS.

KYZ044-050>052-058>060-068-069-079-080-083>087-104-106-108-109-111-
112-114>117-181415-
FLEMING-MONTGOMERY-BATH-ROWAN-ESTILL-POWELL-MENIFEE-ROCKCASTLE-
JACKSON-PULASKI-LAUREL-WAYNE-MCCREARY-WHITLEY-KNOX-BELL-ELLIOTT-
MORGAN-WOLFE-MAGOFFIN-LEE-BREATHITT-OWSLEY-PERRY-CLAY-LESLIE-
INCLUDING THE CITIES OF...FLEMINGSBURG...MOUNT STERLING...
OWINGSVILLE...MOREHEAD...IRVINE...STANTON...FRENCHBURG...
MOUNT VERNON...MCKEE...SOMERSET...LONDON...MONTICELLO...
WHITLEY CITY...CORBIN...WILLIAMSBURG...BARBOURVILLE...MIDDLESBORO...
PINEVILLE...SANDY HOOK...WEST LIBERTY...CAMPTON...SALYERSVILLE...
BEATTYVILLE...JACKSON...BOONEVILLE...HAZARD...MANCHESTER...HYDEN
711 AM EDT THU AUG 17 2006

.TODAY...
SKY/WEATHER.....MOSTLY SUNNY. PATCHY DENSE FOG IN THE MORNING.
MAX TEMPERATURE.....AROUND 90.
24 HR TREND.....2 DEGREES WARMER.
MIN HUMIDITY.....39-47 PERCENT.
24 HR TREND.....7 PERCENT WETTER.
WIND (20 FT).....SOUTHEAST WINDS AROUND 5 MPH.
LAL.....1.
HAINES INDEX.....4 OR LOW POTENTIAL FOR LARGE PLUME DOMINATED
FIRE GROWTH.
MIXING HEIGHT.....4800 FT AGL.
TRANSPORT WIND.....SOUTHEAST AROUND 5 MPH.
DISPERSION INDEX.....23.
VENT RATE.....POOR (23100 KNOT-FT).
PROB OF PRECIP.....0 PERCENT.
QPF (INCHES).....NONE.

.TONIGHT...
SKY/WEATHER.....MOSTLY CLEAR. PATCHY DENSE FOG AFTER MIDNIGHT.
MIN TEMPERATURE.....62 TO 67 IN VALLEYS...AND AROUND 70 ON RIDGES.
24 HR TREND.....5 DEGREES WARMER.
MAX HUMIDITY.....70 PERCENT RIDGES TO 100 PERCENT VALLEYS.
24 HR TREND.....UNCHANGED.
WIND (20 FT).....VARIABLE LESS THAN 5 MPH.
LAL.....1.

HAINES INDEX.....3 OR VERY LOW POTENTIAL FOR LARGE PLUME
DOMINATED FIRE GROWTH.
PROB OF PRECIP.....10 PERCENT.
QPF (INCHES).....NONE.

.FRIDAY...

SKY/WEATHER.....BECOMING PARTLY CLOUDY. PATCHY DENSE FOG IN
THE MORNING. CHANCE OF THUNDERSTORMS IN THE
AFTERNOON.
MAX TEMPERATURE....84 TO 89.
24 HR TREND.....2 DEGREES COOLER.
MIN HUMIDITY.....50-60 PERCENT.
24 HR TREND.....12 PERCENT WETTER.
WIND (20 FT).....SOUTH WINDS AROUND 5 MPH.
LAL.....3.
HAINES INDEX.....2 OR VERY LOW POTENTIAL FOR LARGE PLUME
DOMINATED FIRE GROWTH.
MIXING HEIGHT.....5100 FT AGL.
TRANSPORT WIND.....SOUTHWEST AROUND 5 MPH.
DISPERSION INDEX.....22.
VENT RATE.....POOR (22400 KNOT-FT).
PROB OF PRECIP.....30 PERCENT.
QPF (INCHES).....LOCALIZED AROUND 0.25 INCHES.

\$\$

KYZ088-107-110-113-118>120-181415-
HARLAN-JOHNSON-FLOYD-KNOTT-LETCHER-MARTIN-PIKE-
INCLUDING THE CITIES OF...HARLAN...PAINTSVILLE...PRESTONSBURG...
HINDMAN...WHITESBURG...INEZ...PIKEVILLE
711 AM EDT THU AUG 17 2006

.TODAY...

SKY/WEATHER.....MOSTLY SUNNY. PATCHY DENSE FOG IN THE MORNING.
MAX TEMPERATURE....85 TO 90.
24 HR TREND.....4 DEGREES WARMER.
MIN HUMIDITY.....39-46 PERCENT.
24 HR TREND.....2 PERCENT WETTER.
WIND (20 FT).....SOUTHEAST WINDS AROUND 5 MPH.
LAL.....1.
HAINES INDEX.....4 OR LOW POTENTIAL FOR LARGE PLUME DOMINATED
FIRE GROWTH.
MIXING HEIGHT.....4800 FT AGL.
TRANSPORT WIND.....SOUTHEAST AROUND 5 MPH.
DISPERSION INDEX.....21.
VENT RATE.....POOR (21500 KNOT-FT).
PROB OF PRECIP.....0 PERCENT.
QPF (INCHES).....NONE.

.TONIGHT...

SKY/WEATHER.....MOSTLY CLEAR. PATCHY DENSE FOG AFTER MIDNIGHT.
MIN TEMPERATURE....LOWER 60S IN VALLEYS...TO UPPER 60S ON RIDGES.
24 HR TREND.....4 DEGREES WARMER.
MAX HUMIDITY.....79 PERCENT RIDGES TO 100 PERCENT VALLEYS.

24 HR TREND.....15 PERCENT DRIER.
WIND (20 FT).....SOUTHEAST WINDS AROUND 5 MPH.
LAL.....1.
HAINES INDEX.....4 OR LOW POTENTIAL FOR LARGE PLUME DOMINATED
FIRE GROWTH.
PROB OF PRECIP.....0 PERCENT.
QPF (INCHES).....NONE.

.FRIDAY...

SKY/WEATHER.....BECOMING PARTLY CLOUDY. PATCHY DENSE FOG IN
THE MORNING. SLIGHT CHANCE OF THUNDERSTORMS
IN THE AFTERNOON.

MAX TEMPERATURE...84 TO 89.

24 HR TREND.....UNCHANGED.

MIN HUMIDITY.....43-51 PERCENT.

24 HR TREND.....5 PERCENT WETTER.

WIND (20 FT).....SOUTH WINDS AROUND 5 MPH.

LAL.....2.

HAINES INDEX.....2 OR VERY LOW POTENTIAL FOR LARGE PLUME
DOMINATED FIRE GROWTH.

MIXING HEIGHT.....5100 FT AGL.

TRANSPORT WIND.....SOUTH AROUND 5 MPH.

DISPERSION INDEX.....16.

VENT RATE.....POOR (16300 KNOT-FT).

PROB OF PRECIP.....20 PERCENT.

QPF (INCHES).....LOCALIZED AROUND 0.25 INCHES.

\$\$

.FORECAST DAYS 3 THROUGH 7...

.SATURDAY...PARTLY CLOUDY WITH A CHANCE OF THUNDERSTORMS. PATCHY
DENSE FOG. LOWS IN THE UPPER 60S. HIGHS IN THE MID 80S. SOUTH WINDS
AROUND 5 MPH.

.SUNDAY...MOSTLY CLOUDY WITH A CHANCE OF THUNDERSTORMS. LOWS IN THE
UPPER 60S. HIGHS IN THE MID 80S. WEST WINDS AROUND 5 MPH.

.MONDAY...PARTLY CLOUDY. LOWS IN THE UPPER 60S. HIGHS IN THE MID
80S. LIGHT WINDS.

.TUESDAY...PARTLY CLOUDY WITH A SLIGHT CHANCE OF THUNDERSTORMS. LOWS
IN THE MID 60S. HIGHS IN THE MID 80S.

.WEDNESDAY...PARTLY CLOUDY WITH A SLIGHT CHANCE OF THUNDERSTORMS.
LOWS IN THE MID 60S. HIGHS IN THE MID 80S.

\$\$

C. Appendix 3-Example of an FWM

FNUS83 KJKL 131900

FWMJKL

FCST,154401,010214,13,6,58,78,1,1,SW,10,M,58,48,93,83,5,6,N

FCST,157002,010214,13,6,61,67,1,1,SW,12,M,61,47,99,72,8,5,N

FCST,157201,010214,13,6,58,78,1,1,SW,13,M,58,49,93,88,6,6,N

FCST,159801,010214,13,6,59,75,1,1,SW,09,M,59,47,99,72,7,5,N

FCST,152001,010214,13,6,57,80,1,1,SW,12,M,57,48,93,67,5,6,N

FCST,154801,010214,13,6,58,78,1,1,SW,10,M,58,47,99,71,5,6,N

FCST,156001,010214,13,6,58,78,1,1,SW,10,M,58,48,97,77,6,6,N

D. Appendix 4-Example of an RFW

WWUS83 KJKL 092040
RFWJKL

RED FLAG WARNING
NATIONAL WEATHER SERVICE JACKSON KY
340 PM EST THU MAR 9 2006

...RED FLAG WARNING REMAINS IN EFFECT UNTIL 8 PM EST THIS EVENING
FOR STRONG WINDS AND LOW RELATIVE HUMIDITIES ACROSS PORTIONS OF EASTERN
KENTUCKY...

..SUSTAINED SOUTHERLY WINDS OF 20 TO 30 MPH...WITH HIGHER GUSTS WILL
CONTINUE ACROSS PORTIONS OF EAST KENTUCKY THROUGH THE EARLY EVENING
HOURS. DRIER AIR FROM ALOFT WILL CONTINUE TO MIX DOWN TO THE
SURFACE...RESULTING IN RELATIVE HUMIDITIES BELOW 25 PERCENT ACROSS THE
AREA...CREATING HAZARDOUS FIRE WEATHER CONDITIONS THROUGH THIS
EVENING. BY 8 PM...THE ATMOSPHERE WILL MOISTEN UP...ALLOWING RELATIVE
HUMIDITIES TO RECOVER TO ABOVE 25 PERCENT.

KYZ086-087-107-109-112-116-100100-
/O.EXA.KJKL.FW.W.0002.000000T0000Z-060310T0100Z/
KNOX-BELL-JOHNSON-MAGOFFIN-BREATHITT-CLAY-
340 PM EST THU MAR 9 2006

...RED FLAG WARNING IN EFFECT UNTIL 8 PM EST THIS EVENING...

THE NATIONAL WEATHER SERVICE IN JACKSON HAS ISSUED A RED FLAG
WARNING FOR STRONG WINDS AND LOW RELATIVE HUMIDITIES...WHICH IS
IN EFFECT UNTIL 8 PM EST THIS EVENING.

A RED FLAG WARNING MEANS THAT CRITICAL FIRE WEATHER CONDITIONS
ARE EITHER OCCURRING NOW...OR WILL SHORTLY. A COMBINATION OF
STRONG WINDS...LOW RELATIVE HUMIDITY...AND WARM TEMPERATURES WILL
CREATE EXPLOSIVE FIRE GROWTH POTENTIAL.

\$\$

KYZ088-110-113-115-117>120-100100-
/O.CON.KJKL.FW.W.0002.000000T0000Z-060310T0100Z/
HARLAN-FLOYD-KNOTT-PERRY-LESLIE-LETCHER-MARTIN-PIKE-
340 PM EST THU MAR 9 2006

...RED FLAG WARNING REMAINS IN EFFECT UNTIL 8 PM EST THIS
EVENING...

A RED FLAG WARNING REMAINS IN EFFECT FOR STRONG WINDS AND LOW
RELATIVE HUMIDITIES UNTIL 8 PM EST THIS EVENING.

A RED FLAG WARNING MEANS THAT CRITICAL FIRE WEATHER CONDITIONS
ARE EITHER OCCURRING NOW...OR WILL SHORTLY. A COMBINATION OF
STRONG WINDS...LOW RELATIVE HUMIDITY...AND WARM TEMPERATURES WILL

CREATE EXPLOSIVE FIRE GROWTH POTENTIAL.

\$\$

MAX TEMPERATURE.....87-89.
MIN HUMIDITY.....25-27 PERCENT.
WIND (20 FT).....UPSLOPE 3-5 MPH...NORTHEAST 4-6 MPH ON RIDGETOP.
SURROUNDING RIDGE...NORTHEAST 4-6 MPH.
RIDGETOP WIND.....NORTHEAST 4-6 MPH.
POP.....0 PERCENT.
LAL.....1.
HAINES INDEX.....5 OR MODERATE POTENTIAL FOR LARGE PLUME
DOMINATED FIRE GROWTH.
MIXING HEIGHT.....4600-5000 FT AGL.
TRANSPORT WINDS.....EAST 8-11 MPH.
DISPERSION INDEX....48.

\$\$
FORECASTER...PELTON
REQUESTED BY...ROBIN ACCIARDO
TYPE OF REQUEST...WILDFIRE
.TAG 20070817.BECKE.01/JKL

F. Appendix 6-Memorandum of Agreement

**INTERAGENCY AGREEMENT
for
METEOROLOGICAL SERVICES**

Among the
Bureau of Land Management
Bureau of Indian Affairs
U.S. Fish and Wildlife Service
National Park Service
of the
United States Department of the Interior
and the
Forest Service
of the
United States Department of Agriculture
and the
National Weather Service
of the
United States Department of Commerce
BLM Agreement No. 1422RAI02-0030

BIA Agreement No.
FWS Agreement No.
FS Agreement No. 02-IA11130206041
NPS Agreement No.
NWS Agreement No. 201-02-002

1.0 INTRODUCTION.

Fire management and suppression in the nation's wildlands is an on-going concern to the American public and to the Department of the Interior's Bureau of Land Management, Bureau of Indian Affairs, Fish and Wildlife Service, and National Park Service, and the Department of Agriculture, Forest Service, as well as to the Department of Commerce, National Oceanic and Atmospheric Administration-National Weather Service (NWS).

Considerable cooperation and coordination among these agencies exists, which is critical to the success of fire management, suppression and safety. This agreement will refer to the National Weather Service as "NWS" and the federal wildland fire management agencies as the "Interagency Wildland Fire Agencies." The National Weather Service is legally mandated to issue weather forecasts and warnings for the protection of life and property. The Interagency Wildland Fire Agencies are responsible for the stewardship and/or protection of lands owned or held in trust by the United States or under the jurisdiction of state agencies.

The NWS and Interagency Wildland Fire Agency responsibilities are defined in Section 5. The NWS Weather Forecast Office (WFO) products and services shall be focused on respective County Warning Forecast Areas (CWFA) for the operational concerns of local wildland fire agency districts, while Interagency Wildland Fire Agencies shall focus on geographic area and national level products and services. The needs of geographic areas are met using a geographic area Memorandum of Understanding and/or geographic specific Annual Operating Plan (AOP) - (see appendix 1 for a suggested outline), and this Interagency Agreement. The NWS and Interagency Wildland Fire Agencies will coordinate and cooperate on developing fire weather policy, standards and guidelines

2.0 AUTHORITIES.

- A. Economy Act of June 30, 1932 (47 Stat. 417; 31 U.S.C. 1535), as amended.
- B. Travel Authority (5 U.S.C. 5702).
- C. Organic Act of 1890 (15 U.S.C. 313).
- D. Joint Project Authority (49 U.S.C. 44720).
- E. Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.).

- F. National Park Service Organic Act of August 1916 (16 U.S.C. 1).
- G. National Wildlife Refuge Administration Act of June 27, 1998 (16 U.S.C. 668dd)
- H. Disaster Relief Act of 1974 (42 U.S.C. 5147).
- I. National Indian Forest Resources Management Act of 1990 (25 U.S.C. 3101 et seq.).
- J. Cooperative Forestry Assistance Act of 1978 (P.L. 95-313, 92 Stat. 365 as amended; 16 U.S.C. 2101 (note), 2101-2103, 2103a, 2103b, 2104-2105).
- K. Federal Fire Prevention and Control Act of October 29, 1974, (P.L. 93-498, 15 U.S.C. 2201 et seq., 88 Stat 1535.)

3.0 PURPOSE.

The purpose of this Inter-Agency Agreement is to combine resources and provide complementary services without duplication to best serve the needs of the public and all agencies for the protection of life, property and resource values to enhance ecosystem health. Accurate and timely meteorological and fire danger information is required to manage these resources effectively and efficiently. It is also the purpose of this Agreement to set forth the terms and conditions under which the NWS will continue to provide meteorological services to support these efforts as requested by the Interagency Wildland Fire Agencies. It is with this knowledge that this Inter-Agency Agreement is entered into.

This Agreement supersedes the “National Agreement for Meteorological Services in Support of Agencies with Land Management and Fire Protection Responsibilities” among the six participating agencies, as listed above, that was effective June 1983.

4.0 OBJECTIVES.

The objectives of this Agreement are:

- A. To identify meteorological services to be provided;
- B. Establish interagency relationships; and B.
- C. Define obligations of the NWS and Interagency Wildland Fire Agencies.

5.0 RESPONSIBILITIES.

The responsibilities listed are not all-inclusive, but are meant to provide the overall scope of services provided by the respective agencies.

- A. The National Weather Service agrees to: All obligations undertaken by the NWS under this Agreement are subject to the availability of appropriated funds.
- 1. Provide Basic Meteorological Services: Basic Meteorological Services will be provided in accordance with the Annual Operating Plan (AOP) for Fire Weather Service for designated NWS offices. These services will be made available without cost to Interagency Wildland Fire Agencies and will include:
 - a. Routine fire weather forecast and updates during the designated period outlined in the AOP.
 - b. Extended and long-range weather and climate outlooks.
 - c. NWS weather observations.
 - d. Fire Weather Watch and Red Flag Warning program.
 - e. Site-specific forecasts for wildland fires or special federal projects (i.e. spraying, seeding, fuels management, or search and rescue operations).
 - f. Provide consultation and technical advice in support of basic services to Interagency Wildland Fire Agencies.
 - g. Provide weather information to a central communication gateway and the internet for Interagency Wildland Fire Agencies' use and further distribution.
 - h. Provide a cadre of Incident Meteorologists (IMET) in support of the fire weather program.
 - i. Maintain a current list of offices providing basic meteorological services.
 - j. National scale short-range fire weather outlooks.

2. Non-Routine Services: These services will be provided by designated NWS offices. Expenses above planned salary and operating costs will be borne by the benefiting agency.
 - a. Weather Observer training.
 - b. Weather observation station visits.
 - c. Participation in Wildland Fire Agency training.
 1. Course development.
 2. Classroom instruction.
 - d. On-site meteorological services.
3. Fire Weather Training: The NWS recognizes the need for specialized training in fire weather meteorology for forecasters. Costs associated with training NWS staff will be borne by NWS. The NWS will meet this need as follows:
 - a. The NWS will ensure all meteorologists producing fire weather products have met the minimum fire weather forecaster training requirements.
 - b. The NWS will provide specialized training for the purpose of qualifying NWS IMETs.
4. Participation in interagency groups: All NWS costs will be borne by NWS.
5. Wildland fire suppression related activities: The NWS will not charge an administrative surcharge or any other expenditure that is not authorized under the Wildland Fire Agencies' Appropriation Acts related to these activities.

B. Interagency Wildland Fire Agencies

Wildland Fire Agencies' programs provide Geographic Area and national products for the strategic role of resource prioritization and utilization. Specific responsibilities of Wildland Fire Agencies are listed below.

1. Operational Support and Predictive Services

a. Geographic Area and national level fire weather products, services and assessments will be provided for resource allocation and prioritization.

b. Integration of weather and climatic sciences into Geographic Area Coordination Center (GACC) operations.

c. Develop value-added products to enhance short and long-range outlooks and projections.

d. Provide weather briefings to GACC and NIFC Coordinators and Multiagency Coordinating Groups.

e. Manage weather and climatology portions of GACC web site.

f. Manage agency fire weather infrastructure.

g. Smoke management.

2. Program Management

Program management of federal land management and fire agencies' fire weather responsibilities, which includes:

a. Program coordination with state agencies.

b. Programmatic guidance, evaluation and certification.

c. Advice and staff support to Fire Directorate

d. Manage weather station network.

e. Liaison between field users and service providers.

f. Participation in activity reviews.

3. Monitoring, Feedback and Improvement

- a. Transmit feedback to product and service providers.
- b. Suggest improvements to providers of products and services received.
- c. Advise agencies on quality control of weather observations.
- d. Coordination with NWS and users in assessment and evaluation of program effectiveness.
- e. Fire weather expertise in accident/incident investigations.

4. Technology Transfer

- a. Transfer meteorology and climatology knowledge to field level personnel.
- b. Promote proper usage by agency personnel of weather and climate products and services.
- c. Conduct training/expertise needs assessment.
- d. Coordinate data and technology acquisition.
- e. Participation on training cadre.

5. Agency Computer Systems

Where fire management computer systems are locally available, access to the systems will be granted to NWS to provide services, as needed. Costs will be borne by the Interagency Wildland Fire Agencies for requirements that are beyond the distribution of weather information through a central communications gateway.

6. Fire Weather Observations:

- a. Provide routine surface weather observations to NWS.
- b. Provide all equipment, equipment maintenance, inspection of weather observation sites, and data quality control.
- c. Pay all travel and per diem costs associated with Interagency Wildland Fire Agencies' requests for visits of NWS personnel to weather observing sites.
- d. Provide for collection, storage and retrieval of remote automatic weather stations (RAWS) data.
- e. Provide observations for site specific and other special forecasts.

7. On-Site Meteorological Support:

- a. Pay costs directly associated with on-site meteorological support by NWS personnel. This includes costs incurred by the NWS IMET duty station.
- b. Provide logistical and weather observation support to NWS personnel at onsite operations.
- c. Provide and pay costs associated with telecommunication services.

8. Training:

- a. Pay per diem and travel costs for NWS personnel instructing and providing course development in Wildland Fire Agency training.
- b. Provide technical assistance, instruction, and supporting material for NWS sponsored fire weather training sessions.

9. Other Non-Routine Services

Interagency Wildland Fire Agencies will provide logistics support and pay all overtime, travel, and per diem costs of NWS personnel associated with the provision of all other

special fire meteorological services, including Wildland Fire agency approved wildland fire familiarization for NWS personnel.

6.0 JOINT RESPONSIBILITIES:

NWS and Interagency Wildland Fire Agencies shall jointly prepare national and Geographic Area specific MOUs and/or AOPs for Fire Weather Services that will set policy and procedures at GACC, NIFC, state or forecast office level, and shall include:

- A. Shared responsibilities of all participants shall include, but not limited to weather briefings, training, research, product/service verification as outlined in Geographic Area specific AOPs.
- B. Provision for monitoring, feedback and improvement.
- C. Procedure for documenting, monitoring and evaluating fire weather products, briefings and services delivered.
- D. Provision for monitoring and evaluating advances in science and technology.
- E. Provision for efficient means for technology transfer.
- F. Provision for participation in fire weather research activities.
- G. Provision that on-site IMET services may be provided by Interagency Fire Weather Meteorologist meeting NWS standards only when NWS IMETs are not available to meet Wildland Fire Agency resource requests on a national basis. The coordination for Interagency Fire Weather Meteorologists will be done between the NWS IMET coordinator and the National Interagency Coordination Center.
- H. Provision that NWS meteorologists and Interagency Wildland Fire Agency meteorologists stationed at GACCs and at NIFC will work together to ensure fire agency decision makers receive consistent and coordinated fire weather products and services.
- I. Provision that the NWS and Interagency Wildland Fire Agencies will jointly develop and share technology including meteorological software and data, Advanced Technology

Meteorological Units, portable weather stations, etc. to improve abilities and performance.

- J. The NWS and Wildland Fire Agency meteorologists shall work closely in all phases of the fire weather forecast and warning program to resolve concerns and avoid potential inconsistencies in products and services prior to delivery to fire agency customers. The goal of all agencies is to maximize firefighter and public safety through a coordinated delivery of consistent services.

- K. The Parties recognize that, given the current administrative process for payments for fire suppression activities, it is not feasible to obligate the full amount of funds that may be required by this Agreement, because the Agreement does not constitute a binding obligation under 31 U.S.C. § 1501 since it cannot anticipate the specific goods or services for which payment will be requested, or the individual payment amounts, in each future case. This information can only be provided by Resource Orders executed when the goods or services are requested. At the same time, the Parties recognize that Resource Orders are insufficient to constitute a binding obligation under the statute because there is no evidence of intent to be bound, no authorized signatures are present, and no legal authorities are cited. However, these requirements are satisfied by the Agreement. The two documents, when taken together, contain all the elements required for an obligation under the statute. Hence, the Parties agree that this Agreement shall automatically be incorporated by reference into any Resource Orders issued under it, and that nobligation of funds will occur at the time the NWS presents a copy of this Agreement and the Resource Orders for payment. The parties also agree to work toward a more efficient resolution of this administrative process for obligation and payment of fire suppression funds.

7.0 STATEMENT OF WORK.

Procedures for notification of and obtaining services from the NWS will be prepared and specified in the Annual Operating Plans (AOP) and/or in the MOUs for the Geographic Area Coordinating Centers, and in the Geographical Area and National Mobilization Guides. An electronic copy of the National Mobilization Guide can be viewed via www.nifc.gov - select "National Interagency Coordination Center" – select "References" link to National Mobilization Guide.

8.0 TRANSFER OF FUNDS.

- A. Billing and collection procedures will follow the Intra-governmental Payment and Collection (IPAC) system process.

B. Wildland Fire Suppression Activities: Transfers under this subsection are under the Disaster Relief Act, 42 U.S.C. § 5147. Reimbursable costs are estimated not to exceed a maximum of \$2,000,000.00 per fiscal year. In the event this amount is insufficient for a particular fiscal year, this Agreement may be modified to increase the amount of funding, subject to the availability of funds. This Agreement is automatically incorporated by reference into any Resource Order that is issued under it, constituting a binding obligation. The Interagency Wildland Fire Agencies warrant that they will administratively reserve these funds to ensure that the funds will be available when the obligations are recorded. The recording of the obligations will occur upon the receipt of the billings from the NWS by the applicable Interagency Wildland Fire Agency. The billings, inclusive of copies of this Agreement, the Resource Order(s), and expenditure documentation, will define the specific services, supplied goods and costs for each order, and subsequent obligation and payment.

1. Reimbursement payments for suppression-related activities will be accomplished by submission of billings, which are inclusive of copies of the Resource Orders that define the requested services and goods, and the expenditure back-up documentation. The NWS will not charge an administrative surcharge or any other expenditure that is not authorized under the Wildland Fire Agencies' Appropriation Acts related to these activities
2. It is the responsibility of the requesting agency/office to provide billing instructions to the NWS office that provided the service, which includes the items listed below. It is also the responsibility of the requesting agency/office to conduct any required verification of costs, authorization of expenditures and reconciliation of payment.
 - a) The fire name, jurisdictional unit, and incident number (The copy of the Resource Order generally includes this information);
 - b) Applicable support documentation requirements;
 - c) A copy of this Agreement complete with signatures;
 - d) Identification (name and phone number) of NWS financial contact;
 - e) Provide information to NWS regarding which payment center to send the billings for processing; and
 - f) Billings and support documentation are to be submitted to the appropriate payment center by the NWS within sixty-days of completion of service.

C. Non-Wildland Fire Suppression Activities: Obligation of funds and payments for non-wildland fire suppression activities that are included in the Annual Operating Plan (AOP) shall be accomplished by Task Orders against this Agreement between the concerned agencies by the responsible officers at the appropriate level operating within their authority.

1. All funding obligations must be placed against the individual agency/office's Task Order number and not against this Agreement number.
2. Task Orders to this Agreement may be approved and signed for the NWS by the Director, Office of Climate, Water and Weather Services.
3. Each federal agency shall make direct settlement from its own funds for all liabilities it incurs under this Agreement.
4. The NWS will not charge any agency that is signatory to this Agreement an indirect administrative surcharges for activities addressed in the respective Annual Operating Plan(s) and Geographical Area MOUs, and are requested through Task Orders or Resource Orders under the National Mobilization Guide.
5. Task Orders may be prepared in any format acceptable to the agencies involved in each project. At a minimum, each Task Order written in support of this Agreement will include the following items:
 - a) Detailed description of services to be done or supplies to be delivered;
 - b) Description of the deliverables;
 - c) Performance period for completion;
 - d) Cost estimates;
 - e) Identify responsible project officials for each Task Order agency;
 - f) Payment procedures (applicable billing procedures, identification of codes, method of payment—advance/reimbursement; and Signature(s) by authorized personnel for each Task Order agency.
 - g) Signature(s) by authorized personnel for each Task Order agency.

9.0 TERM OF AGREEMENT.

The terms of this Inter-agency Agreement shall become effective with and upon execution by NWS and any or all Interagency Wildland Fire Agencies and shall remain in effect for a period of five-years from the date the last signature was placed on the signatory section, or until such time as the Inter-agency Agreement is terminated by mutual agreement. Any signatory may terminate their participation in this Agreement by written notice to all other signatories provided that such notice shall be given between the dates of October 1 of any year and February 1 of the following year. Full credit shall be allowed for each party's expense and all non-cancelable obligations properly incurred up to the effective date of termination. The remaining signatories may continue the provisions of this Agreement as long as the NWS remains a signatory.

10.0 RESOLUTION OF DISAGREEMENT.

Should disagreement arise on the interpretation of the provisions of this Agreement, or modifications thereto, that cannot be resolved at the operating level, the area(s) of disagreement shall be stated in writing by each party and presented to the other party for consideration. If agreement on interpretation is not reached within thirty-days, the parties shall forward the written presentation of the disagreement to respective higher officials for appropriate resolution. Conflicts and/or disagreements that cannot be resolved at the regional (GACC) level will be elevated to the National Fire Weather Program Managers for the NWS and Interagency Wildland Fire Agencies. If the conflict cannot be resolved at the National Program Managers level, the conflict will be elevated to the Agency Director level (NWS and applicable Wildland Fire Agency Director) for final resolution.

11.0 GENERAL PROVISIONS.

A. Parties to this Agreement are not obligated to make expenditures of funds or provide services under terms of this Agreement unless such funds are appropriated or services are authorized by either the State Legislatures or the Congress of the United States, or are otherwise available under Section 101 and 102 of the Annual Appropriations Act for Interior and Related Agencies.

B. The points of contact listed in Section 13 will review this Agreement annually.

C. Modifications to this Agreement may be initiated by any signatory agency. The modifications shall not take effect until documented and signed by all signatory agencies.

1. The BLM is designated as the agency responsible for all administrative oversight of modifications to this agreement.

2. Modifications to this Agreement may be approved for the NWS and signed by the Director, Office of Climate, Water and Weather Services, or pursuant to NWS protocol.

D. The signatory Interagency Wildland Fire Agencies agree to consider expansion of this Agreement to cover areas of mutual concern, e.g., changing technology and improved procedures, as opportunities for such cooperation become available.

12.0 WAIVER.

Each party to this agreement does hereby expressly waive all claims against the other party for compensation for any loss, damage, personal injury or death occurring in consequence of the performance of this agreement.

13.0 PRINCIPAL CONTACTS.

The Points of Contact are responsible for coordinating an annual review of the currency and adequacy of this Agreement among the signatories, and/or their designees.

National Weather Service:

National Fire Weather Program Manager

Rusty Billingsley

National Weather Service

3833 South Development Ave.

Boise, ID 83705

208/334-9824 – Office

david.billingsley@noaa.gov

Interagency Wildland Fire Agencies:

NIFC Fire Weather Program Manager

Rick Ochoa

National Interagency Fire Center

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14.0 DEFINITIONS.

When the following terms are used in this Agreement, or in an AOP, such terms will have the meanings stated below.

- A. Annual Operation Plan for Fire Weather Services (AOP):** A procedural guide, based on the National Interagency MOU and applicable Geographic Area MOUs, which describes fire meteorological services provided within the Geographic Area of responsibility, including NIFC. At a minimum the AOP will include the items in Appendix 1, Annual Operating Plan - Required Elements and Suggested Format.
- B. Assessment:** Fire weather and/or fire danger product based on a thorough evaluation of all pertinent sources of meteorological and fire danger information.
- C. Basic Meteorological Services:** Basic meteorological services are those state-of-the-science meteorological forecasts, warnings, observations and statements produced at a designated NWS office.
- D. Fire Weather Watch:** Fire Weather Watch is issued to advise of conditions, which could result in extensive wildfire occurrence or extreme fire behavior, which are expected to develop in the next 12 to 48 hours, but not more than 72 hours. In cases of dry lightning, a Fire Weather Watch may be issued for the next 12 hours. Fire Weather Watch meteorological and fuel criteria will be defined in the AOP.
- E. Geographic Area:** A geographic boundary designated by Interagency Wildland Fire Agencies, where these agencies work together in the coordination and effective utilization of resources within their boundaries. The National Interagency Mobilization Guide identifies the areas encompassed by the eleven Geographic Areas.
- F. Geographic Area Memorandum of Understanding (MOU):** A document, based on the National Interagency Memorandum of Understanding for Meteorological Services, which establishes local policy to meet unique needs of a Geographic Area.
- G. Incident Meteorologist (IMET):** A meteorologist specially trained to provide on-site meteorological support of Wildland Fire Agency designated incidents.
- H. Non-Routine Services:** Meteorological services uniquely required by interagency Wildland Fire Agencies, which usually are not provided from a designated NWS office.
- I. On-Site Meteorological Services:** Special service which dedicates an IMET to an incident so that they are removed from their normal duties.

J. Predictive Services: Those Geographic Area/national level fire weather and/or fire danger services and products produced by Wildland Fire Agency meteorologists in support of resource allocation and prioritization.

K. Red Flag Warning: Red Flag Warning is used to warn of impending or actually occurring critical weather conditions that could result in extensive wildland fire activity. A warning will be issued when the forecast time of onset is less than 24 hours. Red Flag Warning meteorological and fuel criteria will be defined in the AOP.

L. Routine Fire Weather Forecasts: A Routine Fire Weather Forecast is a scheduled narrative and/or matrix forecast of weather parameters pertinent fire management activities in support of protection of life, property, and resources at risk in a given area. The number of parameters may vary due to regional weather requirements, but normally include a brief weather synopsis, expected weather and clouds, duration of precipitation, maximum and minimum temperature/relative humidity, wind direction and speed, transport and stability parameters, and lightning activity level. These forecasts normally cover the next 48 hours and may include input for the computation of National Fire Danger Rating System indices. These forecasts may also include long-range outlooks.

M. Site Specific Forecasts: Site-specific forecasts are issued when requested by Interagency Wildland Fire Agencies for wildland fires. These forecasts differ from routine fire weather forecasts by incorporating greater detail in timing, higher resolution of terrain influences, and incorporate meso-scale and sometimes micro-scale weather influences impacting the site. These may be generated from an office with Wildland Fire supplied information (i.e., location, weather observations, objectives) or generated by an IMET assigned to the incident. Forecast formats may vary but all are highly tailored to satisfy requirements of the incident objectives.

N. Wildland Fires: All ignitions that occur on wildlands.