



**Fire Weather Services
Annual Operating Plan
For
Central New York
And
Northeast Pennsylvania**

**National Weather Service
Binghamton, NY**

2020

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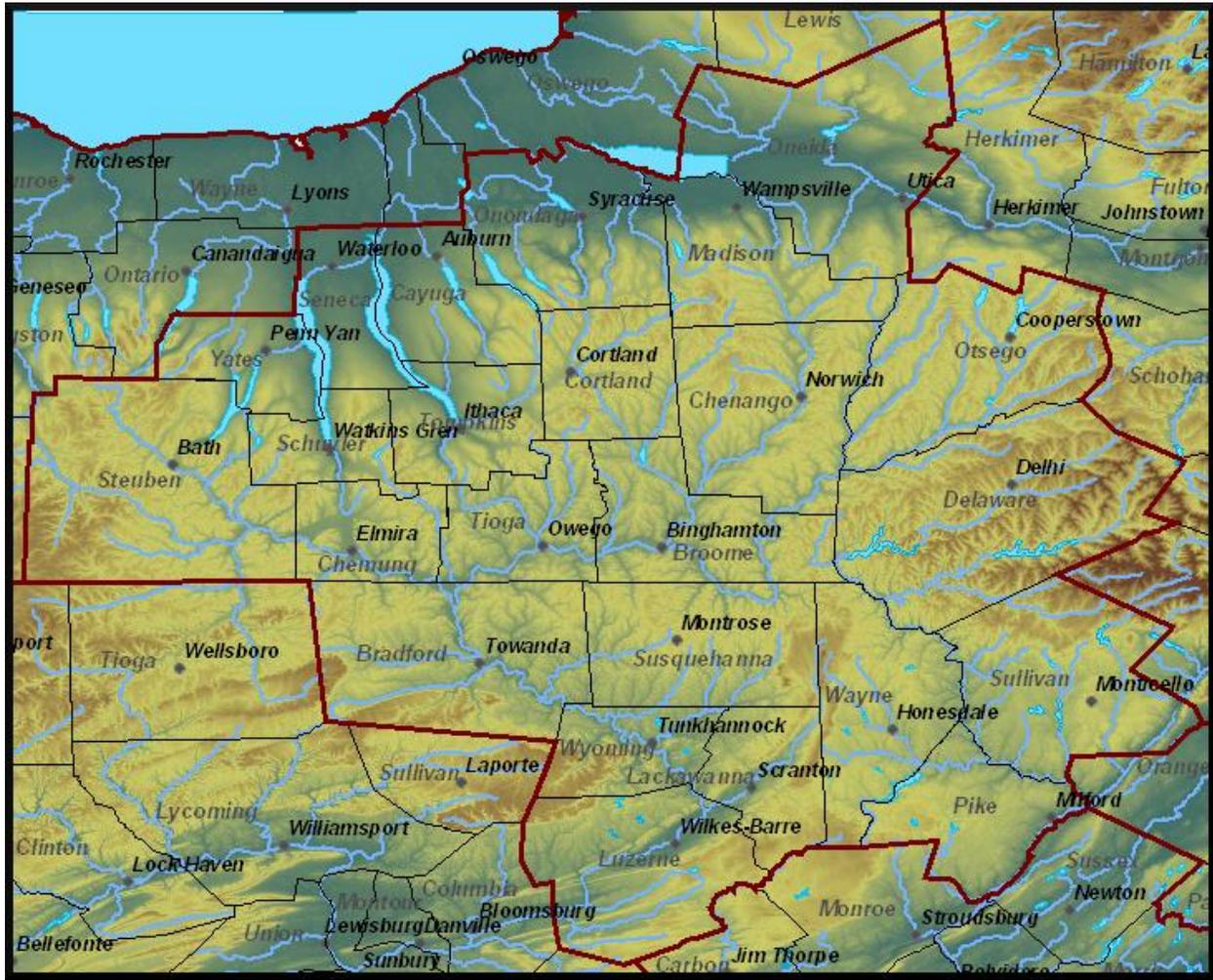
I. Introduction

This plan provides a guide to the National Weather Service (NWS) Weather Forecast Office (WFO) in Binghamton, NY, as well as to the NWS state liaison offices in Albany, NY and State College, PA. Binghamton has fire weather responsibility for our county warning area (CWA) which includes 17 counties in central New York and 7 counties in northeast Pennsylvania.

The fire weather responsibilities include issuing a fire weather forecast at least once daily, issuing fire weather watches and red flag warnings, and preparing spot forecasts when requested for prescribed burns and fire suppression. On-site support could occur in the operation of an Air Transportable Mobile Unit (ATMU). If an ATMU is deployed in Binghamton's CWA, support will be provided to the Incident Meteorologist.

The format of the Fire Weather Forecast allows for a flexible (county/weather zone) header grouping coinciding with the county breakout/grouping of the Public Zone Weather Forecast Product (Ex: ALBZFPBGM) for the daily forecasts. Each weather county/zone is identified by its code and county name (i.e. NYZ056 - Broome County, NY). Graphical forecasts are also available on the internet at www.weather.gov.

II. Service Area and Organizational Directory



A. DCNR - PENNSYLVANIA STATE BUREAU OF FORESTRY
DIVISION OF FOREST FIRE PROTECTION

Mike Kern, Chief of Forest Fire Protection
mikern@pa.gov

Matt Reed, Chief of Fire Operations
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6th Floor, Rachel Carson Building
Harrisburg, PA 17105
Phone (717) 787-7959

DCNR - PA BUREAU OF FORESTRY DISTRICT CONTACTS

**FOREST DISTRICT #11 - PINCHOT FOREST DISTRICT: Lackawanna,
Luzerne, Wyoming, Susquehanna, Wayne.**

Nicholas Lylo, Forest District Manager
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1841 Abington Rd.
North Abington Township, PA 18414
Phone: (570) 945-7133
Fax: (570) 945-7249

FOREST DISTRICT #16, TIOGA FOREST DISTRICT: Western Bradford

Jim Hyland - Forest District Manager
One Nessmuk Lane
Wellsboro, PA 16901
Phone: (570) 724-2868
Fax: (570) 724-6575

FOREST DISTRICT #19, DELAWARE FOREST DISTRICT: Pike, Monroe

Tim Dugan, Forest District Manager
Tdugan@pa.gov
Route 611
Swiftwater, PA 16901
Phone: (570) 895-4000

**FOREST DISTRICT #20, LOYALSOCK FOREST DISTRICT:
WYOMING, BRADFORD**

Richard A. Glinski, Forest District Manager
Rglinski@pa.gov
6735 Route 220
Dushore, PA 18614
Phone: (570) 946-4049
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PENNSYLVANIA GAME COMMISSION: NORTHEAST REGION

Michael Beahn, Land Management Supervisor
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3917 Memorial Hwy
Dallas, PA 18612
Phone: (570)-675-1143 X5007
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**B. NEW YORK - DEPARTMENT OF ENVIRONMENTAL
CONSERVATION (NYS DEC) Albany Central Office**

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Director of Forest Protection and Fire Management
Statewide Predictive Services/RAWS Program Coordinator – Andrew
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NYS DEC
625 Broadway
Albany, NY 12233-2560
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NYS DEC REGION III- Sullivan County (in part)
VACANT (845) 256-3024
Regional RAWS Coordinator Lt. Greg Tyrrell, (845) 699-9836
gregory.tyrrel@dec.ny.gov
NYS DEC
21 South Putt Corners Rd.
New Paltz, NY 12561-1696

NYS DEC REGION IV- Delaware and Otsego Counties (in part)

Captain Steve Preston, (518) 357-2161 (w) 518-524-0636 (c)

NYS DEC

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Schenectady, NY 12306-2014

Regional RAWS Coordinator Tyler Briggs, Fire Management Specialist

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Albany pine Bush

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Albany, NY 12203

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Regional RAWS Coordinator

NYS DEC

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Watertown, NY 13601

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Madison, Onondaga, Tioga, and Tompkins (in part)

Captain Shawn Plaisted, (716) 997-5834

Shawn.Plaisted@dec.ny.gov

1285 Fisher Ave

Cortland, NY 13045

Regional RAWS Coordinator Mike Burkholder, (607) 373-1013

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NYS DEC

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NYS DEC REGION VIII- Chemung, Schuyler, Seneca, Steuben, and

Yates (in part)

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NYS DEC

7291 Coon Rd.

Bath, NY 14810

C. NATIONAL PARK SERVICE

Delaware Water Gap National Recreation Area & Mid Atlantic Fire
Management Area

William Crolly – Fire Management Officer (570) 588 -1845
1978 River Rd
Bushkill, PA 18324

**D. NATIONAL WEATHER SERVICE OFFICES - FIRE
WEATHER**

AREA OFFICE/ADDRESS

PHONE

WFO Binghamton, NY (BGM)
Dave Morford, FW and IMET
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32 Dawes Drive
Johnson City, NY 13790

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WFO Buffalo, NY (BUF)
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WFO Upton, NY (OKX)
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Burlington Int'l Airport
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REGIONAL OFFICES

PHONE

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XXXXXX, W/ER1X4

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D. GEOGRAPHIC COORDINATION CENTERS (GACC) FIRE WEATHER METEOROLOGISTS

National Interagency Fire Center
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Eastern

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US FISH & WILDLIFE SERVICES CONTACTS

Department of the Interior
U. S. Fish and Wildlife Service
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Sussex, NJ 07461

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FAX: (973) 702-7286

F. GREEN MOUNTAIN/FINGER LAKES NATIONAL FOREST

U. S. Department of Agriculture, Forest Service
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Hector, NY 14841

(607) 546-4470

III. Services Provided by the National Weather Service

A. Basic Services

1. Routine fire weather forecasts

a. Issuance - The Pennsylvania fire weather forecast program is normally active year round. The status of the program is determined by the Pennsylvania Bureau of Forestry in Harrisburg and coordinated with WFO State College. State College notifies the other supporting NWS offices in Pennsylvania. In New York, input will be sought from the New York State Department of Environmental Conservation.

WFO Binghamton will begin issuing the fire weather forecast for the entire CWA, when either northeast Pennsylvania or central New York users want to begin the fire weather season. We will not issue fire weather products just for one state. The fire season will end when both northeast Pennsylvania and central New York users want to end the fire weather season.

During drought episodes the fire weather seasons are often extended or even continued through the summer into the fall. Infrequent special requests for spot fire weather forecasts or the fire weather forecast product may also be made in the off-seasons.

The NWS Binghamton area of fire weather responsibility includes central New York and northeast Pennsylvania. Zone groupings will be weather dependent. In addition, the headers will consist of county names, not area names. This allows for more specificity in the Fire Weather Forecast. The forecaster will make every effort to combine zones or counties into groupings that are climatologically homogeneous and represent ongoing or expected weather. Weather at any particular site within a zone may be dictated by microclimates.

FIRE WEATHER BACKUP:

WFO State College, PA is the primary backup of WFO Binghamton, and vice versa. When either State College or Binghamton is unable to operate fully, the other will back up all fire weather products including the fire weather forecast, red flag warnings, fire weather watches, and any spot forecasts. Binghamton is a secondary backup for WFO Albany, NY, and they are Binghamton's secondary backup.

b. How forecast is issued and accessed.

Forecasts are issued from the gridded database and are transmitted automatically to the internet. It can be accessed through the link at on the fire weather page of the website.

c. Content of the forecast.

Headline - A headline is **required** when a Fire Weather Watch or Red Flag Warning is in effect. Include the watch/warning type, geographical area, reason for issuance, and effective time period. Also include the headline in appropriate zone grouping. **Significant** trends of locally defined critical weather elements should be headlined for non-watch/warning periods.

Discussion - Per NWS Directive 10-401, this is a brief, clear and non-technical description of the weather systems impacting the region. Emphasis should be on the first two days, but later periods may be included if significant weather is expected and the forecaster has a reasonable confidence level that it will occur.

Note: Users have also stated that they would like us to avoid using the following terms in our discussions:

- *Elevated Fire Awareness*
- *Near Red Flag Conditions*
- *Fire Danger (or Elevated Fire Danger)*

Parameters - The Fire Weather Planning Forecast (FWF) uses the Universal Generic Code (UGC) zone format. The early morning forecast consists of three 12 hour time frames. The forecast should have a general outlook valid out to day 7. The following meteorological parameters will be entered in the forecast:

CLOUD AMOUNT:

- CLR (clear).....0 to 6 percent coverage
- MO CLR (mostly clear).....7 to 31 percent coverage
- PT CLDY (partly cloudy).....32 to 69 percent coverage
- MO CLDY (mostly cloudy).....70 to 94 percent coverage
- CLDY (cloudy).....95 to 100 percent coverage

PRECIP CHC (%): Probability of precipitation in percent (0 - 100%)

PRECIP TYPE: The type of precipitation expected.

MAX/MIN TEMP: Maximum daytime and minimum nighttime temperatures. (Temperature 24 hour trends are optional.)

20 FT WND AM: The prevalent 20 foot wind direction (8 compass points) and speed (mph) during the morning.

20 FT WND PM: The prevalent 20 foot wind expected during the afternoon for the daytime period and at night for the nighttime period (follow same nomenclature as AM wind).

PRECIP AMOUNT: Amount of average precipitation in inches.

PRECIP DURATION: Duration of precipitation in hours during the forecast period. Today/Tomorrow refers to 7 AM to 7 PM, Tonight is 7 PM to 7 AM. Duration does not have to quantitatively equal Precipitation Begin minus Precipitation End times (i.e., on/off precipitation).

PRECIP BEGIN: The onset time of any expected precipitation.

PRECIP END: The ending time of precipitation.

HUMIDITY (%): The minimum relative humidity during the day and the maximum value at night. (Relative humidity 24 hour trends are optional.)

HAINES: The **Haines Index** (HI) is calculated for the two **daytime periods**, but not the night period. The Haines Index is a **measure of stability and moisture** (does not incorporate wind or fuel moisture). The **HI** ranges from 2 to 6, which is a sum of two components, a temperature difference (categorized 1 to 3), and a moisture/dewpoint difference (also categorized 1 to 3).

There are different options available in the Haines index, each customized for elevation. **For our forecast area, we will be using the low option.**

The following is a qualitative guide for using the **Haines Index** :

HI Value	Qualitative Term
2 or 3	VERY LOW
4	LOW
5	MODERATE
6	HIGH.

The HI has been related to **fire behavior**, such that **the higher the value, the better the chance of seeing large fire development**, mainly where winds are not a factor.

LAL: Lightning activity level category. Ranges from 1 to 6 and relates to the areal coverage of thunderstorms, corresponding to Lightning Activity Levels (LAL) from the National Fire Danger Rating System (NFDRS).

LAL and areal coverage should correspond as follows:

LAL	Level Coverage	(%) Descriptor
1	0	None
2	1-14	Isolated
3	15-24	Widely Scattered
4	25-54	Scattered
5	55+	Numerous
6 (Dry lightning)* (little/no rain)	>=15	Widely Scattered or greater

* *Dry lightning is extremely rare in the eastern United States.*

MIXING HGT/DISP: The mixing height and inversion/dispersion. The Mixing Height is forecast during the day and inversion/dispersion is forecast at night.

The **Mixing Height** is the Maximum depth to which mixing will occur. This can be a difficult parameter to forecast. One way to view this is by estimating the maximum temperature and lifting it dry adiabatically until it reaches the forecast sounding temperature. Generally, during the summer, if neither a low level inversion nor warm air advection is present, daytime heating will produce a well mixed atmosphere of 4000 to 7000 ft in depth. The more unstable the atmosphere, the greater the mixing height.

The **Inversion** time is the start and break times of the ground based inversion. If an inversion is not expected, then forecast NONE. The dispersion is the average dispersion during the night. General guidance for dispersion based on surface winds:

- 0-4 mph: Poor to Very Poor (VP to PO)
- 5-7 mph: Fair (FA)
- 8-9 mph: Good (GD)
- 10 mph or greater: Excellent (EX)

*So, for example, a daytime entry might be 3000, a nighttime entry might be 1AM - 8am/PO, or a nighttime entry for no inversion might be NONE/GD

TRANSPORT WIND: The Transport Wind is the Average wind from the surface to the mixing height. After calculating the mixing height, the average wind direction and speed within that layer needs to be calculated. One way to view this is as an estimate based on the surface to 850 mb wind field (approximately 5000 ft). The direction will be specified using 8 compass points, and the speed in miles per hour.

VENTILATION RATE: Generalized descriptions range from “Poor” to “Excellent”. There is no definitive classification of Ventilation Rate. It is a combination of mixing height and transport wind. Generally, **when the mixing height is low and transport winds are light, the Ventilation Rate will be poor.** The Ventilation Rate will be calculated only for the daytime periods.

The best procedure to manually calculate the ventilation rate is to Multiply the mixing height in thousands of feet by the transport wind speed (mph). **These numbers are placed in the general Fire Weather Forecast. The table below is only a guide.**

100000 and up	(corresponds to Excellent)
61000 – 100000	(corresponds to Good)
41000 – 60000	(corresponds to Average)
21000 – 40000	(corresponds to Fair)
20000 or less	(corresponds to Poor)

Examples: A) Mixing height 4500 feet, Transport Wind Speed 20 mph.
 4500 x 20 = 90000
 B) Mixing height 2500 feet, Transport Wind Speed 10 mph
 2500 x 10 = 25000

REMARKS: Any significant information (timing of wind shifts) can be entered here (optional).

Expanded Forecast Section - This is the forecast for days 3 to 7, taken from the first grouping in the Public ZONE FORECAST (ALBZFPBGM). *Winds will be included in each period of the extended forecast section.*

Outlook 8 to 14 Day - per Directive 10-401, this is based on local policy. Thus, we will continue using the 8-14 day outlook from the National (CONUS) extended forecast product for New York.

Forecast Updates:

During the fire weather season, the fire weather forecaster will closely monitor weather conditions and issue an updated forecast if conditions are expected to **deviate significantly** from the original forecast. As a guide, an updated fire weather forecast should be issued only when any of the following criteria are met:

1. Red Flag criteria met, but not previously anticipated.
2. Observed wind is 10 mph or greater than forecast, and the direction differs by two or more compass points (based on 8 compass points).
3. Relative humidity, originally forecast to be greater than 30 percent, is now expected to be less than 30 percent.
4. Numerous thunderstorms where none were previously forecast.
5. The occurrence (or non-occurrence) of precipitation will **significantly** differ from the forecast.
6. Any unexpected weather conditions that will **significantly** impact fire service operations. (unexpected wind shifts, etc.)

The NWS communication header for the WFO Binghamton fire weather products are the following:

DAILY FIRE WEATHER FORECAST

AWIPS WMO
ALBFWFBGM FNUS51 KBGM

FIRE WEATHER WATCH/ RED FLAG WARNING

AWIPS WMO
ALBRFWBGM WWUS81 KBGM

DAILY FIRE WEATHER FORECAST FOR STATE COLLEGE PA (PRIMARY BACKUP)

AWIPS WMO
PHLFWFCTP FNUS51 KCTP

FIRE WEATHER WATCH/ RED FLAG WARNING FOR STATE COLLEGE PA

AWIPS WMO
PHLRFWCTP WWUS81 KCTP

DAILY FIRE WEATHER FORECAST FOR ALBANY NY (SECONDARY BACKUP)

AWIPS WMO
ALBFWFALB FNUS51 KALY

FIRE WEATHER WATCH/ RED FLAG WARNING FOR ALBANY NY

AWIPS WMO
ALBRFWALB WWUS81 KALY

Access to the fire weather forecast is presently available through the NOAA weather wire system or from the NWS BGM homepage (<http://www.nws.noaa.gov/er/bgm>) under NY/PA Weather. A fire weather page is also available (<http://www.erh.noaa.gov/bgm/fireweather/>). On this page fire weather forecasts and indices can be found. It also has links to other agencies, reports and forecasts.

FIRE WEATHER FORECAST PRODUCT FORMAT: The seasonal fire weather forecast products will be issued by 6 AM daily. The fire weather forecast will be updated when the current or expected weather is significantly different. The product will start with a discussion of what is causing the weather. A detailed forecast for the first 3 - 12 hour periods (today, tonight, and tomorrow) will contain most of the information. This will be done for each zone grouping. Next will be the extended forecast for tomorrow night to day 7 for all of central New York and northeast Pennsylvania, including the winds. Last will be the temperature and precipitation outlook for 8 to 14 days.

The fire weather product contains appropriately grouped zones in the WFO Binghamton office area of responsibility. See appendix C for a sample fire weather product from WFO Binghamton. The zone identification code will always be associated with its assigned county/zone (i.e. PAZ038 - Bradford). The symbol > means through so 038>040 includes the zones 038, 039, and 040.

WFO Binghamton will be using AWIPS GFE grids and formatter to generate the daily fire weather forecasts. See appendix H for directions on running the program. The software program AWIPS CAEFIRE is used as a backup. See appendix G for details on the program.

2. Site-specific wildland fire forecasts.

THE NFDRS POINT FORECASTS

The National Fire Danger Rating System (NFDRS) measures wildfire fire danger. The NWS role in NFDRS is that of forecasting weather parameters for input which when combined with fire weather community input (fuel moisture, etc) allows the NFDRS software to predict the next day's fire danger index.

NWS Binghamton is responsible for inputting weather parameters (ALBFWMBGM) into the National Fire Danger Rating Forecast. **These forecast parameters are generally valid for the next day at 1300 LST, except some parameters (for example, max/min temperature and RH) are for a range of time. Per request of our users, NWS Binghamton will issue this product by 4 PM, at the latest. Updates are not required.** Per Directives 10-401, a fire weather observation *must* be received for an NFDRS forecast to be generated. The forecast is for the RAWS sites in Binghamton's CWA. The locations are as follows:

NEW YORK

#300171 SHFN6 – Sherburne, NY (Chenango County)

Elevation: 1120 ft. 42 40' 52.94" N 75 31' 08.72" W

Owner: State of New York, Department of Environmental Conservation

#301011 GMFN6 – Gang Mills, VT (Steuben County)

Elevation: 950 ft. 42 08' 28.52" N 77 07' 12.14" W

Owner: State of New York, Department of Environmental Conservation

PENNSYLVANIA

#361802 LOLP1 - Loch Lomond, PA (Pike County)

Elevation: 886 ft. 41 12' 24.84" N 74 53' 24.00" W

Owner: US Govt., National Park Service

Contact: Tom Liogys (718) 815-4973

#360791 - TT137 Thornhurst, PA (Lackawanna County)

Elevation: 2058 ft. 41 13' 54" N 75 37' 29" W

Owner: PA - DCNR

Contact: Brian Pfister bpfister@pa.gov

#360151 – ROAP1 - Rienze, PA (Bradford County)

Elevation: 1268 ft. 41 38' 50.1" N 76 53' 19.4" W

Owner: PA - DCNR

Contact: Brian Pfister bpfister@pa.gov

#361031 - , TT602 Camp William Penn PA (Pike County)

Elevation: 1142 ft. 41.15208 N -75.25208 W

Owner: PA - DCNR

Contact: Brian Pfister bpfister@pa.gov

The FWM Forecast format is as follows:

FCST,#####,YYMMDD,13,X,TT,RH,L1,L2,DD,SS,,TX,TN,RX,RN,P1,P2,F

where:

NFDRS Station Identifier {see above}

YYMMDD Year Month Day (**forecast valid date which is the next day**)

060608: June 8th, 2006

13 Time (forecast valid time 1300 hours/1PM EST) *Does not change.*

** The double comma “,,” in the forecast line between SS and TX is needed to hold the place for *10 hour fuel moisture* values. The NWS does not forecast this however.

The following parameters are valid at 1300 EST for the forecast valid date (next day):

X Weather

Codes: 0 - clear

5 - drizzle

1 - scattered clouds (mostly clear)

6 - rain

2 - broken clouds (partly-mostly cloudy)

7 - snow/sleet

3 - overcast

8 - showers

4 - fog

9 - thunderstorms

Note; categories 5, 6, or 7 sets NFDRS index to 0 Try to avoid.

TT Dry Bulb Temperature

RH Relative Humidity

DD Wind direction (N, NE, E, SE etc)

SS Wind speed (10 minute average in MPH)

L1 Lightning Activity Level (period 1300 - 2300 LST hours)

Codes: LAL Level Coverage (%) Descriptor

1 0 None

2 1-14 Isolated

3 15-24 Widely Scattered

4 25-54 Scattered

5 55+ Numerous

6 (Dry lightning) >=15 Widely Scattered or greater (little/no rain)

L2 Lightning Activity Level (period 2300 - 2300 LST hours on forecast valid date)

The following parameters are valid for the 24 hour period ending at 1300 EST on the forecast valid date:

TX Maximum temperature

TN Minimum temperature

RX Maximum relative humidity

RN Minimum relative humidity

P1 Precipitation duration (1300-0500 LST period) in whole hours

P2 Precipitation duration (0500-1300 LST period) in whole hours

F Wet Flag “Y/N” (Only use Y for widespread rainfall. This will set all NFDRS indices to 0!)

1. Example of ALBFWMBGM - Point Forecast:

ZCZC ALBFWMBGM ALL
TTAA00 KBGM DDHMM
NATIONAL FIRE DANGER RATING FORECAST
NATIONAL WEATHER SERVICE BINGHAMTON NY
255 PM EDT TUE JUN 6 2006
FCST,300171,060606,13,1,64,40,1,1,NE, 8,,65,50,90,40,0,0,N

Remember...the double comma “,,” in the forecast line above, between SS and TX is needed to hold the place for *10 hour fuel moisture* values. The NWS is not responsible for this parameter.

Guidance products used to develop these forecasts include, but are not limited, to the following sources:

- Numerical MOS guidance for nearby stations,
- Fire weather observations (Observation is REQUIRED per Directive 10-401),
- Current METAR surface observations, and
- Satellite and Radar imagery.

SPOT AND PRESUPPRESSION FORECASTS

The spot and presuppression forecast is a site-specific, localized weather forecast including a forecast of wind, temperatures, humidity and any effects local topography will have on the weather. A spot forecast will normally cover a 12-hour period and is issued on request.

The agency requesting a spot fire weather forecast in Binghamton’s county warning area should use our internet site. The program can be found by going to the WFO Binghamton fire weather page. (<http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=bgm>) If it is not available a request can be called or faxed to us. The forecast staff will provide the information also via the internet or when not available by fax or phone (Appendix E) for the particular area affected when duties allow. Higher priorities, such as severe weather, may delay the response until time permits. Forecasters will use the form in the appendix. Blank copies will be in a clear file holder in the Fire Weather binder near the back. After the forecast is issued, leave it in the fire weather focal point’s mailbox so it can be logged and filed. If the requesting agency only needs more detailed information easily given over the phone, document the call in the fire weather binder and on the shift log. The following information should be exchanged whenever a spot or presuppression forecast is requested:

THE REQUESTING AGENCY WILL PROVIDE THE FOLLOWING:
<ol style="list-style-type: none"> 1) The name of the agency 2) Location and size of the fire 3) Elevation/Geography/Topography 4) Recent weather observations if any 5) Any additional information that would help the forecaster

THE FORECASTER WILL PROVIDE:

- | |
|--|
| <ol style="list-style-type: none">1) Time period for forecast (usually for 12 hours)2) Brief synopsis3) Relative humidity forecast (forecast minimum value during the day and forecast maximum value at night)4) 20 ft forecast wind direction and speed (state height of wind if other than 20 ft)5) Probability of precipitation6) Mesoscale features associated with thunderstorms/fronts7) Other weather phenomena deemed important by the duty forecaster |
|--|

NON-ROUTINE FORECASTS

Although the Bureau of Forestry in Pennsylvania and the Department of Environmental Conservation ■Forest Protection and Fire Management• in New York are the main agencies using and requesting fire weather information; other federal, state and local agencies may also request non-routine fire weather (spot and pre-suppression) forecasts anytime during the year. During times of high to extreme fire danger, the Bureau of Forestry or the Department of Environmental Conservation may request updates to the fire weather forecast product as needed. An agency may request a revised forecast when there is a significant change from the previous forecast in wind, relative humidity or thunderstorm activity.

During periods of very high or extreme fire danger, a supplemental briefing may be scheduled by the Bureau of Forestry in advance with our office. The predetermined briefing should provide updated information pertaining to the progress of frontal systems, lightning storms, approaching rain or other rapidly changing weather features.

3. Fire Weather Watch, Red Flag Programs.

Fire Weather Watches and Red Flag Warnings are used to convey the possibility of severe fire weather to fire control agencies. Meeting criteria is considered rare. Red Flag Warning criteria is slightly different in Pennsylvania versus New York (see below).

Red Flag events normally require the combination of very high to extreme fire danger and critical weather conditions (significantly increased winds and wind shifts, thunderstorm activity containing little or no rain, and significantly decreased humidity). The issuance of red flag events are based on the criteria of the users (state and federal) and require advance coordination.

The DCNR should notify the respective forecast offices for areas where and when measured ten hour fuel moisture levels have dropped to 15 % or less. Fire weather watches, red flag warnings, and ten hour fuel moisture levels can be found on the internet.

CRITERIA FOR PENNSYLVANIA (must meet all 3)

- 1) Ten hour fuels must be at 10% moisture or less.
- 2) Minimum relative humidity (RH) levels are expected to fall to 30% or lower.
- 3) 20-ft winds sustained or frequently gusting at or above 20 mph for 2 or more hours.

CRITERIA FOR NEW YORK (must meet all 3 or 4)

during vegetation stage I or II (cured/transition ■ spring/fall)

- 1) Winds sustained or frequently gusting above 25 mph.
- 2) Relative Humidity less than 30%.
- 3) Rainfall less than 1/4 of an inch during the previous 5 or more days.

during vegetation stage III (green ■ summer)

- 1) Winds sustained or frequently gusting above 25 mph.
- 2) Relative Humidity less than 30%.
- 3) Rainfall less than 1/4 of an inch during the previous 8 or more days.
- 4) Fuels; Keetch Byram Drought Index (KBDI) above 300.

It is the users' responsibility (in NY) to inform the NWS of the following:

Current stage (I, II, or III)

When your measured KBDI is: approaching 300, over 300, and falls back below 300.

With no input from the users on these parameters, the NWS will assume climatological timing for various stages.

Stage I cured - 75% or more dead

Stage II transition - 25% to 75% dead

Stage III green - less than 25% dead

During the winter the stage will be cured. Transition will occur 2 to 4 weeks after the last freeze. After about 30 days the stage will be green. The process will work backwards starting with the first freeze of fall. The average last frost ranges from the last week of April in the warmer parts of the Finger Lakes of New York and in the Wyoming Valley of Pennsylvania to the last week of May in the deeper valleys of the Poconos, Catskills, Northern Susquehanna Region and Tug Hill Plateau. The first frost occurs in the fall from around the 20th of September in the coldest areas to the third week in October in the warmest areas.

--FIRE WEATHER WATCH--

A Fire Weather Watch is used to advise of the possible development of a red flag event in the near future. Usually fire danger is in the very high to extreme category. A Fire Weather Watch will normally be issued 12 to 24 hours in advance of the expected onset of severe fire weather conditions. The watch will be issued via an RFW product (i.e. RFWBGM). The product will contain a headline and the basis for the watch issuance. Fire Weather Watch information will be included in the affected areas of the daily routine Fire Weather Forecast. A Fire Weather Watch will be canceled via an RFW if subsequent information indicates that the conditions are no longer expected to develop. (See appendix D for an example of a fire weather watch.)

--RED FLAG WARNING--

A Red Flag Warning is issued to indicate the imminent danger of severe fire weather with a relatively high probability of occurrence. Usually the fire danger is in the very high to extreme category. A Red Flag Warning will normally be issued for potential severe fire weather events in less than 12 hours. A Red Flag Warning may or may not be preceded by a Fire Weather Watch. The warning will be issued via an RFW product and contain a headline and basis for the warning issuance. Red Flag Warning information will be included in the affected areas of the daily routine Fire Weather Forecast. A Red Flag Warning will be canceled via an RFW if subsequent information indicates that the conditions are no longer expected to develop. (See appendix D for an example of a red flag warning.)

B. Special Services

ON-SITE METEOROLOGICAL SUPPORT (IMET and ATMU):

Large wildfires may need an incident response. If the occasion should arise, an Incident Meteorologist (IMET) and AIR TRANSPORTABLE MOBILE UNIT (ATMU) would be requested by the state or federal government through the U.S. Forest Service or the National Interagency Fire Center. The local user agency requesting the on-site forecast service has the primary responsibility for transporting the ATMU and IMET to and from the incident.

FIRE DANGER RATING/NOAA WEATHER RADIO - Optional program in PA:

This program is inactive and remains inactive; however it is provided as reference.

Due to the non-meteorological parameters in forecasting fire danger ratings, the direct computation of fire categories (**high, very high, extreme**) will be calculated (in season) for counties by the Pennsylvania Bureau of Forestry in Harrisburg and New York State Department of Environment and Conservation. Should the fire danger category reach, change or fall below the above categories, then the program specialist with the appropriate agency in NY or PA will call our office. A call will be made daily (including Saturday and Sunday) during the late afternoon to each office affected when the criteria is reached or has changed. The requesting agency will cease calling when the fire danger category falls below **high**.

For a category of HIGH (or greater) fire danger the Bureau of Forestry will relay fire danger information to the applicable NWS offices so that the information can be broadcast over NOAA Weather Radio. **The NOAA Weather Radio alarm shall not be used when relaying fire weather information.** Upon receipt of the fire danger information, the forecast office will broadcast the fire danger category along with a brief call-to-action statement on the NOAA weather radio (see appendix F).

C. Training.

The NWS recognizes the need for specialized training in fire weather meteorology for forecasters. Any NWS meteorologist producing fire weather products shall have met the requirements set forth in NWSI 10-405.

IV. WILDLAND FIRE AGENCY RESPONSIBILITIES

Operational Support and Predictive Services

Program Management

The natural resource agencies will oversee the fire weather observation program, including the siting and maintenance of the observing equipment, fire weather training of their personnel, and the proficiency of their personnel in the use of the NWS Spot software.

Monitoring, Feedback and Improvement

Natural resource agencies will monitor the quality and timeliness of NWS fire weather products, and provide feedback to the NWS in order to improve services to the agencies.

Technology Transfer

The natural resource agencies may, from time to time, advise the NWS of new technologies being implemented to monitor meteorological or fuel parameters, or to improve communication, coordination, training or reference. Natural resource agency personnel may, with prior arrangement, visit an NWS office to acquire knowledge of NWS technologies used in the monitoring of weather, or the preparation of products.

Agency Computer Resources

Internet will be the primary method of obtaining the Fire Weather Forecast, Red Flag Warning, Fire Weather Watch, and for both requesting and receiving a Spot Forecast. As a backup method, a request can be made to the NWS for a product to be faxed to the customer agency. NFDRS observations will be entered into WIMS, and forecasts and calculations based on these observations will be received by WIMS, or by internet via a WIMS website.

Fire Weather Observations

Fire weather observation stations provide the specialized weather observations for fire weather forecasts, wildfire control and suppression, and various other land management operations. Stations may either be manned sites operated by land management agencies, or unmanned, Remote Automatic Weather Stations (RAWS) maintained by any of the federal or state land management agencies in the area.

Sensor failure will often result in erroneous or (at best) suspicious values. If the NWS becomes aware of such a situation, it is prudent to contact the station owner. Similarly, if a station owner becomes aware of sensor failure, he should relay that information to the appropriate NWS office. It is that station owner's responsibility to make sure that their station is and remains in good working order and that any repairs are made in a timely manner. Owners of NFDRS stations can still (and should) correct any errors in their respective observations.

Training

The responsibility of training natural resource agency employees will be that of the agencies themselves. However, the NWS will be available to assist when requested to do so

V. Joint Responsibilities

Joint responsibilities include the following:

Meetings between the NWS offices and the natural resource agencies.

At least one statewide meeting hosted by the NWS is normally attempted each year, usually coordinated by the NWS State Liaison Offices in Albany. WFO Binghamton may conduct a meeting with all of their customers, from all affected states, either each year or every other year.

Maintenance and Revision of the Annual Operating Plan.

The AOP should be revised each year by the end of January, with cooperation and participation from WFO Binghamton and each natural resource agency.

Workplace Visits.

Natural resource agencies and the NWS should collaborate on familiarization of personnel in each others fields of expertise, operations and equipment. Visits to offices and work centers, as well field job sites can meet part of these requirements.

Service Evaluation.

Services provided by the NWS, and delivery of observations and information from the natural resource agencies to the NWS in support of these services, shall be under constant evaluation by both parties.

VI. EFFECT DATES ON THE AOP

The effective dates of this Annual Operating Plan will be from January 1 through December 31 of the current calendar year. This plan will be subject to review and revision by all signatory parties each year, or more frequently as operations warrant. This plan will be available on the WFO fire weather webpages. A copy of this plan will be sent to NWS Eastern Region Headquarters by January 31 of the current year. Eastern Region Headquarters will forward a copy of the plan to NIFC and NWS Headquarters.

VII. SIGNATURE PAGE

Signed _____

David Morford

IMET/Fire Weather Program Leader

WFO Binghamton

Signed _____

Douglass Butz

Meteorologist In Charge

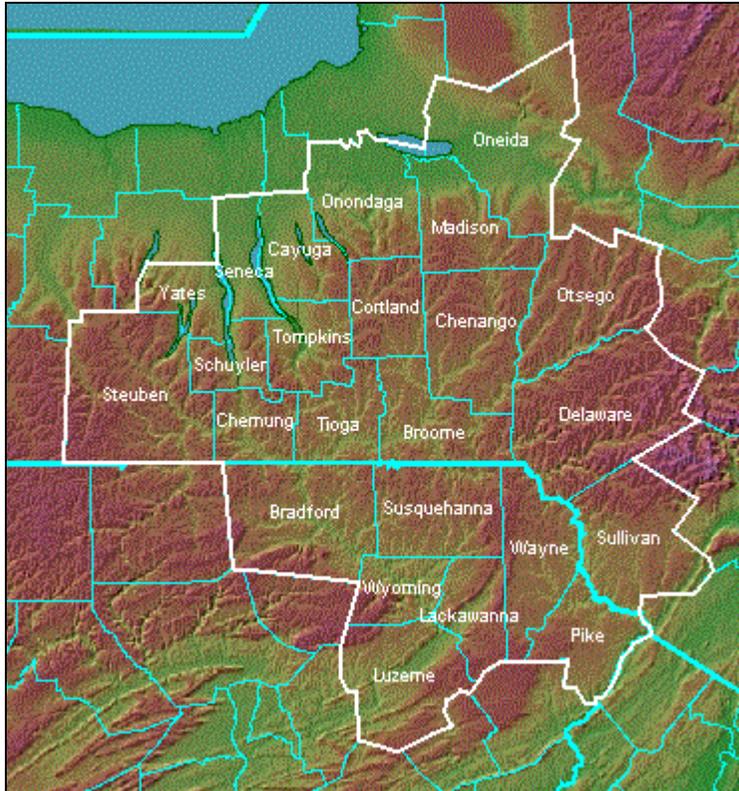
WFO Binghamton

VIII. APPENDICES

- A. Interagency Agreement for Meteorological Services in Support of Agencies with Land and Fire Management Responsibilities.

<http://www.erh.noaa.gov/gsp/fire/NC07/2002agree.htm>

- B. Fire weather zone maps.



- C. Catalog of fire weather observation sites.

NEW YORK

#300171 SHFN6 – Sherburne, NY (Chenango County)

Elevation: 1120 ft. 42 40' 52.94" N 75 31' 08.72" W

Owner: State of New York, Department of Environmental Conservation

#301011 GMFN6 – Gang Mills, NY(Steuben County)

Elevation: 950 ft. 42 08' 28.52" N 77 07' 12.14" W

Owner: State of New York, Department of Environmental Conservation

PENNSYLVANIA

#361802 LOLP1 - Loch Lomond, PA (Pike County)

Elevation: 886 ft. 41 12' 24.84" N 74 53' 24.00" W

Owner: US Govt., National Park Service

Contact: Tom Liogys (718) 815-4973

#360791 - TT137 Thornhurst, PA (Lackawanna County)

Elevation: 2058 ft. 41 13' 54" N 75 37' 29" W

Owner: PA - DCNR

Contact: Brian Pfister bpfister@pa.gov

#360151 – ROAP1 - Rienze, PA (Bradford County)

Elevation: 1268 ft. 41 38' 50.1" N 76 53' 19.4" W

Owner: PA - DCNR

Contact: Brian Pfister bpfister@pa.gov

#361031 - , TT602 Camp William Penn PA (Pike County)

Elevation: 1142 ft. 41.15208 N -75.25208 W

Owner: PA - DCNR

Contact: Brian Pfister bpfister@pa.gov