# Fire Weather Operations Plan for Maine

# 2020

This operating plan will be a semi-permanent document, specifying Fire Weather services provided by the National Weather Service offices in Gray and Caribou ME. The plan incorporates procedures detailed in the Interagency Agreement for Meteorological Services.

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# Introduction

## Purpose of the Operating Plan

This Fire Weather Operating Plan serves as the official document governing the interaction and relationships between the National Weather Service and the federal, state and local natural resource and land management agencies or cooperators in Maine.

## Explanation of relationship between the Operating Plan and MOU

This operating plan is issued in lieu of a formal Memorandum of Understanding (MOU) between the National Weather Service, federal, state, and other agencies that rely on fire weather support. The plan will outline forecast operations and services available to users. This includes products and formats, dissemination and coordination, and the responsibilities of the partners.

This operating plan will be the governing document for fire weather procedures and cooperation among the following agencies:

- NOAA National Weather Service
- USDA Forest Service
- USDI National Park Service
- USDI Fish and Wildlife Service
- Maine Forest Service

The National Mobilization Guide further defines the relationship between the natural resource agencies and the NWS Incident Meteorologist.

This operating plan for fire weather services conforms to the Interagency Agreement for Meteorological Services.

# Service Area and Organizational Directory

## Service Area

The service area covered by this operating plan is Maine which is served by the National Weather Service Weather Forecast Offices in Gray and Caribou, Maine.

Specifically, Maine counties that are covered by the Weather Forecast Office (WFO) in Caribou, ME include:

| County | Forecast Zone # |
|---|---|
| Aroostook | MEZ001, MEZ002, MEZ006 |
| Hancock | MEZ016, MEZ029 |
| Penobscot | MEZ005, MEZ011, MEZ015 |
| Piscataquis | MEZ004, MEZ010, MEZ031 |
| Northern Somerset | MEZ003 |
| Washington | MEZ017, MEZ030, MEZ032 |

Specifically, Maine counties that are covered by the Weather Forecast Office (WFO) in Gray, ME include:

| County | Forecast Zone # |
|---|---|
| Androscoggin | MEZ020 |
| Cumberland | MEZ019, MEZ024 |
| Franklin | MEZ008, MEZ013 |
| Kennebec | MEZ021 |
| Knox | MEZ027 |
| Lincoln | MEZ026 |
| Oxford | MEZ007, MEZ012 |
| Sagadahoc | MEZ025 |

| | |
|---|---|
| Somerset | MEZ009, MEZ014 |
| Waldo | MEZ022, ME028 |
| York | MEZ018, MEZ023 |

## National Weather Service Headquarters

NWS Headquarters, located in Silver Spring, Maryland, establishes policies and coordinates the national fire weather program. The national program manager coordinates the program with the regional program managers. The national program manager also works with the national headquarters of the Federal forestry and other natural resource management agencies and the Association of State Foresters in determining overall requirements for meteorological support. The national program manager coordinates national training in forestry and fire weather for NWS forecasters.

## National Weather Service Regional Headquarters

Regional headquarters manage the technical operational aspects of the fire weather program within each region. They also provide guidance and assistance to meteorologists-in-charge (MIC) on program operations and developing issues through Supplements to the National Directives System (NDS) and conferences. Regional headquarters advise national headquarters on matters pertaining to technical planning and operations. The regional program managers coordinate the regions' fire weather programs and advise regional directors on the operational and administrative aspects of the regions' programs.

## Weather Forecast Offices (WFO)

Weather Forecast Offices prepare and disseminate forecast products for all sectors of the population, including those for the Fire Weather program. These offices are responsible for providing forecasts to user agencies within their County Warning Area (CWA). Most offices have a designated fire weather focal point or fire weather program leader.

The National Weather Service Weather Forecast Offices will provide 24-hour, 365 days a year service. The NWS WFO's can be reached at:

National Weather Service Gray
1 Weather Lane
PO Box 1208
Gray, ME 04039-1208
(207) 688-3216

National Weather Service Caribou
810 Main Street
Caribou, Maine 04736
(207) 492-0166

### *Meteorologists-in-Charge (MIC)*

The Meteorologists-in-Charge is responsible for the provision of adequate weather services for the offices' assigned areas of program responsibility. The MIC will ensure that the focal points or program leaders are provided adequate time for user liaison and assistance activities. MICs can be reached via email or through contact with their respective office:

Meteorologist-in-Charge at WFO Gray
**Hendricus Lulofs**
(207) 688-0170
Hendricus.Lulofs@noaa.gov

Meteorologist-in-Charge at WFO Caribou
**Patrick Maloit**
(207) 492-0170
Patrick.Maloit@noaa.gov

** For internal (unlisted) coordination phone numbers please call the public number above.

### *Program Leaders (or Focal Points)*

Fire weather focal points and program leaders are the "customer service representatives" for the program. The focal points or program leaders, as representatives of the MIC's, are in regular contact with the partner agencies, helping them assess their meteorological needs, informing them of NWS products and services available to meet these needs, and educating them in the most effective use of the various NWS products and resources, including NOAA Weather Radio (NWR). Focal points and program leaders will work with users to utilize existing NWS products and services produced for other programs that could meet the requirements of natural resource management. The focal points and program leaders are also tasked with ensuring staff meteorologists are trained and remain proficient in preparing forecast products for support of the fire weather program. Fire weather program leaders can be reached via e-mail or through contact with their respective office:

Fire Weather Focal Point at WFO Gray
**Stacie Hanes**
(207) 688-3216
Stacie.Hanes@noaa.gov

Fire Weather Focal Point at WFO Caribou
**Malcolm "Mal" Walker**
(207) 492-0166
malcolm.walker@noaa.gov

### Participating Agencies

The following agencies are participants of this operating plan:

**NOAA National Weather Service**

**USDA Forest Service**

**USDI National Park Service**

**USDI Fish and Wildlife Service**

**Maine Forest Service**

## Services Provided by the National Weather Service

### Fire Weather Season

Wildfires can occur in Maine any time when the ground is free from snow cover, which is typically from early spring through late fall. However, there are two periods which are particularly prone to wildfires due to a combination of dry air and dry fuels.

The greatest peak is April and May. During this period, the spring sun is gaining strength but the air can still be very dry. Fine fuels, freeze-dried from the winter season, are available for burning. This peak period typically begins a week or two after the ground is snow-free, usually late March to early April, and then tapers off during green up, which begins in earnest around mid-May.

Historically, the highest risk of significant fire starts and blow-ups occur when very dry air masses come down from Canada during our mid-spring fire weather season. The spring sunshine will warm the air mass while the dew points in the air mass remain very low. This combination results in exceptionally low relative humidities which can quickly dry fine fuels and foster the ignition and spread of brushfires.

A second smaller peak occurs in early fall after the leaves have fallen and dried, and before the late fall storms appreciably dampen the ground.

### Basic Services:

#### Fire Weather Planning Forecast (FWF)

The Fire Weather Planning Forecast (FWF) is a zone-type product used by natural

resource management personnel primarily for input in decision-making related to pre-suppression and other planning or resource land management activities. Additionally it helps to determine general weather trends that might impact burning conditions and thereby fire behavior of wildfires and prescribed fires. The decisions impact firefighter safety, protection of the public, property, and the natural resources, and resource allocation. Zones used in the FWF are illustrated in Appendix C.

### *Product Overview and Issuance Criteria*

The FWF provides a detailed prediction of elements for three specific 12-hour periods, a general 3 to 7 day forecast, and an 8 to 14 day extended outlook. The FWF is issued during the morning (between 3:00 and 6:00 AM) and again in the afternoon (between 3:00 and 6:00 PM). The forecast, to be disseminated no later than 8:30 AM, consists of three periods: "Today" (valid from issuance through 6 PM local time), "Tonight" (6 PM to 6 AM), and "Tomorrow" (6 AM to 6 PM).

### *Dissemination*

The FWF is sent from our Advanced Weather Information and Processing System (AWIPS), and from there becomes available on our web page http://www.weather.gov/gyx or http://www.weather.gov/car under “Forecasts”.

### *Format/Content of the FWF*

• Format - The format of the Fire Weather Forecast is specified in National Weather Service Directive 10-401. Some elements are optional and are not included by all National Weather Service offices.

• Headlines - A headline is **required** when Red Flag Warnings and/or Fire Weather Watches are in effect. The headline will include the warning type, location, reason for issuance (e.g., high winds and low humidity), and effective time period(s). The headline is also included in the body of the FWF, in each appropriate zone grouping. Other headlines may be requested since the natural resource agencies are also considered "all risk agencies." When significant weather trends of locally-defined critical weather elements are forecast or observed during non-watch/warning periods, they will be identified in the headline.

• Discussion - The discussion should be a brief description of relative humidity, winds, wetting rains, and any other factors that might affect fire weather operations in a the next 36 hours.

• Cloud Cover ("CLOUD COVER") - This is an indication of the expected sky condition. "Clear" or "Sunny" descriptors are designated when the forecast cloud cover is < 10%; "Mostly Clear" or "Mostly Sunny" are used when cloud cover is forecast to be >= 10% and < 30%; "Partly Cloudy" or "Partly Sunny" are used

when cloud cover is forecast to be >= 30% and < 60%; "Mostly Cloudy" is used when cloud cover is >= 60% and < 80%; "Cloudy" is used when cloud cover is forecast to be >= 80%.

• Precipitation Type ("PRECIP TYPE") - This refers to the predominant precipitation type during the forecast period, with an exception. When both "showers" and "thunderstorms" are included in the public forecast, "thunderstorms" will be designated as the precipitation type in the FWF.

• Chance of Precipitation ("CHANCE PRECIP") - Refers to the probability of measurable precipitation (0.01 inches or more) during the forecast period. This will be rounded to the nearest 10%. Note: Drizzle and snow flurries are not considered measurable precipitation and thus will not be given a probability.

• Temperature ("TEMP") - Refers to the forecasted maximum and minimum temperature for the zone, in degrees F, as measured at a standard 4.5 ft above the ground level.

• Relative Humidity ("MAX/MIN RH") - Forecasted minimum relative humidity is provided during the daytime periods, while maximum RH is included at night. Relative humidity is highly variable from site to site, but for the purpose of the zone forecast will be the maximum or minimum relative humidity within the zone.

Note: The lowest average humidity typically occurs during the warmest part of the day. However, if it is expected to occur at a different time of the day, this will be noted in the "Remarks" portion of the forecast.

• Surface Winds ("WND20FT2MIN/EARLY and WND20FT2MIN/LATE") - Surface wind speed and direction represent a two-minute average at 20 feet above the vegetative ground cover. Wind direction is the direction the wind blows from, to eight points of the compass. The "EARLY" designation refers to morning hours (before noon) during daytime periods, and also the evening hours (before midnight) during nighttime periods. "LATE" refers to the afternoon hours during the daytime periods, and also the pre-dawn hours (after midnight) during the nighttime periods. Wind gusts, which are rapid fluctuations in wind speed of usually less than 30 seconds in duration, are indicated in the forecast if gustiness is expected. Forecasts for highest probable gust will be preceded by "G".

• Precipitation Amount ("PRECIP AMOUNT") - Refers to the forecasted precipitation amount (in hundredths of an inch) whenever the chance of precipitation is 20% or greater.

• Precipitation Duration ("PRECIP DURATION") - Refers to the duration of the measurable precipitation (in hours) when the probability of measurable precipitation is greater than or equal to 20%. A precipitation duration forecast of "1" is used for "1-hour or less" duration.

• Precipitation Begin/End ("PRECIP BEGIN/END") - Refers to the time

measurable precipitation begins or ends.

• Mixing Height ("MIXING HGT") - Mixing height is defined as the atmospheric limit above which vigorous vertical mixing does not take place. It provides the potential for the atmosphere to disperse smoke. Mixing height will vary from site to site, but for the purpose of the zone forecast will be the maximum height mixing is expected to occur within the zone. In general, a mixing height of 1650 feet or less should deter a prescribed burn and result in a call to the National Weather Service to obtain a site specific forecast. Routine upper air soundings are available after 0900 and may give a better indication of mixing heights than those in the forecast. Mixing height forecasts are given in feet above the ground ("FT-AGL").

• Transport Wind ("TRANSPORT WND") - Defined as the average wind direction and speed from the surface to the top of the mixed layer. Direction of the transport wind (where the wind is blowing from) and speed will be given. The speed will be in MPH.

• Ventilation Rate ("VENT RATE") - Refers to a multiplication of the mixing height and transport wind, with units in ft-MPH. The ventilation rate gives the potential for the atmosphere to disperse smoke.

• Lightning Activity Level ("LAL") - A numerical value, which is used to describe the expected lightning activity for that day, according to the following chart:

| LAL | Strikes per min | Strikes per 5 min. | Strikes per 15 min. |
|---|---|---|---|
| 1 | 0 | 0 | 0 |
| 2 | 1 | 1 to 5 | 1 to 8 |
| 3 | 1 to 2 | 6 to 10 | 9 to 15 |
| 4 | 2 to 3 | 11 to 15 | 16 to 25 |
| 5 | >3 | >15 | >25 |
| 6 | 1 to 2 | 6 to 10 | 9 to 15 |

NOTE: LAL 6 has the same lightning activity as LAL 3 except thunderstorms with LAL 6 are dry with little or no precipitation.

• Haines Index ("HAINES INDEX or LASI")- The index infers the stability of the atmosphere. Haines Index values range from 2 through 6. Haines Index values of 5 or 6 serve as an alert that fires or prescribed burns can experience control challenges. Studies have shown that a Haines Index of 4 represents the initiating threshold whereby the atmosphere can support large fire growth. In the absence of strong winds, fire growth will be primarily "plume dominated", with crowning and spotting on all sides. As wind speeds increase, coupled with a Haines Index of 4 or greater, there is an increased threat for large wind-driven fires.

• Chance of Wetting Rain ("CWR") – This is a percentage figure used to indicate the possibility of rain. Percentages below 10% are not mentioned. Wetting rain is 0.10 inches or more in a major area.

• Keetch-Byram Drought Index (KBDI) – A drought index specifically designed for fire potential assessment. Per USFS, the KBDI attempts to measure the amount of precipitation necessary to return the soil to full field capacity. It is a closed system ranging from 0 to 800 units and represents a moisture regime from 0 to 8 inches of water through the soil layer. At 8 inches of water, the KBDI assumes saturation. Zero is the point of no moisture deficiency and 800 is the maximum drought that is possible. At any point along the scale, the index number indicates the amount of net rainfall that is required to reduce the index to zero, or saturation.

• 3 through 7 Day Forecast - The outlook period is an extended forecast for the zone, or the entire forecast area, provided in narrative form (non-digital, non-tabular), and appended at the bottom of each zone grouping (for just that zone).

• Outlook 8 to 14 Days - This section will only include temperature and precipitation forecasts and will provide forecasts with respect to seasonal normal values for the specific time of year.

### *Update Criteria for the Fire Weather Planning Forecast*

The fire weather forecaster will maintain a weather watch to ensure that the forecast remains accurate. When unexpected changes occur, or are forecast to occur, which significantly deviate from the previous forecast, the forecast will be updated. The decision to update, to an extent, is at forecaster discretion. It is a shared responsibility for the WFOs and the natural resource agencies to monitor the need to update a forecast. Respective agency personnel will also provide feedback as to the updating of an FWF, NFDRS Point, or Spot Forecast.

## National Fire Danger Rating System (NFDRS) Forecasts

### *Issuance*

NFDRS forecasts will be issued for any predetermined site from which an NFDRS observation is received. The observation provided must be received on time, be complete, and be deemed accurate. The natural resource agencies will determine which observation sites (normally RAWS sites) will be NFDRS sites. Initiation of NFDRS forecasts for a new site will be coordinated with the NWS, and the agency requesting new NFDRS service will provide the NWS with information about the site location. Forecasts will not be provided for sites with bad data. The NWS will notify the owner agency when bad data is received from a RAWS station. Maine has several NFDRS sites:

**Station ID | Name | County | Latitude | Longitude**

- 170701 | Bar Harbor, Hancock Co., 44.38N, 68.22W
- 170850 | Moosehorn (Calais, ME), Washington Co., 45.11 N, 67.28 W
- 170131 | Isle Au Haut, Knox Co., 44.06N, 68.62W
- 172501 | Rachel Carson, Cumberland/York Co., 43.35N, 70.54W

***Content.***

**FCST,170701,YYMMDD,13,X,TT,RH,L1,L2,DD,SS,TX,TN,RX,RN,P1,P2,F**

Where: **YYMMDD** is the year, month, and day of the forecast.
**13** local time (does not change).
**X** is a weather code: 0=clear, 1=scattered clouds 2=broken clouds (partly to mostly cloudy), 3=overcast, 4=fog, 5=drizzle, 6=rain, 7=snow/sleet, 8=showers, and 9=thunderstorms.
**TT** is a 21 hour - 1300 LT temperature forecast.
**RH** is a 21 hour - 1300 LT relative humidity forecast.
**L1** and **L2** are lightning activity levels (LALs) for 1300-0600 and 0600-1300 local time respectively. code: 1=none, 2=1-8 strikes, 3=9-15 strikes 4=15-25 strikes, 5= >25 strikes, 6= scattered dry thunderstorms (very rare).
**DD** is wind direction using 8-point compass headings.
**SS** is 20 or 30 foot wind speed (10 minute average in mph).
**TX** is a forecast 24 hour maximum temperature.
**TN** is a forecast 24 hour minimum temperature.
**RX** is a forecast 24 hour maximum relative humidity.
**RN** is a forecast 24 hour minimum relative humidity.
**P1** is precipitation duration (1300-0600 period) in hours.
**P2** is precipitation duration (0600-1300 period) in hours.
**F** is a Y/N flag for wetting rains (0.25 + inches.)

***Procedures***

The land management agencies are responsible for taking, quality controlling, transmitting and archiving the NFDRS observations. Observation must be received at the NWS in a timely manner. Forecasts will only be prepared for predetermined sites, and only from those sites for which an observation has been received. The deadline for the land management agency for transmitting the observation is 1900 GMT (2:00 PM EST or 3:00 PM EDT).

## Site Specific Forecasts:

### Spot Forecasts:

#### *Criteria*

Spot forecasts are special, non-routine forecasts. They can be requested by any federal or state agency when there is some aspect of federal resources involved and/or interagency protection agreements currently exist, and they need site specific weather forecasts for: 1) controlling the spread of wildfire; 2) planning and managing prescribed fires; or 3) other specialized forest management activities. In the event of an emergency which threatens life and/or property, spot forecasts can also be provided to any federal, state, or local agency. Spot forecast requests for wildfires and hazardous material emergencies are considered high priority, and can be obtained at any time. Spot forecasts may be obtained for prescribed burns.

#### *Contents*

Spot forecasts are highly detailed forecasts for a specific location within the forecast area. The format of the spot forecast is specified in National Weather Service Directive 10-401. The forecasts will be **headlined** with a **Red Flag Warning** or **Fire Weather Watch** if these products are issued concurrently. The forecasts will begin with a discussion, and may contain any or all of the following weather elements: sky conditions, weather, hourly temperatures, maximum and minimum temperatures, hourly relative humidity, minimum and maximum relative humidity values, wind speed and direction; wind shifts, probability of precipitation; precipitation type, duration and amount; mixing heights; transport wind; inversion height; inversion onset and burn-off times or temperatures; ventilation and smoke management levels; wind profiles; stability indices (i.e., Haines Index), and lightning activity levels (LAL). Since these are site specific and can be initiated because of critical circumstances, tailored products can be requested (e.g. temperature, relative humidity, and wind speed forecasts on a two-hour incremental time period).

#### *Procedures for Requesting a Spot Forecast*

Spot forecasts will be prepared when requested by a user agency. Federal, state and local agencies may request spot forecasts in support of wildfire suppression or other emergencies where lives and/or property may be threatened. Due to the detailed and specific nature of this forecast product, it is imperative that the user provide the forecaster with necessary and sufficient information so that a reliable forecast can be prepared.

Requests for spot forecasts should be made using the web-based spot forecast request form. This form, along with instructions on how to use it, is available on the local NWS fire weather web pages. The web-based spot forecast request form should be filled out as completely as possible (required parameters are listed in red) by the user agency prior to submitting the request. Use

latitude/longitude for your location, and this should be entered in either decimal degrees, or degrees/minutes/seconds. If you are using decimal degrees enter as standard (e.g. 37.52). If degrees/minutes/seconds, use a second decimal (e.g. 37.31.12), or leave a space between each number (e.g. 37 31 12).

***Direct link to the spot monitor and request submission web page:***

http://weather.gov/spot/

In times when internet access is hindered or not possible, spot forecasts may be requested and disseminated via fax or phone.

While there is no dedicated fire weather forecaster, the forecast office will give a high priority to spot forecasts in the absence of weather phenomena in the CWA that pose a threat to life and property. To ensure that the request for a spot forecast is handled properly and appropriately, users should adhere to the following guidelines:

1) Allow adequate time for the forecaster to prepare the forecast. This will normally be about 30 minutes. On particularly busy fire weather days, spot forecasts will be handled on a first-come, first-serve basis, with wildfires or other life threatening events taking the highest priority.

2) Provide as much on-site or near-site weather information as possible. It will be helpful if the user provides an observation within an hour of the request. This observation should contain the following: location of the observation; elevation at the observation site; time of the observation; wind direction, speed, and level (eye or 20 foot); dry and wet bulb temperatures; any remarks about the state of the weather, particularly anything that may affect fire behavior**. If possible, include some observations from the previous day that might give the forecaster an indication of daily trends.**

3) As much as possible, specify the time period for which the forecast is needed.

4) As much as possible, specify the weather elements of most importance for which a forecast is needed, and/or critical values of these elements.

5) Provide a contact point name and phone number where the forecaster can call back, if necessary. Also include a fax number for returning completed forecasts if the web-based spot forecast form is not used.

6) In order to receive prompt attention for a fax request, please phone the office to let the forecaster know the request is on the way.

7) Natural resource agency personnel should contact the NWS forecast office for a spot update if the forecast conditions appear unrepresentative of the actual weather conditions. Whenever possible, users should provide feedback, positive or negative, to the NWS forecast office concerning the performance of the spot forecast during or shortly after an event. This will assist forecasters in subsequent forecasts for the same or similar conditions.

## Fire Weather Watch and Red Flag Programs:

### *Issuance*

During periods in which critical fire weather conditions are expected or imminent, the NWS will issue statements, watches and warnings to describe the level of urgency to the appropriate user agencies. These issuances will be coordinated with natural resource agencies.

### *Definition of a Red Flag Event*

A Red Flag Event occurs when critical weather conditions develop which could lead to extensive wildfire occurrence or to extreme fire behavior. Red Flag events represent a threat to life and property, and may adversely impact fire fighting personnel and resources. Critical weather conditions include combinations of the following: strong, gusty winds; very low relative humidity; high to extreme fire danger (very low fuel moisture). Historically, the highest risk of significant fire starts and blow-ups occur when very dry air masses come down from Canada during our mid-spring fire weather season. The spring sunshine will warm the air mass while the dew points in the air mass remain very low. This combination results in exceptionally low relative humidities which can quickly dry fine fuels and foster the ignition and spread of brushfires.

In an effort to simplify the Red Flag Warning process, forecasters at the NWS offices will be mainly concerned with the specific weather conditions and critical weather patterns necessary to produce Red Flag conditions. Tracking fuel moisture will be the responsibility of the fire product user agencies. As a result, coordination will be necessary with the Maine Forest Service when a NWS forecaster considers a Red Flag Warning or Fire Weather Watch.

### *Red Flag / Fire Weather Watch Criteria*

Red Flag criteria are considered met when:

The mean of 1 hour and 10 hour fuel moistures are less than 10% in combination with the following weather conditions and certain relative humidity and wind conditions are met as defined by “W” in the following chart.

| Relative Humidity | Wind Speeds | | | |
|---|---|---|---|---|
| | < 10 mph | 10 to 19 mph | 20 to 29 mph | > 30 mph |
| 31 to 35% | | | | W |
| 26 to 30% | | | W | W |
| 20 to 25% | | W | W | W |
| < 20% | W | W | W | W |

NOTE: It is also preferable to have a Haines Index of 5 or 6 as well. Although, it is not necessary this criterion be met.

During periods of extended drought or when wild land fires are occurring, modifications to these criteria may be required. Any change will be coordinated through the Eastern Area Coordination Center, or with the Fire Burn Analyst (FBAN) and Incident Commander (IC) on an existing large project burn. We recognize there are seasonal variability that may stress live fuels differently, in addition to other weather phenomena (such as, a frontal passage or thunderstorm downburst), that may result in extreme fire behavior and pose a hazard to wild land firefighters.

### *Red Flag Warning*

A Red Flag Warning will be issued, after coordination with the Maine Forest Service (MFS), when a Red Flag event is occurring or is imminent. The warning may be issued for all or a portion of the forecast area. Warnings will be issued by NWS forecast zones as outlined earlier in this plan. Warnings will be issued immediately once the forecaster and MFS have determined that a Red Flag event is ongoing. Otherwise, it shall be issued for impending Red Flag conditions when there is a high degree of confidence that conditions will develop within 24 hours. The warning will continue until the conditions cease to exist or fail to develop as forecast. At such time, the warning will be canceled. The format of the Red Flag Warning is specified in National Weather Service Directive 10-401.

**Red Flag Warnings are issued when the NWS and MFS agree that all the required conditions are expected. If fire weather conditions warrant a RFW but fuel conditions do not, MFS will inform the NWS forecaster during a coordination call. The NWS forecaster will log the discussion in the official shift log to include the conference call participants, time and decision not to issue RFW based on unreceptive fuels.**

### *Fire Weather Watch*

A Fire Weather Watch will be issued after coordination with MFS in order to advise of a possible development of a Red Flag event in the near future. It may be issued for all or part of the forecast area. A Fire Weather Watch is issued when the forecaster and MFS are reasonably confident that a Red Flag event will occur. A watch should be issued 12 to 48 hours in advance of, but not more than 72 hours in advance of, the expected onset of the critical weather conditions. The watch will remain in effect until either it is determined the Red Flag event will not develop, or that the watch should be upgraded to a warning. If conditions are not expected to occur as forecast, the watch will be canceled. The format of the Fire Weather Watch is specified in National Weather Service Directive 10-401.

• Every attempt will be made by the NWS to coordinate with Maine Forest

Service prior to the midnight shift. Ideally, the day shift prior to the potential event will issue the Fire Weather Watch. Fuel conditions should be coordinated with the Forest Service at this time. The fuel conditions should be passed onto the midnight shift, ultimately allowing the midnight shift to determine whether to issue a Red Flag Warning.

• If a Watch is cancelled for all or part of the Watch area, the headline may be edited to read, “The Fire Weather Watch is no longer in effect”. The text portion may address the marginal nature of fire weather conditions.

***Fire Danger Statements and Blow-Up Alerts***

When fire danger or fire occurrence is high and is coupled with critical weather conditions, Maine Forest Service may request that the NWS issue a Fire Danger Statement or Blowup Alert. These statements will be issued in coordination with the requesting agency and will only be issued with their approval. The NWS will use the Special Weather Statement (SPS) for these issuances.

## Participation in Interagency Groups

At a minimum, one NWS representative (usually the State Liaison WFO Fire Weather Program Leader or MIC) will attend state interagency meetings or working groups where fire weather or smoke management policy is discussed as an integral part of the meeting. However, it is strongly recommended that all NWS offices with fire weather responsibility attend the meetings to ensure uniform representation.

## Special Services

Special fire weather services are those services that are uniquely required by MFS and go beyond the normal forecast operations of the NWS. Special services include Incident Meteorologist (IMET) deployment, station visits, training, and other pertinent meteorological services that are designated as non-routine.

Typically, special services require NWS personnel to be away from the forecast office and, in some instances, be in overtime status. User agencies are responsible for covering the cost of NWS overtime, travel and per diem expenses. Reimbursement of costs for special services will be as outlined in the Interagency Agreement for Meteorological Services.

## Incident Support

Onsite forecast service support is available for wildfires and prescribed burns. This includes the deployment of an Incident Meteorologist (IMET) and related service equipment such as the Advanced Technology Meteorological Unit (ATMU), the All Hazards Meteorological Response System (AMRS), and the Fire Remote Automated Weather Station (Fire RAWS). The IMET, ATMU, AMRS, and the Fire RAWS are

considered national fire fighting resources, and can be requested through the Northeast Coordination Center in Campton, NH.

## Other Special Services

Other special services may include weather station visits by partner agency personnel, RAWS (Remote Automatic Weather Stations) site surveys and inspections, weather observer training, and course development work or related program work. These activities would typically be at the full expense of the requesting agency unless other arrangements have been made.

NWS meteorologists may also be asked to assist in other non-routine services (e.g. briefings or coordination calls) during periods of high fire danger or fire occurrence. MICs and Fire Program Leaders are to ensure MFS needs are met with little expense to either agency.

## Fire Weather Training

NWS meteorologists will be available to assist in user-oriented training. This includes fire behavior courses, such as S-190 and S-290, where the meteorologist will serve as part of the cadre for that course. Requests for training assistance should be made through the NWS office's Fire Weather Program Leader or Meteorologist-in-Charge (MIC). Sufficient advance notice should be given to allow for scheduling and proper preparation. Costs incurred by the NWS in providing training assistance will be borne by the requesting agency.

# Maine Forest Service Responsibility

## Program Management

The MFS will oversee the fire weather observation program, including the sitting 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 forecast software.

## Monitoring, Feedback and Improvement

MFS 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 MFS may advise the NWS of new technologies being implemented to monitor meteorological or fuel parameters, or to improve communication, coordination, training or reference. MFS may 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.

## 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. These stations were selected very carefully in each state and federal district. Sites were chosen to represent homogeneous weather conditions across a district. 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 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 a 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 repairs are made in a timely manner. Owners of NFDRS stations can still and should correct any errors in their respective observations.

It is important to note, observations are the most important single effort the control agencies put into the Fire Weather Program. Potential fire danger is derived from these observations. The Fire Danger Rating System is the guidance tool that, together with the weather forecast, is used to make a variety of management decisions. It is important that observers be well trained and informed of the necessity for accurate, timely, and representative observations.

### On-Site Support

The user agencies are also responsible for maintaining observation site equipment. NWS personnel may accompany the user on maintenance trips or for annual inspection visits, which could also serve as liaison with the users.

### Training

The responsibility of training MFS employees will be that of the agencies themselves. However, the NWS will be available to assist when requested to do so. Any expenses incurred by the NWS will normally be charged to the user agency, unless other arrangements have been made.

## Joint Responsibility

### Conference Calls

During times of very high or extreme fire danger, the agencies may initiate a conference call to discuss fire danger and weather. This call may include various partner agencies, and either some, or all of the NWS offices serving a particular area. When more than one NWS office is participating, one NWS office will lead the weather discussion, which may be followed by input from the other NWS offices for their area. At times when the entire state is the area of concern, the NWS State Liaison Office in Gray will normally lead the discussion, but this may vary if the area of concern is skewed toward another NWS office's area.

### 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 each NWS office and MFS. The National Weather Service Office in Gray, Maine, will be custodian of the plan.

### Notification of NWS Changes in Operating Procedures

From time to time, NWS headquarters, or NWS Eastern Region Headquarters, will send draft versions of future directives to their forecast offices for review and comment. To ensure that MFS has an opportunity to review and comment on proposed changes, the

NWS State Liaison Office in Gray will forward a copy of draft directives to EACC when they are received. EACC will then forward draft NWS directives to the rest of the MFS for review. Comments and suggestions can be forwarded to the NWS State Liaison Office in Gray which will forward them to NWS Eastern Region Headquarters.

## Agreements on Services Provided

Agreements on services and standards are normally reached at statewide meetings, but may be achieved at by a series of local meetings or by other means such as telephone or e-mail. NWS offices and land mangers should be aware of the ripple effect an agreement might have on other NWS offices and their customers, particularly when service areas cross state lines.

## Workplace Visits

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

## Service Evaluation

Services provided by the NWS and delivery of observations and information from the MFS to NWS will be under constant evaluation by both parties.

## Requests for Historical Weather Information

Agencies requiring historical weather information for specific locations should contact the Gray or Caribou NWS offices. If the requested historical information is available, the NWS will disseminate the information via telephone, fax or mail, depending on the needs of the user agency. Their will be no charge if the request is from a government agency (city/state/federal). Whenever possible, NWS offices will attempt to disseminate this information at the time of the request with little or no delay.

## Effective 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 NWS Gray and NWS Caribou fire weather web page. A copy of this plan will be sent to NWS Eastern Region Headquarters. Eastern Region Headquarters will forward a copy of the plan to NIFC and NWS Headquarters.

## 2019 Fire Season Customer Signature Page

Maine Forest Service _____ Date _____

Acadia National Park Brent Woffinden Date 4/8/2020

Baxter State Park _____ Date _____

U.S. Fish and Wildlife Service Brent Woffinden Date 4/8/2020

# Appendix

## A – Interagency Agreement

Interagency Agreement for the Meteorological Services in Support of Agencies with Land and Fire Management Responsibilities can be found at https://www.weather.gov/media/mqt/2012_National_Agreement.pdf

## B - Points of Contact

***Federal Agencies***:

*National Park Service (Acadia National Park)/US Fish and Wildlife Service

Contact: **Brent Woffinden** (Regional Fire Coordinator)

207-288-8780-office number
207-288-8791-dispatch
Fax 207-288-8792

***State Agencies:***

*Maine Forest Service
RR #1 Box 650
Augusta, ME 04330

Maine Forest Service
87 Airport Road
P.O. Box 415
Old Town, Maine 04468

Contacts:

**Jeff Currier** Office: 207-827-1810 / Cell: 207-441-2580 /
Fax 207-827-8441 ***First contact for ME Fire Weather***

**Joseph Mints**
Office: 207-827-1800 / Cell: 207-712-9074

**Baxter State Park**

**Eben Sypitkowski** (Park Director)
207-723-9500

**Donald Bolduc** (Chief Ranger)

207-723-9616

**Northeast Forest Fire Protection Commission Campton, NH**

**Thomas Parent**
207-968-3782
www.nffpc.org

***Weather Service Forecast Offices:***

FIRE WEATHER FOCAL POINTS

Gray (Portland)
National Weather Service
1 Weather Lane
P.O. Box 1208
Gray, ME 04039-1208

Stacie Hanes
Phone 207-688-3216

Caribou
National Weather Service
810 Main St
Caribou, ME 04736

Malcolm Walker
Phone 207-492-0166

Boston
National Weather Service
46 Commerce Way
Norton, MA 02766

Hayden Frank
Phone 508-622-3250

Burlington
National Weather Service
1200 Airport Drive
South Burlington, VT 05403

Eric Evenson/Brooke Taber
Phone 802-862-2475

Albany
National Weather Service
251 Fuller Rd B-300
Albany, NY 12203

Dan Thompson
Phone 716-565-0013

National Weather Service
Eastern Region Headquarters
Airport Corporate Center
630 Johnson Avenue
Bohemia, NY 11716

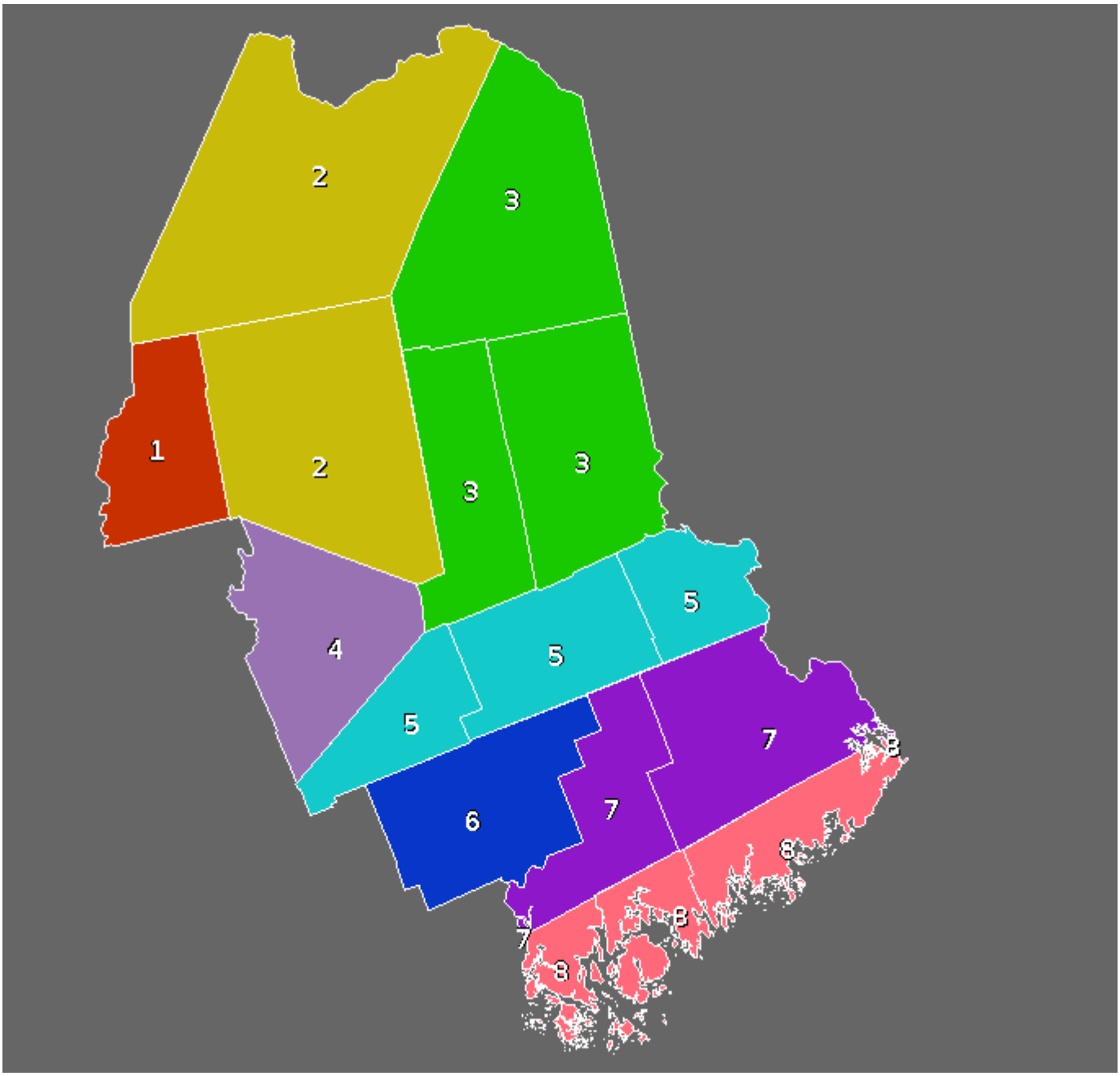
Regional Fire Weather
Services Program Leader
Melissa DiSpigna
631-244-0122

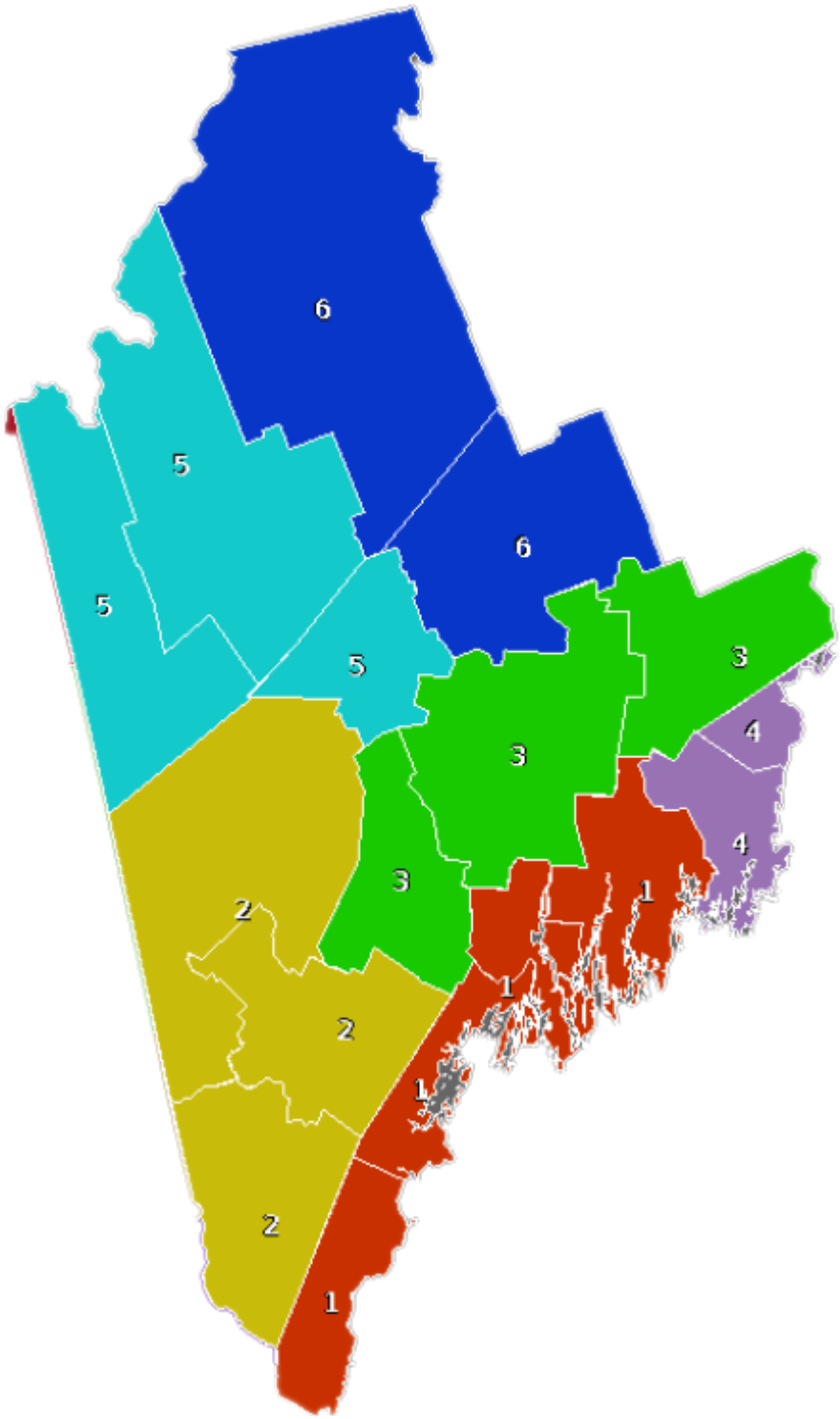
Eastern Area Coordination Center
626 E. Wisconsin Avenue, Suite 500
Milwaukee, WI 53202

414-944-3838
Fax: 414-944-3838

## C – Map of Fire Weather Zones

Fire weather zones for Maine.




6
6
5
5
5
3
3
3
4
4
1
1
1
2
2
2
1

## D - Example of NWS Products

### Fire Weather Forecast

```
000
FNUS51 KGYX 300656
FWFGYX

Fire Weather Planning Forecast for Western Maine and New Hampshire
National Weather Service Gray ME
256 AM EDT Mon Mar 30 2020

.DISCUSSION...
Upper level low pressure lingers over the region through the week.
This will keep periods of showers in the forecast.

MEZ023>026-302115-
Coastal York-Coastal Cumberland-Sagadahoc-Lincoln-
Including the cities of Biddeford, Saco, Old Orchard Beach,
Kittery, Portland, Cape Elizabeth, South Portland, Westbrook,
Yarmouth, Brunswick, Arrowsic, Bath, Phippsburg, Bowdoinham,
Topsham, Bowdoin, Whitefield, Dresden, Alna, Bremen, Bristol,
Damariscotta, Newcastle, Boothbay Harbor, Wiscasset,
and Waldoboro
256 AM EDT Mon Mar 30 2020

                      Today        Tonight      Tue

Cloud cover           Cloudy       Cloudy       Pcldy
Precip type           Showers      Showers      Snow Showers
Chance precip (%)     50           70           30
Temp (24h trend)      40 (-5)      27 (-7)      44
RH % (24h trend)      76 (+12)     91 (-9)      42
20ftWnd - AM(mph)     E 11 G27                  N 11 G24
20ftWnd - PM(mph)     NE 12 G28    NE 11 G27    N  9 G20
Precip amount         0.03         0.05         0.01
Precip duration       1            6            1
Precip begin          6 AM         Continuing   Continuing
Precip end            Continuing   Continuing   11 AM
LAL                   1            1            1
Haines Index          2            2            4
Mixing hgt(ft-AGL)    2100                      4830
Transport wnd (mph)   E 22                      N 16
Vent rate (kt-ft)     39900                     67620
CWR                   10           10           0
KBDI                  <200         <200         <200

REMARKS...None.
```

The rest of fire weather zones omitted for brevity. They would follow in a similar format as the grouping above.

**Red Flag Warning**

URGENT - FIRE WEATHER MESSAGE
NATIONAL WEATHER SERVICE CARIBOU ME
413 PM EDT MON MAY 4 2015

...RED FLAG WARNING THROUGH LATE THIS AFTERNOON...
...FIRE WEATHER WATCH TUESDAY AFTERNOON INTO THE EVENING...

.LOW RELATIVE HUMIDITY...GUSTY WEST TO NORTHWEST WINDS EXPECTED FOR TUESDAY.

MEZ001>006-010-011-015>017-031-032-050415-
/O.NEW.KCAR.FW.A.0002.150505T1600Z-150506T0000Z/
/O.CON.KCAR.FW.W.0001.000000T0000Z-150505T0000Z/
NORTHWEST AROOSTOOK-NORTHEAST AROOSTOOK-NORTHERN SOMERSET-
NORTHERN PISCATAQUIS-NORTHERN PENOBSCOT-SOUTHEAST AROOSTOOK-
CENTRAL PISCATAQUIS-CENTRAL PENOBSCOT-SOUTHERN PENOBSCOT-
INTERIOR HANCOCK-CENTRAL WASHINGTON-SOUTHERN PISCATAQUIS-
NORTHERN WASHINGTON-
413 PM EDT MON MAY 4 2015

...RED FLAG WARNING REMAINS IN EFFECT UNTIL 8 PM EDT THIS EVENING FOR VERY HIGH FIRE DANGER FOR NORTHERN AND EASTERN MAINE...
...FIRE WEATHER WATCH IN EFFECT FROM TUESDAY AFTERNOON THROUGH TUESDAY EVENING FOR VERY HIGH FIRE DANGER FOR NORTHERN AND EASTERN MAINE...

THE NATIONAL WEATHER SERVICE IN CARIBOU HAS ISSUED A FIRE WEATHER WATCH FOR VERY HIGH FIRE DANGER...WHICH IS IN EFFECT FROM TUESDAY AFTERNOON THROUGH TUESDAY EVENING.

* AFFECTED AREA...FIRE WEATHER ZONE 001 NORTHWEST AROOSTOOK... FIRE WEATHER ZONE 002 NORTHEAST AROOSTOOK...FIRE WEATHER ZONE 003 NORTHERN SOMERSET...FIRE WEATHER ZONE 004 NORTHERN PISCATAQUIS...FIRE WEATHER ZONE 005 NORTHERN PENOBSCOT...FIRE WEATHER ZONE 006 SOUTHEAST AROOSTOOK...FIRE WEATHER ZONE 010 CENTRAL PISCATAQUIS...FIRE WEATHER ZONE 011 CENTRAL PENOBSCOT...FIRE WEATHER ZONE 015 SOUTHERN PENOBSCOT...FIRE WEATHER ZONE 016 INTERIOR HANCOCK...FIRE WEATHER ZONE 017 CENTRAL WASHINGTON...FIRE WEATHER ZONE 031 SOUTHERN PISCATAQUIS AND FIRE WEATHER ZONE 032 NORTHERN WASHINGTON.

* WINDS...GUSTY SOUTHWEST WINDS WILL SUBSIDE THIS EVENING. WEST TO NORTHWEST WINDS WILL INCREASE TO 10 TO 20 MPH ON TUESDAY WITH GUSTS TO 30 MPH.

* RELATIVE HUMIDITY...AS LOW AS 25 PERCENT INTO EARLY EVENING. RELATIVE HUMIDITIES WILL INCREASE TONIGHT BUT DROP OFF ON TUESDAY AND ARE EXPECTED TO GO BELOW 30 PERCENT BY THE AFTERNOON.

* TEMPERATURES...WILL DROP BACK INTO THE 60S THIS EVENING. DAYTIME TEMPERATURES ON TUESDAY ARE EXPECTED TO BE IN THE UPPER 60S TO LOWER 70S.

* LIGHTNING...NOT EXPECTED.

* IMPACTS...GRASS OR BRUSH FIRES THAT IGNITE COULD SPREAD VERY RAPIDLY AND BECOME OUT OF CONTROL.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

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.

A FIRE WEATHER WATCH MEANS THAT CRITICAL FIRE WEATHER CONDITIONS ARE FORECAST TO OCCUR. LISTEN FOR LATER FORECASTS AND POSSIBLE RED FLAG WARNINGS.

$$

HEWITT

**Fire Weather Watch**

```
ZCZC PWMRFWGYX
WWUS81 KGYX 291937
URGENT - FIRE WEATHER MESSAGE
NATIONAL WEATHER SERVICE GRAY ME
337 PM EDT SAT MAY 29 2010

...LOW RELATIVE HUMIDITY AND GUSTY NORTHWEST WINDS MAY PRODUCE
CRITICAL FIRE WEATHER CONDITIONS SUNDAY...

.A COLD FRONT WILL MOVE THROUGH THE REGION TONIGHT AND USHER DRIER
AIR IN FOR SUNDAY. RELATIVE HUMIDITY WILL RANGE FROM 25 TO 30
PERCENT. IN ADDITION NORTHWESTERLY WINDS WILL INCREASE DURING THE
LATE MORNING WITH GUSTS OF 30 MPH POSSIBLE.

MEZ007>009-012>014-018>028-
/O.NEW.KGYX.FW.A.0002.100530T1500Z-100530T2200Z/
NORTHERN OXFORD-NORTHERN FRANKLIN-CENTRAL SOMERSET-
```

SOUTHERN OXFORD-SOUTHERN FRANKLIN-SOUTHERN SOMERSET-INTERIOR YORK-
INTERIOR CUMBERLAND-ANDROSCOGGIN-KENNEBEC-INTERIOR WALDO-
COASTAL YORK-COASTAL CUMBERLAND-SAGADAHOC-LINCOLN-KNOX-
COASTAL WALDO-
337 PM EDT SAT MAY 29 2010

...FIRE WEATHER WATCH IN EFFECT FROM SUNDAY MORNING THROUGH
SUNDAY AFTERNOON...

THE NATIONAL WEATHER SERVICE IN GRAY HAS ISSUED A FIRE WEATHER
WATCH...WHICH IS IN EFFECT FROM SUNDAY MORNING THROUGH SUNDAY
AFTERNOON.

RELATIVE HUMIDITY WILL RANGE FROM 25 TO 30 PERCENT WITH WIND GUSTS
TO 30 MPH.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A FIRE WEATHER WATCH MEANS THAT CRITICAL FIRE WEATHER CONDITIONS
ARE FORECAST TO OCCUR. LISTEN FOR LATER FORECASTS AND POSSIBLE
RED FLAG WARNINGS.

&&

## NFDRS Forecast

FNUS81 KCAR 101952
FWMCAR

FCST,170701,070111,13,1,24,45,1,1,W,04,,33,13,67,42,0,0,N

## Spot Forecast

SPOT FORECAST FOR MOOSEHORN...NWS GRAY
NATIONAL WEATHER SERVICE GRAY ME
101 PM EST WED MAR 21 2007

FORECAST IS BASED ON IGNITION TIME OF 1320 EST ON FEBRUARY 21.
IF CONDITIONS BECOME UNREPRESENTATIVE, CONTACT THE NATIONAL WEATHER
SERVICE.

.DISCUSSION...
DRY CONDITIONS WITH LIGHT WINDS WILL PREVAIL TODAY WITH A
MOSTLY CLOUDY SKY.

.TODAY...

SKY/WEATHER.....MOSTLY SUNNY (45-55 PERCENT). CHANCE OF SNOW
SHOWERS EARLY IN THE MORNING.
MAX TEMPERATURE.....AROUND 30.
MIN HUMIDITY.....59 PERCENT.
EYE LEVEL WINDS.....LIGHT WINDS BECOMING NORTHWEST 5 TO 11 MPH IN
THE LATE MORNING AND AFTERNOON.

```
CHANCE OF PCPN......10 PERCENT.
MIXING HEIGHT.......2000-3800 FT AGL INCREASING TO 4000-4400 FT AGL
                    IN THE AFTERNOON.
TRANSPORT WINDS.....NORTHWEST 12 TO 18 MPH.

TIME (EST)      1 PM   3 PM   5 PM
SKY (%).........61     61     62
WEATHER COV.....
WEATHER TYPE....NONE   NONE   NONE
TEMP............48     48     45
RH..............49     51     57
EYE LEVEL WIND..NW 9   NW 9   NW 9
EYE LEVEL WIND..15     15     15
CHC OF PCPN (%).10     10     10
```

## E- Surface Observations

The following sites can be accessed via the internet on the Gray or Caribou homepages, 24 hours a day, when available.

| Site | ID | Type |
|---|---|---|
| Augusta, ME | AUG | ASOS |
| Fryeburg, ME | IZG | ASOS |
| Lewiston/Auburn, ME | LEW | AWOS |
| Portland, ME | PWM | ASOS |
| Rockland, ME | RKD | AWOS |
| Sanford, ME | SFM | AWOS |
| Waterville, ME | WVL | AWOS |
| Wiscasset, ME | IWI | ASOS |

Automated Surface Observing System (ASOS) are owned and maintained by the NWS and report complete weather observations 24 hours a day. They can be accessed via the internet on the Gray homepage. The sites listed below are located within the Gray CWA.

Automated Weather Observations (AWOS), maintained by the Federal Aviation Administration (FAA) provide weather reports (no current weather is available on AWOS sites).

The Automated Surface Observing System (ASOS) is located at 10 sites across Northern and Down East Maine. A complete weather observation is available 24 hours a day by calling the site or by accessing the Gray or Caribou homepages. The observation locations and telephone numbers are listed below:

| ID | LOCATION | TELEPHONE |
|---|---|---|
| FVE | Frenchville | 207-543-7456 |
| CAR | Caribou | 207-496-3153 |
| HUL | Houlton | 207-532-1584 |
| GNR | Greenville | 207-695-0732 |
| MLT | Millinocket | 207-723-8396 |
| BGR | Bangor | 207-561-2515 |
| AUG | Augusta | 207-623-0432 |
| IWI | Wiscasset | 207-882-8094 |
| IZG | Fryeburg | 207-935-2882 |
| PWM | Portland | 207-874-7914 |

In addition to the ASOS observation, Automated Weather Observations (AWOS) are available from the following sites:

| ID | LOCATION | TELEPHONE |
|---|---|---|
| PQI | Presque Isle | 207-764-7248 |
| BHB | Bar Harbor | 207-667-7364 |
| 8BO | Rangeley | 207-864-5250 |
| LEW | Lewiston | 207-783-2806 |
| RKD | Rockland | 207-594-7946 |
| SFM | Sanford | 207-324-1958 |
| WVL | Waterville | 207-877-0519 |

**RAWS (Remote Automatic Weather Stations) and MESONET SITES (w/Lat and Lon)**

**RAWS**

| | | |
|---|---|---|
| McFarland Hill RAWS | 44.37 | -68.26 |
| Moosehorn | 45.11 | -67.28 |
| Rachel Carson | 43.27 | -70.59 |
| Isle Au Haut | 44.07 | -68.64 |

**MCOOP sites**

| | | |
|---|---|---|
| Dixmont | 44.684 | -69.141 |
| Westfield | 46.597 | -67.932 |
| Ripogenous Dam | 45.878 | -69.178 |
| Kokadjo | 45.673 | -69.446 |
| Eagle Lake | 47.037 | -68.569 |
| Eastport | 44.915 | -67.009 |
| Jonesboro | 44.646 | -67.649 |
| Patten | 46.026 | -68.498 |
| Oxbow Ck Pnt. | 46.427 | -68.553 |
| Princeton | 45.244 | -67.631 |
| Danforth | 45.661 | -67.861 |
| Fox Brook | 46.806 | -68.839 |
| Smith Brook | 46.455 | -68.952 |
| Saint Zacharie | 46.093 | -70.289 |
| Clayton Lake (40B) | 46.611 | -69.523 |
| Estcourt Station | 47.445 | -69.163 |

## F – NOAA Weather Radio

Portions of Northern and Down East Maine are covered by a NOAA Weather Radio network. These 24-hour broadcasts provide continuous up-to-date weather information directly from the NWS. Automated or taped weather messages are repeated every 5 to 10 minutes, and are routinely revised as needed. 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.

NOAA Weather Radio transmitter sites serving Maine and their assigned frequency are listed below:

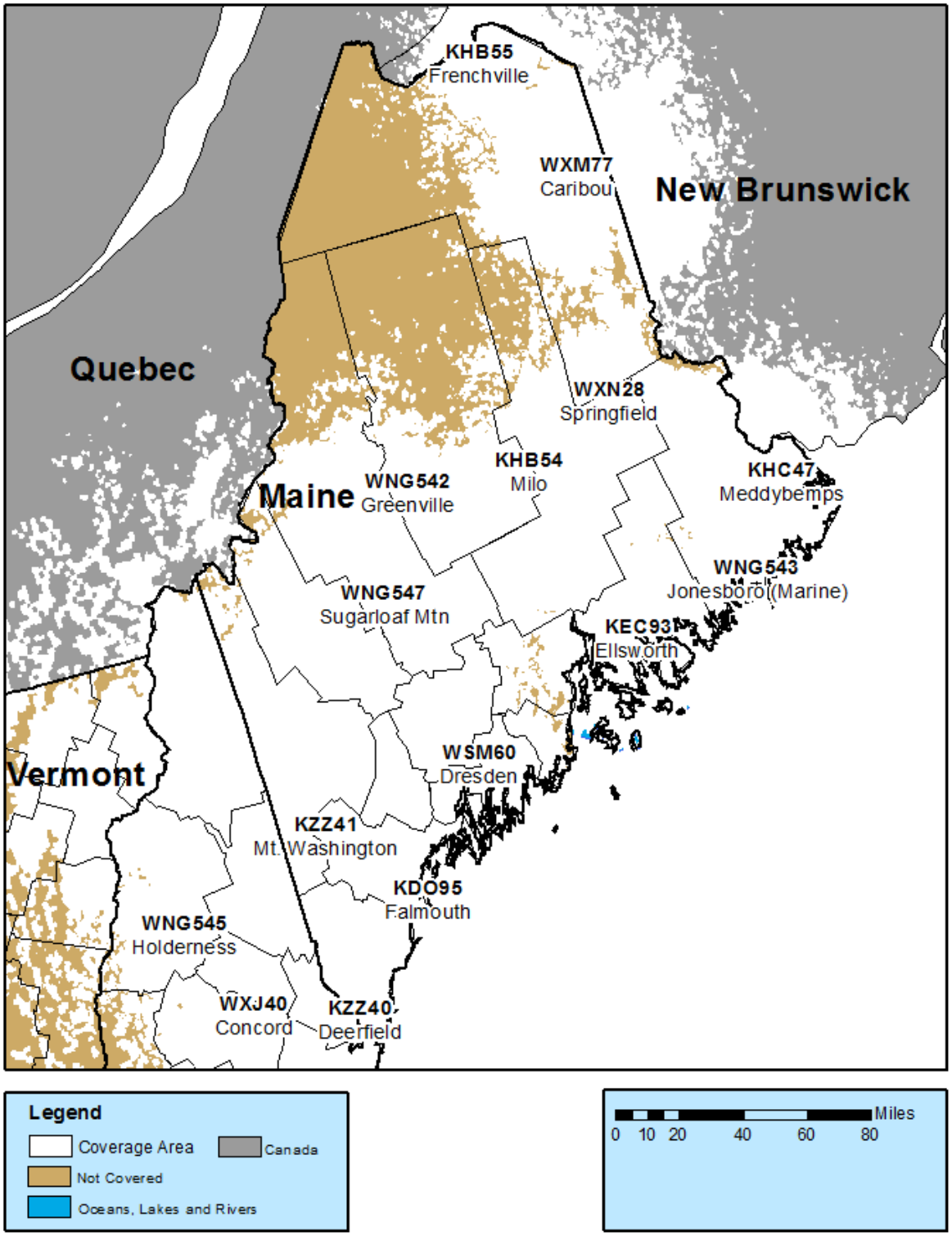
The National Weather Service operates 11 NOAA Weather Radio transmitters across Maine. Here's a list:

| Name | Location | Frequency | Call Sign |
|---|---|---|---|
| Blackstrap | Falmouth | 162.550 MHz | KD095 |
| Blinn Hill | Wiscasset/Dresden | 162.475 MHz | WSM-60 |
| Sugarloaf Mtn | Carrabasset Valley | 162.450 MHz | WNG-547 |
| *Ellsworth | Hancock Co. | 162.400 MHz | KEC-93 |
| Frenchville | Aroostook Co. | 162.475 MHz | KHB-55 |
| Greenville | Piscataquis Co. | 162.425 MHz | WNG-542 |
| Jonesboro (marine specific) | Washington Co. | 162.450 MHz | WNG-543 |
| Mars Hill | Aroostook Co. | 162.525 MHz | WXM-77 |
| Meddybemps | Washington Co. | 162.425 MHz | KHC-47 |
| Milo | Piscataquis Co. | 162.550 MHz | KHB-54 |
| Springfield | Penobscot Co. | 162.500 MHz | WXN-28 |

*State NWR Distribution Site

Jonesboro's primary programming is dedicated to marine forecasts, observations, and warnings for the intended use of both commercial and recreational mariners. In addition, severe weather warnings for Washington and Hancock counties will be aired on this station.

# Maine


KHB55
Frenchville
WXM77
Caribou
New Brunswick
Quebec
WXN28
Springfield
KHB54
Milo
KHC47
Meddybemps
Maine
WNG542
Greenville
WNG543
Jonesboro (Marine)
WNG547
Sugarloaf Mtn
KEC93
Ellsworth
WSM60
Dresden
Vermont
KZZ41
Mt. Washington
KDO95
Falmouth
WNG545
Holderness
WXJ40
Concord
KZZ40
Deerfield
Legend
Coverage Area
Canada
Not Covered
Oceans, Lakes and Rivers
Miles
0 10 20 40 60 80

## G – Record of Changes to the Operating Plan

**2013 season**: Changed Format/Content of FWF- Discussion changed from an overall discussion of basic weather patterns to a more specific fire weather discussion including RH, winds, and other factors that may impact fire weather operations; pg 9.

**2014 season**: Added section stating that when meteorological red flag criteria are expected but a RFW is not wanted by the State, written justification will be sent to the NWS; pg 17.

**2015 season**: Changed some contact information.

**2016 season:** Fixed broken links after ER migrated to a new web farm- now using many SR links. New national spot request page being tested/used this coming fire season 2016-2017. Replaced the map of the old fire weather zones with a map of the new zones. Changed some contact information.

**2017 season:** New spot page now live.

**2018 season:** Adjusted fire weather zones, fixed a couple links, and fixed a few typos.

**2019 season:** Changed some contact information. Added maps of fire zones used in Fire Weather Forecast (FWF). Documented addition of Keetch-Byram Drought Index to FWF. Updated phone number for Bangor ASOS. Updated frequency for Milo NOAA Weather Radio. Updated section of MESONET sites in Appendix C.

**2020 season**: Removed reference to dispersion in FWF, removed mention of Turner Brook RAWS site, clarified NWS/MFS coordination on RFWs, updated Acadia NPS fire contact, updated NWS Eastern Region fire weather contact, redesignated Appendices C through E to E through G, added new NOAA Weather Radio map and deleted old maps with incorrect frequencies, corrected lat/lon for numerous observing sites in Appendix E, deleted reference to Knowles Corner site and added 4 new sites in Appendix E, updated call sign for NWR transmitter at Meddybemps