

# Fire Weather Services Operation Plan for Maryland 2022

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### Section I Annual Operating Plan

This 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 in the state of Maryland.

#### **Explanation of relationship between the AOP 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
- MD Department of Natural Resources

#### Changes from 2021 Plan:

Page 1: A reconfiguration of the layout of the outline; No content changes.

Page 2: Consolidation of time zone including addition on EDT.

Pages 3-4: Adjustment of the layout of the WFO forecast zones.

Page 4: Inclusion of the word fire to the term “critical weather” days.

Page 5: Added EDT to the mention EST for the upper air sounding availability.

Page 6: Removed mention that WFO Mount Holly does not forecast the ADI & LVORI.

Pages 8-9: Provided more information and additional details in the NDFRS section.  
Page 9: Organized the RAWS station table and edited lat/long and/or elevation data where necessary.  
Pages 11-12: Shifted to a tabular format for the NOAA Weather Radio section.  
Pages 12-13: Provided greater detail to the section regarding on-site meteorological support.  
Page 14: Numerous updates to the WFO fire weather program leaders and assistants. Also, updated the WFO Mount Holly WCM position status.  
Page 15: Updated the Maryland DNR contact list to accommodate a retirement.  
Pages 16-17: Provided a more recent example of the FWF product.  
Page 17: Added the mention of the FWM being a 7-day product now along with a more recent date listed in the example.  
Pages 18-21: Supplied more recent examples of a Spot Forecast, Fire Weather Watch, Red Flag Warning, and Special Weather Statement.  
Page 22: Added the updated look of the Graphical Fire Weather Forecast.

## **Section II**

### **NWS Fire Weather Policy & Philosophy**

The National Weather Service Forecast Offices (WFO's Sterling, VA, Mount Holly, NJ, and Wakefield, VA) will provide fire weather support in accordance with the National Weather Service Fire Weather Policy. This support will consist of daily fire weather forecasts. Spot (non-routine) forecasts, fire weather watches, and red flag warnings will be provided on an as-needed basis at any time throughout the year.

Unless otherwise specified, forecasts are made to reflect the worst probable weather in terms of fire management, within the forecast zone. For instance, the daytime forecast will attempt to depict the hottest, driest, and windiest weather that is likely to be experienced in the wildland environment of a zone from 7AM to 7 PM EST/EDT. On occasion, this may be different from the general public forecast which emphasizes prevailing conditions for the area.

Though the routine forecast attempts to depict a worst case fire weather scenario for a given period, it in no way reflects all the local variations in weather that can have an adverse effect on fire behavior within a zone. Fire control officers should be familiar with typical weather variations across their district or forest such as those associated with land versus sea interaction, changes in elevation, and vegetation. The impact of sea breezes or mountain/valley winds should also be recognized. A spot forecast should be requested whenever local effects are suspected of creating difficult fire management conditions.

Over mountainous terrain, weather conditions vary considerably from site to site within a county. Routine forecasts for mountainous counties will be aimed at lower elevations where the most operations are likely to occur. As a general rule, high elevation sites will have lower temperatures on the order of 5 degrees per 1,000 feet in elevation. Fire officers are urged to

obtain spot forecasts whenever terrain causes significant departures from the routine forecast.

### Section III NWS Forecast Areas

**WFO Sterling:** All of Maryland west of the Chesapeake Bay.

**WFO Mount Holly:** Kent, Queen Anne's, Caroline, Talbot counties

**WFO Wakefield:** Dorchester, Wicomico, Worcester, Somerset counties.

For NWS Sterling: <http://www.weather.gov/lwx/>

For NWS Mount Holly: <http://www.weather.gov/phi/>

For NWS Wakefield: <http://www.weather.gov/akq/>

**National Fire Weather Page:** <https://www.weather.gov/fire/>



<b>WFO Sterling (Zones/Zone #s)</b>			
W Allegany	MDZ501	Calvert	MDZ018
E & Central Allegany	MDZ502	Cecil	MDZ008
Anne Arundel	MDZ014	Frederick	MDZ004
Northern Baltimore	MDZ006	Charles	MDZ016
Southern Baltimore	MDZ011	Carroll	MDZ005
NW Harford	MDZ507	Garrett	MDZ001
SE Harford	MDZ508	Washington	MDZ003
		SE Howard	MDZ506
		NW Howard	MDZ505

SE Montgomery MDZ504  
NW Montgomery MDZ503

Prince Georges MDZ013  
St. Mary's MDZ017

**WFO Mount Holly**

Kent MDZ012  
Queen Anne's MDZ015  
Talbot MDZ019  
Caroline MDZ020

**WFO Wakefield**

Dorchester MDZ021  
Wicomico MDZ022  
Worcester MDZ024  
Eastern Worcester MDZ025  
Somerset MDZ023

**Section IV**  
**The Fire Weather Planning Forecast (FWF)**

The fire weather planning forecast (FWF) will be issued by each Weather Forecast Office for fire weather zone in their forecast area. The forecast will be issued between 4:00 and 6:00 AM each morning and again between 2:00 and 4:00 PM each afternoon.

The morning fire weather forecast will cover specific conditions for a 36 hour period and will consist of three 12 hour periods (today, tonight, and the next day). The afternoon forecast will consist of four 12 hour periods (tonight, tomorrow, tomorrow night, and the next day). On critical fire weather days, a headline may be included at the top of the product. The headline will be mandatory for Red Flag Warnings or Fire Weather Watches. A brief synopsis of the weather as it pertains to the forecast area will precede the forecasts. Following the three/four period forecasts, the product will also contain an extended forecast, and the NWS long range forecast for the area.

A) Data Included in the Short Term Section of the Fire Weather Product will be broken down into several groups. Each forecast zone consists of 12 hour periods. The data included will be:

- 1) Cloud Amount
- 2) Precipitation Type
- 3) Chance of Precipitation
- 4) Daytime Max Temperatures and Nighttime Minimum Temperatures (*deg F*)
- 5) Daytime Minimum Relative Humidity and Nighttime Max (*in percent*)
- 6) 20-ft Wind Direction & Speed (*using an 8 point compass in MPH*)
- 7) Precipitation Amount (*in inches*)
- 8) Precipitation Duration (*in hours*)
- 9) Precipitation Begin and End Times (*NWS Sterling and Pittsburgh only*)
- 10) Daytime Mixing Height (*in feet*)
- 11) Daytime Transport Wind Direction
- 12) Daytime Transport Wind Speed (*in miles per hour*)
- 13) Daytime Ventilation Index (*transport wind speed x mixing height*)

- 14) Lightning Activity Level
- 15) Haines Index for potential fire growth
- 16) Early and Late ADI
- 17) Early and Late Max LVORI

**20-ft Winds:** Direction is given using an eight point compass (i.e. N, NE, E, SE, S, SW, W, NW). Surface wind speed is in miles per hour. During the daytime periods, wind is broken down into morning and afternoon periods. For those that require 20 foot winds, the difference between 20 and 33 foot wind is typically only 10 % or less in moderate to strong winds.

- **Precipitation Duration:** The total number of hours of precipitation expected during the 12 hour period.

- **Precipitation Begin and End Times:** These are the start and end times of any expected precipitation. It does not necessarily mean that precipitation will occur continuously between these times.

- **Humidity:** The humidity values given are the relative humidity extremes expected. In the two daytime periods, these are the minimum relative humidity forecast. At night, they are the maximum value forecast.

- **Haines Index:** This index refers to the stability and dryness of the lower atmosphere. It was intended to measure the potential for fire growth with existing fires. It is calculated by adding two factors. The first compares the atmospheric temperature at 950 mb versus 850 mb. The second figures the humidity of the atmosphere at 850 mb. This is a daytime index. A Haines Index of:

- 2 or 3 Indicates a very low potential for fire growth
- 4 Indicates a low potential
- 5 Indicates a moderate potential
- 6 Indicates a high potential for large fire growth
- \*\*\* A value of 5 or 6 indicates that prescribed burns may get out of control.

- **Lightning Activity Level:** The amount of lightning strikes anticipated.

- 1 No lightning
- 2 No lightning or a few scattered strikes
- 3 Scattered strikes
- 4 More numerous strikes
- 5 Frequent lightning

- **Mixing Height:** This is defined as the atmospheric limit above which vigorous mixing does not take place. The mixing height gives the potential of the atmosphere to disperse smoke. In general, with a forecast mixing height of 1600 feet (500 meters) or less, the fire control officer should consider moving a

scheduled prescribed burn to a different day. Upper air sounding data is available between 8-9 AM EST (9-10 AM EDT). This data can sometimes provide a more accurate mixing height than what is issued earlier in the morning on the daily fire weather forecast. Since vigorous mixing typically occurs during the daylight hours, this value is given during the daytime periods. At night, the value falls to the inversion height.

**Transport Wind:** Defined as the average wind vector from the surface to the mixing height (more plainly, the direction and speed of the wind that will carry the smoke). Direction of the transport wind (where the wind is blowing from) and speed will be given. This is given in miles per hour. To convert to meters per second, multiply it by 0.45 (roughly divide it in half). Since the mixing height used to compute this is a daytime index, this is given for day periods only.

**Ventilation Rate:** This is a combination of the Transport Wind (mph) and the Mixing Height (ft). It is computed by multiplying the two values. It measures the volume of smoke moved by dispersion. Since the mixing height used to compute this is a daytime index, ventilation rate is also given for the daytime periods only.

**ADI..**

The atmospheric dispersion index is the process by which the atmosphere mixes and transports particulates such as smoke away from their source. It is an assessment of air quality and smoke concentration. ADI is derived from 20 ft wind speed, mixing height, transport wind, and cloud cover.

ADI			
1-6	=	Very Poor	61-100 = Good
7-12	=	Poor	>100 = Very Good
13-20	=	Generally Poor	
21-40	=	Fair	
41-60	=	Generally Good	

**LVORI..**

The Low Visibility Occurrence Risk Index is an index of low visibility and ranges from 1-10 depending on the dispersion and relative humidity. A 1 indicates there is almost no chance of low visibility, while a 10 indicates low visibility is likely.

**B) The Extended Forecast**

At the end of the daily fire weather forecast, the extended forecasts are given. For the mid range, these will include cloud cover, precipitation, and temperatures. For the long range, this will include deviations from normal for temperatures and precipitation.

**Section V**

## **Spot (Non-Routine) Forecasts**

### **Site Specific Forecasts (Spot Forecasts)**

#### ***Criteria***

Spot forecasts are special, non-routine forecasts prepared upon request of any federal agency, or state agency when there is some aspect of federal resources involved and/or interagency protection agreements currently exist. Site specific weather forecasts are 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; however, the response may be delayed due to higher priority responsibilities of the forecaster on duty.

#### ***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. 38.46, -78.65). If degrees/minutes/seconds, use a second decimal (e.g. 37.27.36, 78.39.00), or leave a space between each number (e.g. 37 27 36, 78 39 00).

Requests for and retrieval of completed Spot Forecast Request web page found at <https://www.weather.gov/spot/request>

In times when internet access is hindered or not possible, spot forecasts may be requested and disseminated via fax or phone. If faxing a request, users should use the Fire Weather Special Forecast Request Form, WS Form D-1. A printable version of this form is located here <https://www.weather.gov/media/cae/D1a.pdf> Section I of WS Form D-1 should be filled out as completely as possible by the user agency prior to submitting the request by the fax to the forecast office. If the request is made by phone, all information in Section I should be provided to the forecast office.

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 guide.

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.

Provide as much on-site or near-site weather information as possible. At a minimum, the user should provide at least one observation within an hour of the request. This observation must 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.

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

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

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).

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.

## **Section VI**

### **National Fire Danger Rating System (NFDRS) Forecasts**

NFDRS forecasts will be issued for any predetermined site from which an NFDRS observation is received, provided the observation is received on time, complete, and deemed accurate. The natural resource agencies will determine which observation sites (normally RAWS sites) will be NFDRS sites. NFDRS forecasts will be issued by the NWS for all RAWS stations on a daily basis no later than 1945Z (245 PM EST or 345 PM EDT) and is now a 7-day forecast. 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 which may include a negative humidity, or an abnormally high or low temperature for the season. These issues normally indicate the sensors need to be replaced. The NWS will notify the owner agency when bad data is received from a RAWS station.



NFDRS 2016 will require a continuum of observations spanning 24 hours every day. Short term outages of an hour or so will generally not pose too much of a problem in the computation of indices; however, long term outages of eight hours or more could lead to significant errors. This is due to the fact that every observation throughout the day is needed to accurately model fuel moisture values.

This year, NFDRS 2016 is expected to reach full implementation with the legacy fuel models from the 1978 and 1988 systems being turned off. These will entail some fundamental changes to the way NFDRS is both computed and enacted. It is suspected Fuel Model 16Y will be the replacement for fuel models 7G and 8G. With NFDRS 2016 being much more automated in nature, the requirement of changing R to O will no longer be necessary. This level of automation may render the WIMS collective (FWO) obsolete. Many of these changes in the NFDRS will be largely transparent to the NWS.

The information needed by the NWS to produce the NFDRS forecast can be supplied by either the GACC meteorologist or the agency representative within the state or local area. This data is readily available from the WIMS catalog.

#### **MARYLAND NFDRS RAWS**

<b>WIMS ID</b>	<b>NAME</b>	<b>COUNTY</b>	<b>ELEV. (ft)</b>	<b>LAT.</b>	<b>LONG.</b>	<b>OWNER</b>	<b>WFO</b>
180201	Green Ridge	Allegany	1,090	39.69	78.42	MFS	Sterling
180302	Catoctin Mt	Frederick	1,485	39.65	77.49	NPS	Sterling
180303	Antietam NB	Washington	450	39.49	77.75	NPS	Sterling
180701	Susquehanna	Harford	369	39.61	76.16	MFS	Sterling
181510	Cedarville	Prince Georges	209	38.65	76.82	MFS	Sterling
181501	Patuxent	Prince Georges	200	39.05	76.82	FWS	Sterling
182101	Tuckahoe	Caroline	50	38.94	75.94	MFS	Mt. Holly
182002	Blackwater	Dorchester	8	38.44	76.09	FWS	Wakefield
182201	Powellville	Wicomico	16	38.36	75.43	MFS	Wakefield
180335	Assateague	Worcester	12	38.08	75.20	NPS	Wakefield

**Section VII**  
**Fire Weather Watches/Red Flag Warnings/Special Weather Statements**  
*(WBCRFWLWX)(WBCSPSLWX)*

Three specific conditions must be met (or expected to be met) concurrently for a Red Flag Warning (or Fire Weather Watch) to be issued. These conditions are as follows:

- ✓ Ten hour fuels must be less than or equal to 8%
- ✓ Sustained surface winds 20 MPH or greater (33-ft 2-minute average)
- ✓ Relative Humidity below 30%

NWS offices Sterling, Wakefield, and Mount Holly will contact the Maryland Department of Natural Resources Forest Service to obtain information about fuel moisture before issuing any headlines. Chris Robertson will be the lead contact, but the WFO's will use the Maryland Forest Service Wildfire Schedule to contact the State Duty Officer assigned daily. Each WFO will receive the schedule of contact information for the State Duty Officer on a monthly basis.

If WFO's determine that the relative humidity/wind criteria will be met, AND after coordination it is determined that the Fuel Moisture criteria will be met, WFO's will issue a FIRE WEATHER WATCH or RED FLAG WARNING. A SPECIAL WEATHER STATEMENT may be issued when it is determined that all elements (wind speed, relative humidity, and fuel moisture) will be close to criteria for Red Flag Conditions. Special Weather Statements will also be coordinated with the Maryland Department of Natural Resources before being issued.

If a FIRE WEATHER WATCH or RED FLAG WARNING is issued, WFO's will include a HEADLINE in the daily fire weather forecast as well as any spot forecasts that are issued during the event. Also a separate product called an RFW will be issued. This separate product will more specifically state the risks and what weather conditions are producing them.

A **"FIRE WEATHER WATCH"** is issued to alert the users to the possible development of a Red Flag event (as defined by the 3 criteria above) in the near future. This is typically issued within 12 to 48 hours in advance of the onset of possible warning conditions.

A **"RED FLAG WARNING"** is issued to warn the users of an impending or on-going Red Flag event (as defined by the 3 criteria above). A Red Flag Warning will typically be issued within 12 hours of the onset of expected warning conditions. However, when confidence is high, a Red Flag Warning may be issued up to 24 hours before the onset of expected warning conditions.

A **"SPECIAL WEATHER STATEMENT"** is issued during situations where near critical (i.e., Wind, RH, and Fuel Moisture are near RFW Criteria) Fire Weather Conditions are expected. A Special Weather Statement may be issued. All Special Weather Statements will be coordinated with the Maryland DNR.

## **Section VIII**

### **Fire Weather Point Forecast Matrix (PFW)**

The Fire Weather Point Forecast Matrix (PFW) is a tabular-type product used by natural resource management personnel for decision support related to pre-suppression and other planning or resource management activities at or near a specific point. These points are predetermined by the customers, and are semi-permanent in nature, meaning they can be changed from time to time, but not on a daily basis.

Generally, the forecast points listed in the PFW are those that are included in the National Fire Danger Rating System (NFDRS) Forecasts (i.e. RAWS locations). If an agency has a critical burn they are planning or there is a prolonged wildfire, they may request to have a point added to the PFW to aid in their planning and decision making processes. If an agency would like to have a point added to the PFW, contact the NWS Fire Weather program manager responsible for the location. A name, elevation, latitude, and longitude for the location is required to have the point added. It may take 2-3 days (sometimes longer) to have a point added to the PFW, so it is not advantageous to make a request for a near-term project or short-lived wildfire where a Spot Forecast is more appropriate.

Note: This product is available for WFOs [Sterling](#) , and [Wakefield](#) County Warning Areas.

**Product Overview and Issuance Criteria**

The PFW provides a detailed prediction of elements for three days out at 3-hour intervals, including smoke management parameters through day 2, and a more general 3 to 7 day forecast without smoke management parameters. The winds given in this forecast are not terrain corrected winds. The PFW is issued twice daily, once in the morning (around 5:00 AM), and the other in the afternoon (around 4:00 PM).

**Section IX  
NOAA Weather Radio**

NOAA Weather Radio continuously broadcasts weather information on a special broadcast band. NOAA Weather Radio transmitters that cover areas within Maryland area are as follows:

The following are NWS Sterling’s NOAA Weather Radios and their assigned frequencies:

<b>NWS Sterling</b>		
<u>Location</u>	<u>Station</u>	<u>Frequency</u>
Pikesville, MD	KEC-83	162.400 MHz
Hagerstown, MD	WXM-42	162.475 MHz
Frostburg, MD	WXM-43	162.425 MHz
Washington, D.C.	WNG-736	162.450 MHz

Manassas, VA	KHB-36	162.550 MHz
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<b>NWS Wakefield</b>		
<u>Location</u>	<u>Station</u>	<u>Frequency</u>
Salisbury, MD	KEC-92	162.475 MHz
Heathville, VA	WXM-57	162.400 MHz
Accomack, VA	KJY-99	162.525 MHz

<b>NWS Mt. Holly</b>		
<u>Location</u>	<u>Station</u>	<u>Frequency</u>
Sudlersville, MD	WXK-97	162.500 MHz

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**Section X**  
**Specialized Fire Weather Services &**  
**On-Site Meteorological Support**

**Onsite Support**

National Weather Service Sterling is offering onsite meteorological support for enhanced fire threats and prescribed burns depending on resource availability. Support must be requested by the agencies with as much advance notice as possible. If Sterling cannot provide onsite support due to resource issues, then offsite support will be provided (via phone). Support from the Sterling office will only be for counties located within the Sterling Office's County Warning Area. For counties outside Sterling's County Warning Area, any support must be coordinated with the appropriate office (Wakefield, or Mount Holly).

When requesting onsite meteorological support, this may include the deployment of an Incident Meteorologist (IMET) and related service equipment such as the All Hazards Meteorological Response System (AMRS), and the Incident Remote Automated Weather Station (IRAWS). The IMET, AMRS, and the IRAWS are considered national firefighting resources, and can be requested through the

Maryland Department of National Resources.

The AMRS is a modularized mobile system of equipment used by an IMET for data collection and forecast preparation. Only trained personnel will operate the AMRS, and this service equipment will only be dispatched to an incident when a certified IMET is requested. The IMET is responsible for arranging shipment of the AMRS.

The procedure for requesting IMETs will follow the guidelines outlined in the national MOA, the National Mobilization Guide, and the Eastern Area Interagency Mobilization Guide. The following information will be provided to the requested IMET:

- 1) Name of fire
- 2) Location of fire
- 3) Directions to location where the IMET is to report and the location of ICP
- 4) Name of Incident Commander, Planning Chief, and FBAN, if available,
- 5) Request and Resource number for IMET

IMET duties will vary with incident management team requirements, but the IMET is expected to provide daily weather forecasts for the incident, participate in shift briefings, planning and strategy meetings, and coordinate daily with the local Weather Forecast Office (WFO) and/or other IMET's at nearby incidents.

## Fire Weather Training

NWS Fire Weather Meteorologists are available to assist in fire control agencies with training at fire behavior school and other weather related courses. Requests for assistance should be forwarded to the Fire Weather Program Leader or MIC of the WFO.

## Other Specialized Services

Other services include weather station visitations requested by user agencies, weather observer training, and course development work. These activities would typically be conducted at user agency facilities.

Information for Incident Meteorologists can be found at the following link:

[http://www.fs.fed.us/fire/ibp/master\\_ia\\_wildland\\_fire\\_mgt.pdf](http://www.fs.fed.us/fire/ibp/master_ia_wildland_fire_mgt.pdf)

# APPENDIX A

## NWS OFFICES and Contacts

- Sterling NWS: Brendon Rubin-Oster: *Fire Weather Program Leader (FWPL)*  
[Brendon.Rubin-Oster@noaa.gov](mailto:Brendon.Rubin-Oster@noaa.gov)  
James Lee *Meteorologist in Charge (MIC)*  
Christopher Strong: *Warning Coordination Meteorologist (WCM)*  
43858 Weather Service Road  
Sterling, VA 20166  
(571) 888-3502
- Wakefield NWS: Andrew Zimmerman: *Fire Weather Program Leader (FWPL)*  
[Andrew.Zimmerman@noaa.gov](mailto:Andrew.Zimmerman@noaa.gov)  
Jeff Orrock: *Meteorologist in Charge (MIC)*  
Eric Seymour: *Warning Coordination Meteorologist (WCM)*  
10009 General Mahone Hwy.  
Wakefield, VA 23888-2742  
(757) 899-4200
- Mt. Holly NWS: Jonathan E O'Brien, *Fire Weather Program Leader (FWPL)*  
[Jonathan.E.Obrien@noaa.gov](mailto:Jonathan.E.Obrien@noaa.gov)  
Lee Robertson: *Assistant FWPL*  
[Lee.Robertson@noaa.gov](mailto:Lee.Robertson@noaa.gov)  
Jason Franklin, *Meteorologist-in-Charge (MIC)*  
Sarah Johnson: *Warning Coordination Meteorologist (WCM)*  
732 Woodlane Rd.  
Mt. Holly, NJ 08060  
(609) 261-6604
- Eastern Region HQ: Melissa Di Spigna: *Regional Fire Weather Program Manager*  
[Melissa.Dispigna@noaa.gov](mailto:Melissa.Dispigna@noaa.gov)  
Airport Corporate Center  
630 Johnson Ave.  
Bohemia, NY 11716  
(631) 244-0122
- NWS Leader: Heath Hockenberry, *Program Leader*  
[Heath.Hockenberry@noaa.gov](mailto:Heath.Hockenberry@noaa.gov)  
National Interagency Fire Center  
3833 S. Development Ave.  
Boise, ID 83705  
(208) 334-9862 (office), (208) 869-2994 (cell)

# APPENDIX B

## USER CONTACTS

### MARYLAND

**See Maryland Forest Service Wildfire Schedule for daily assigned State Duty Officer Contact. Schedule is issued on a monthly basis and sent to WFO.**

DNR Forest Service Chris Robertson: *State Fire Supervisor*  
*HEADQUARTERS* [chris.robertson@maryland.gov](mailto:chris.robertson@maryland.gov)  
Maryland DNR Forest Service  
580 Taylor Ave E-1  
Annapolis, MD 21401  
(410) 260-8503 Office  
(443) 534-6884 Cell

DNR Forest Service Shannon Wolfe, *Fire Manager, Allegany Co.*  
*WESTERN and SOUTHERN*  
[shannon.wolfe@maryland.gov](mailto:shannon.wolfe@maryland.gov)  
Maryland DNR Forest Service  
10201 Bee Oak Road  
Brandywine, MD 20613  
(301) 579-6551 Office  
(301) 331-6432 Cell  
(301) 579-6772 Fax

DNR Forest Service Chris Smith, *Fire Manager, Harford Co.*  
*EASTERN and CENTRAL*  
[chris.smith2@maryland.gov](mailto:chris.smith2@maryland.gov)  
Maryland DNR Forest Service  
3919 Madonna Road  
Jarrettsville, MD 21084  
(410) 692-2072 Office  
(410) 533-8747 Cell

## Appendix C (SAMPLE PRODUCTS)

### FIRE WEATHER PLANNING FORECAST

MDZ003-182100-  
Washington-  
Including the city of Hagerstown  
534 AM EST Fri Feb 18 2022

	Today	Tonight	Sat
CLOUD COVER	Pcldy	Mclear	Pcldy
PRECIP TYPE	None	None	Snow Showers
CHANCE PRECIP (%)	0	0	20
MX/MN TEMP (24H TREND)	40 (-22)	24 (-12)	42
MX/MN RH% (24H TREND)	39 (-24)	67 (-25)	30
AM WIND (MPH)	NW 21 G55		SW 13 G35
PM WIND (MPH)	NW 16 G37	W 7 G21	W 21 G50
PRECIP AMOUNT	0.00	0.00	0.00
PRECIP DURATION			1
PRECIP BEGIN			10 AM
PRECIP END			4 PM
MIXING HGT (FT-AGL)	4480		7620
TRANSPORT WND (MPH)	NW 26		W 40
VENT RATE (KT-FT)	103040		266700
LAL	1	1	1
HAINES INDEX	3	4	4
ADI early	84 GOOD	10 POOR	115 VERY GOOD
ADI late	82 GOOD	4 VERY POOR	146 VERY GOOD
MAX LVORI EARLY	2	3	3
MAX LVORI LATE	1	3	1

REMARKS...None.

.FORECAST FOR DAYS 3 THROUGH 7...

.SUNDAY...Mostly clear. Lows around 16. Highs in the lower 40s. South winds 15 to 20 mph.

.MONDAY...Mostly clear. Warmer. Lows in the upper 20s. Highs in the upper 50s. South winds 10 to 15 mph.

.TUESDAY...Rain. Lows in the lower 40s. Highs in the upper 50s. South winds 10 to 15 mph.

.WEDNESDAY...Mostly cloudy with rain likely. Lows in the lower 50s. Highs around 60. West winds 10 to 15 mph.

.THURSDAY...Mostly cloudy with a chance of rain and snow. Colder. Lows in the mid 30s. Highs in the lower 40s. North winds 10 to 15 mph.



.OUTLOOK 8 TO 14 DAYS...

Temperatures below normal. Precipitation above normal.

## **NFDRS Forecast (FWM)**

WBCFWMLWX

TTAA00 KWBC DDHHMM

FCST,180201,211113,13,2,62,45,1,2,SW,18,,71,55,90,40,3,1,N

### **\*This is officially a 7-day product now\***

Specifically, here is what's in the product WBCFWMWBC:

1) FCST = Tells the NFDRS the following is a forecast.

2) xxxxxx = Six digit station number. Initially, WBC will issue forecasts only for these sites:

- 180201 – Green Ridge, MD (Allegany County)

3) Tomorrow's date (e.g., 211113 is November 13<sup>th</sup>, 2021)

4) Time of forecast (e.g., 13 = 1300 Local Time = 1 PM)

5) A one digit code for weather forecast at time of observation 1300 LOCAL (1PM) tomorrow. The following are valid codes:

0 = clear

1 = scattered clouds

2 = broken clouds

3 = overcast

4 = fog

5 = drizzle

6 = rain

7 = snow, sleet, freezing rain

8 = showers over or in sight of station

9 = thunderstorms

6) Temperature forecast at 1pm tomorrow (degrees F)

7) Humidity forecast at 1pm tomorrow (0-100 percent)

8) Lightning activity from 1pm today through midnight tonight. See following note.

9) Lightning activity from midnight tonight to midnight the upcoming (next) day. See following note.

#### **NOTE ON LIGHTNING ACTIVITY ENTRIES 8 and 9:**

*The codes really have more to do with areal coverage than anything. Here is basically the breakdown:*

- 1) No lightning forecast.
- 2) Isolated thunderstorms (10 percent areal coverage).
- 3) Widely scattered thunderstorms (10-20 percent coverage).

- 4) Scattered thunderstorms (30-40 percent areal coverage).
- 5) Numerous thunderstorms (>50 percent coverage). Frequent lightning potential.
- 6) Frequent lightning from "dry" thunderstorms (we will likely never use this here at WBC).

- 10) Wind direction forecast for 1pm tomorrow (2 letter XX format, use ordinal compass points, e.g., S, SW, NE).
- 11) Wind speed (mph) forecast for 1pm tomorrow.
- 12) MISSING ELEMENT for fuel moisture - LEAVE BLANK (fire officials compute this).
- 13) High temperature forecast (deg F) next 24 hours (occurring either today or tomorrow).
- 14) Low temperature forecast (deg F) next 24 hours (occurring either today or tomorrow).
- 15) Humidity maximum (%) over next 24 hours (1pm today-1pm tomorrow).
- 16) Humidity minimum (%) over next 24 hours (1pm today-1pm tomorrow).
- 17) Precipitation duration (in hours) through 5am the next morning.
- 18) Precipitation duration (in hours) 5am to 1pm the next day.
- 19) Y or N - to indicate a snow pack or soaked ground.

## Point Forecast Matrix (PFM)

### Spot Forecast (Example):

.DISCUSSION...

Mild conditions combined with a dry air mass have resulted in relative humidity values running in the 33 to 40 percent range today. Current observations within 8 miles of the spot forecast show 4 PM relative humidities in the mid/upper 30s. These should quickly rise during the evening as the ground begins to cool off. Good recoveries are forecast tonight as the air mass becomes nearly saturated with overnight temperatures in the mid 40s. Conditions Wednesday will be a bit cooler than today as winds shift from westerly to northerly. The wind fields do remain light given the presence of high pressure. The cooler temperatures will also support an uptick in humidity values on Wednesday. The next chance of showers is not expected to arrive until late Thursday.

.REST OF TODAY...

Sky/weather.....Sunny (20-30 percent).  
 CWR.....0 percent.  
 Max temperature.....Around 71.  
 Min humidity.....37 percent.  
 Wind (20 ft).....Light winds.  
 Mixing height.....300 ft AGL.  
 Transport winds.....Southwest around 6 mph.  
 Smoke dispersal.....Poor (600 knot-ft).

TIME (EST) 4 PM  
 SKY (%).....24

WEATHER COV.....  
 WEATHER TYPE...NONE  
 CWR.....0  
 TEMP.....65  
 RH.....50  
 20 FT WIND.....W 3  
 20 FT WIND GUST.6  
 MIX HGT (FT)...300  
 MIXING WIND....SW 6  
 VRATE KT-FT/10002

.TONIGHT...

Sky/weather.....Partly cloudy (25-35 percent) then becoming  
 mostly cloudy (60-70 percent).  
 CWR.....10 percent.  
 Min temperature.....Around 45.  
 Max humidity.....96 percent.  
 Wind (20 ft).....Light winds.  
 Mixing height.....0 ft AGL.  
 Transport winds.....West 3 to 5 mph.  
 Smoke dispersal.....Poor (0 knot-ft).

TIME (EST)	6 PM	8 PM	10 PM	MIDNGT	2 AM	4 AM
SKY (%).....	18	30	53	65	66	74
WEATHER COV.....						
WEATHER TYPE...NONE	NONE	NONE	NONE	NONE	NONE	NONE
CWR.....	0	0	0	10	10	
TEMP.....	58	52	47	47	46	47
RH.....	67	80	96	93	96	93
20 FT WIND.....	W 2	W 1	W 1	W 1	NW 2	W 2
20 FT WIND GUST.	5	2	4	5	5	6
MIX HGT (FT)...100	BLW100	BLW100	BLW100	BLW100	BLW100	100
MIXING WIND....SW 5	SW 5	SW 3	W 3	W 3	W 3	W 5
VRATE KT-FT/10000	0	0	0	0	0	0

.WEDNESDAY...

Sky/weather.....Partly sunny (50-60 percent) then becoming  
 sunny (5-15 percent).  
 CWR.....10 percent.  
 Max temperature.....Around 65.  
 Min humidity.....52 percent.  
 Wind (20 ft).....Light winds becoming north 5 to 6 mph early in  
 the morning, then becoming light late in the  
 afternoon.  
 Mixing height.....3000 ft AGL.  
 Transport winds.....Northwest 5 to 13 mph shifting to the north 6  
 to 15 mph in the late morning and afternoon.  
 Smoke dispersal.....Poor (0 knot-ft) early in the morning  
 increasing to fair (28000 knot-ft) in the  
 afternoon.

TIME (EST)	6 AM	9 AM	NOON	3 PM
SKY (%).....	54	11	0	4

WEATHER COV.....				
WEATHER TYPE...NONE	NONE	NONE	NONE	NONE
CWR.....10	0	0	0	0
TEMP.....49	56	64	64	64
RH.....86	77	58	52	52
20 FT WIND.....NW 3G6	N 6G13	N 6G11	N 5G8	N 5G8
MIX HGT (FT)...BLW100	1300	3000	1200	1200
MIXING WIND....NW 5	N 13	N 9	N 7	N 7
VRATE KT-FT/10000	14	24	7	7

## **FIRE WEATHER WATCH (Example):**

...FIRE WEATHER WATCH IN EFFECT THURSDAY AFTERNOON FOR LOW RELATIVELY HUMIDITY AND GUSTY WINDS FOR AREAS EAST OF THE BLUE RIDGE...NORTHERN AND CENTRAL VIRGINIA...AND MOST OF MARYLAND WEST OF THE CHESAPEAKE BAY...

The National Weather Service in Baltimore MD/Washington has issued a Fire Weather Watch for low relative humidity and gusty winds...

\* WINDS...Southwest 10 to 20 mph with gusts up to 30 mph.

\* RELATIVE HUMIDITY...As low as 23 percent.

\* IMPACTS...Critical fire weather conditions are possible Thursday, especially from early to mid afternoon hours. All outdoor burning is discouraged.

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.

## **RED FLAG WARNING (Example):**

...RED FLAG WARNING REMAINS IN EFFECT FROM NOON UNTIL 8 PM EDT THIS EVENING FOR STRONG WINDS AND LOW HUMIDITIES FOR NORTHERN VIRGINIA...EASTERN WEST VIRGINIA AND NORTHERN AND CENTRAL MARYLAND...

\* WINDS...West 15 to 25 mph with gusts up to 35 mph.

\* IMPACTS...Gusty winds and very dry air will create conditions that promotes the rapid spread of wildfires. Prescribed burns may get out of control. Outdoor burning is not recommended.

\* HUMIDITY...20 to 25 percent.

\* FUEL MOISTURE... Less than 8 percent.

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 low fuel moisture can contribute to extreme fire behavior.

## **SPECIAL WEATHER STATEMENT (Example):**

...INCREASED FIRE DANGER IS EXPECTED THIS AFTERNOON...

Gusty winds are expected this afternoon across much of the area. Low relative humidities are forecast during this time as well, with values nearing 30 percent. Additionally, dry antecedent conditions over the past several days have dried out fuels across the area as well. All of these factors combined could result in an elevated risk for the spread of fires this afternoon.

Outdoor burning is strongly discouraged during this time. Please refer to your local burn permitting authority on whether you can burn. If you do burn, use extreme caution and ensure fire suppression is readily available.

