INTRODUCTION:

This Fire Weather Annual Operating Plan (FWAOP) was developed to enhance the communication and organization between members of The National Weather Service along with federal and state user agencies, for the 2006 fire season. This AOP was written from information compiled in The National Weather Service Directive 10-4, and the 2005 FWAOP.

APPENDICES:

- Catalog of fire weather observation sites (Appendix A)
- Internet Spot Forecast request procedures (Appendix B)
- Example of products issued (Appendix C)
- Fire Weather Indices (Appendix D)

SERVICE AREA and ORGANIZATION:

Service Areas:

The National Weather Service Office in Gaylord will prepare Fire Weather Forecasts, Point (NFDRS) Forecasts, Spot forecasts, and Red Flag event support for the following fire control/land management agencies in Lower Michigan:

- Huron-Manistee National Forest in northern lower Michigan along and north of M-55
- Sleeping Bear Dunes National Lakeshore in northern lower Michigan
- State forest lands along and north of M-55 in northern lower Michigan

National Weather Service Office in Grand Rapids will prepare Fire Planning Weather Forecasts, Point (NFDRS) Forecasts, Spot forecasts, and Red Flag event support for the following fire control/land management agencies in Lower Michigan:

- Huron-Manistee National Forest in west-central lower Michigan south of M-55
- State forest lands south of M-55 in southwest lower Michigan

National Weather Service Office in White Lake Township, MI will provide Fire Weather Planning Forecasts, Red Flag event support and Spot Fire Weather Forecasts in Lower Michigan for the following fire control/land management agencies:

- Shiawassee National Wildlife Refuge in lower Michigan
- State and local land management agencies across southeast Michigan

National Weather Service Office in Northern Indiana will provide Spot Fire Weather Forecasts for the following fire control/land management agency in Michigan:

- State and local land management agencies in Berrien, Cass, St. Joseph, Branch and Hillsdale counties

Backup:
In events in which the National Weather Office Gaylord cannot provide routine services, as laid out in this FWAOP, then the National Weather Service Office Marquette will assume responsibility for fire weather products and services needed over northern Lower Michigan. In the event the National Weather Service Office Marquette cannot provide routine services as laid out in their FWAOP, then the National Weather Service Office Gaylord will assume responsibility for all fire weather products and services needed over Upper Michigan.

The National Weather Service Office in Marquette prepares the fire weather products for the following fire control/land management agencies in Upper Michigan.

- Ottawa National Forest in upper Michigan
- Hiawatha National Forest in upper Michigan
- Isle Royale National Park in Lake Superior
- Pictured Rocks National Lakeshore in upper Michigan
- Seney Wildlife Refuge in upper Michigan

Similarly, the National Weather Service in White Lake will be the back up for the Grand Rapids office for routine fire weather services. In turn, Grand Rapids will back up the White Lake office for routine fire weather services.

National Weather Service contacts:

WFO Detroit/Pontiac:

Admin: (248)625-4249
FAX: (248)625-4834

Contacts:

Fire Weather Focal Point:	Karen Kahl	karen.kahl@noaa.gov
Asst Fire WX Focal Point:	Steve Considine	steve.considine@noaa.gov
Meteorologist in Charge:	Dick Wagenmaker	richard.wagenmaker@noaa.gov
WCM:	Rich Pollman	richard.pollman@noaa.gov
SOO:	Greg Mann	greg.mann@noaa.gov

Mailing Address: NWS office, NOAA
Fire Weather Program
9200 White Lake Rd
White Lake Township, MI 48386

WFO Gaylord:

Administration: (989)731-3384
FAX: (989)731-0682

Contacts:

Fire Weather Focal Point:	Jeff Lutz	jeffrey.lutz@noaa.gov
Assistant FW Focal Point:	Scott Dickson	scott.dickson@noaa.gov
Meteorologist in Charge:	Gary Campbell	gary.campbell@noaa.gov
WCM:	Jim Keysor	james.keysor@noaa.gov
SOO:	Bruce Smith	bruce.smith@noaa.gov

Mailing Address: NWS Office, NOAA
Fire Weather Program
8800 Passenheim Road
Gaylord, MI 49735-9454

WFO Grand Rapids:

Administration: (616) 949-0643
FAX: (616) 949-1708

Contacts:

Fire Weather Focal Point:	Nathan Jeruzal	nathan.jeruzal@noaa.gov
Assistant FW Focal Point:	Brian Meade	brian.meade@noaa.gov
Meteorologist in Charge:	Daniel Cobb	daniel.cobb@noaa.gov
WCM:	Mike Heathfield	mike.heathfield@noaa.gov
SOO:	TJ Turnage	thomas.turnage@noaa.gov

Mailing Address: NWS Office, NOAA
Fire Weather Program
4899 South Complex Dr. SE
Grand Rapids, MI 49512-4034

WFO Marquette:

Administration: (906)475-5782
FAX: (906)475-6305

Contacts:

Fire Weather Focal Point:	Dave Pearson	david.pearson@noaa.gov
Assistant FW Focal Point:	Kari Fleegel	kari.fleegel@noaa.gov
Meteorologist in Charge:	Robin J Turner	robin.j.turner@noaa.gov
WCM:	Matt Zika	matthew.zika@noaa.gov
SOO:	Tom Hultquist	thomas.hultquist@noaa.gov

Mailing Address: NWS Office, NOAA
Fire Weather Program
112 Airpark Drive South
Negaunee, MI 49866-9526

WFO Northern Indiana:

Administration: (574)834-1104
FAX: (574)834-3492

Contacts:

Fire Weather Focal Point:	Lonnie Fisher	lonnie.fisher@noaa.gov
Meteorologist in Charge:	Mike Sabones	mike.sabones@noaa.gov
WCM:	Steve Eddy	steven.eddy@noaa.gov
SOO:	Jeffrey Logsdon	jeffrey.logsdon@noaa.gov

Mailing Address: NWS Office, NOAA
Fire Weather Program
7506 East 850 North
Syracuse, IN 46567

Land Management Agency Contacts in Lower Michigan:

U.S. Forest Service

Huron-Manistee National Forest
Supervisor's Office (Cadillac)

Barbara Bonefeld – Forest FMO	bbonefeld@fs.fed.us
Rick Witzke - Deputy FMO	rwitzke@fs.fed.us
Debra-Ann Brabazon – Center Manager	dbrabazon@fs.fed.us
Tom Viers – Lead Dispatcher	tviers@fs.fed.us
Gary Scott - Asst Dispatcher	gscott@fs.fed.us
Jae Naugle – Asst Dispatcher	jnaugle@fs.fed.us

Admin: (231)775-5023
FAX: (231)775-8742

Mailing Address:
1755 South Mitchell St.
Cadillac, MI 49601

West Zone (Baldwin)
Steve Hatting – W. Zone FMO shatting@fs.fed.us
Admin: (231)745-4631
FAX (231)745-2345

East Zone (Mio)
Chris Johnson – E. Zone FMO cjohnson@fs.fed.us

Admin: (989)826-3252
FAX: (989) 826-6073

National Park Service

Sleeping Bear Dunes National Lakeshore

Steve Yancho	steve_yancho@nps.gov
Tom Davison	tom_davison@nps.gov

Admin: (231)326-5134
Fax: (231)326-5382

U.S. Fish and Wildlife

Mio office
Steve Nurse –FMO steve_nurse@fws.gov

Admin: (989)826-1783
Fax: (989)826-1838

Mailing address:
P.O. Box 147
Mio, Michigan 48647

Shiawassee Wildlife Refuge
Jim Dystyck jim_dystyck@fws.gov

Admin: (989)777-5930

Mailing address:
697 Mower Rd.
Saginaw, MI 48601

Bureau of Indian Affairs

Will Wiggins wwiggins@up.net

Admin: (906)353-7289
Fax: (906)353-7299

Mailing Address:
100 Hemlock Street
Baraga, MI 49908

Michigan Dept of Natural Resources

Fire Duty officers and extensions:

Randy McKenzie (Incident Cord.Cntr)	Ext. 2040	mckenzir@michigan.gov
Jim Fisher	Ext. 2052	fisherj@michigan.gov
Rita Defibaugh	Ext. 2920	defibaur@michigan.gov
Steve Cross (Cadillac)	(231)775-9727	crosss@michigan.gov

Admin: (989)275-5151
FAX: (989)275-5167

Mailing Address:
8717 North Roscommon Rd.
Roscommon, MI 48653

Land Management Agency Contacts in Upper Michigan:

U.S. Forest Service

Ottawa National Forest:

FMO- Dean Karlovich	(906)358-4551
Dispatcher – Patricia Drake	(906)358-4551
FAX	(906)358-4829

Hiawatha National Forest:

Dispatcher - Jim Flores	(906)789-3356
Supervisor - Mike Miller	(906)786-3306
Voice Pagers - Mike	(906)222-1462
Jim	(906)222-1463
FAX	(906)789-3330

U.S. Fish and Wildlife Service

Seney Wildlife Refuge

Gary Lindsay	(906)586-9851
FAX	(906)586-3800

National Park Service

Isle Royale National Park

Jean Battle - Fire Officer	(906)337-4991

Pictured Rocks National Lakeshore

Larry Hoch - Chief Ranger	(906)387-2607

Routine Services provided by the National Weather Service:

Format of Fire Planning Weather Forecasts and times of issuance are coordinated with the customers at the beginning of each season. The format of the fire weather products will comply with standards set forth in NWS Instruction 10-406. The format is standardized, in an effort to better serve transient fire fighters. The fire fighters can look at any National Weather Service Fire Weather Forecasts, and be familiar with the format so that critical weather information can be easily obtained.

The National Fire Danger Rating System (Point) forecasts will be issued to determine fire danger on an as needed basis. These are initiated by the reception of 1300 (local time) observation at the designated points.

Special forecasts, such as Spot Forecasts, will be issued as needed for on-going fires, prescribed burns, spraying or other special projects of the fire protection agencies.

A red flag program will be maintained throughout the fire season, to support fire agencies in wildfire prevention and suppression tactics.

Close liaison between the National Weather Service and the fire control agencies will be maintained to insure a smooth exchange of essential information.

Below are the fire weather products issued by Weather Forecast Office Gaylord:

- ARBFWFAPX- Routine Fire Weather Forecast.
- ARBFWMAPX- NFDRS (point) forecasts (Mio and Bear)
- ARBFWSAPX- Spot Forecasts
- ARBRFWAPX- Fire Weather Watch or Red Flag Warning

Below are the fire weather products issued by Weather Forecast Office Grand Rapids:

- ARBFWFGRR- Routine Fire Weather Forecast.
- ARBFWMGRR- NFDRS (point) forecasts (Baldwin)
- ARBFWSGRR- Spot Forecasts
- ARBRFWGRR- Fire Weather Watch or Red Flag Warning

Below are the fire weather products issued by Weather Forecast Office White Lake:

- ARBFWFDTX- Routine Fire Weather Forecast.
- ARBFWSDTX- Spot Forecasts
- ARBRFWDTX- Fire Weather Watch or Red Flag Warning

Below are the fire weather products issued by Weather Forecast Office Northern Indiana:

- INDFWSIWX- Spot Forecasts

More specific information on the above products is provided below.

Routine Fire Weather Forecast-

This forecast has two scheduled issuances, between 400 am and 700 am in the morning, and between 300 pm and 400 pm in the afternoon. The morning forecast will contain three periods and an extended portion, while the afternoon forecast will contain four periods and an extended forecast.

The forecasts will contain the following elements:

- **Headline** - The headline should capture the most important aspect of the forecast, or a trend. If a Red Flag Warning or Fire Weather Watch is in effect, then this becomes the headline.
- **Discussion** – This is a short paragraph outlining the synoptic features affecting the Great Lakes region during the next 24 to 36 hours.
- **Other forecast elements** will include: cloud cover, chance and type of precipitation, precipitation amount, max and min temperatures and its trend, max and min relative humidity and its trend, 10 meter morning and afternoon winds in MPH, mixing height in 1000 of feet, and transport winds in knots.
- **Haines Index** - This is a stability index with reportable values that range from 2 to 6. You can calculate the Haines Index by using model soundings.
- **Ventilation Index (VI)** - A smoke management tool used to measure the stability of the atmosphere, in order to indicate how effectively it will disperse fire generated pollutants.
- The extended forecast will be appended to the end of the tabular part of the product and will include the winds through day 7.

This forecast will be updated whenever the following conditions are warranted.

- A Fire Weather Watch is issued, cancelled or expired
- A Red Flag Warning is issued, cancelled or expired

Methods of receiving and accessing routine Fire Planning Weather Forecasts, is as follows:

- Agencies can routinely access the forecast via the internet at weather.gov/gaylord, weather.gov/grr, weather.gov/dtx, or through WIMS (Weather Information and Management System).
- If the above options are not available, then agencies are encouraged to call the respective National Weather Service Office directly.

NFDRS (point) Forecast -

The Point Forecast is issued for a specific point within the fire weather area of responsibility (see stations below) and is valid for a twenty-four (24) hour period (through 100 pm the following day). For example, if the NPS wants a Point Forecast for Wednesday at "The Bear", they will send the 100 pm weather conditions from the site on Tuesday to serve as a reference for the forecast. The Point Forecast for The Bear, would be valid through 100 pm the next day (in this case it would be a Point Forecast for Wednesday at 100 pm at BEAR). Instructions for using AWIPS to issue a Point Forecast are appended (appendix E).

Point forecast Stations:

Station	ID #	COUNTY	AGENCY	LAT	LONG
Office: **GRR**					
Baldwin	203802	Lake	USFS	43.9	85.8
Office: **APX**					
Mio	202902	Oscoda	USFS	44.4	84.1
Bear	202010	Leelanau	NPS	44.5	86.0
Wellston	203101	Manistee	USFS	44.2	85.9
Silver Creek	203601	Iosco	USFS		

The format for NFDRS forecast is found in NWS Instruction 10-401.

Spot Forecasts-

This forecast is prepared for a single location for a very distinct period of time, usually 6 to 12 hours. The forecast is usually requested by federal and state agencies during wildfires or prescribed burns.

The forecast elements will usually consist of the highest or lowest temperature during the period, the highest or lowest relative humidity, wind direction and speed, chances of precipitation and duration.

Spot Forecast requests can come into the office by several means, the internet, by fax, or by phone. The preferred method for requesting or receiving Spot Forecasts will be via the internet. If internet usage is not possible for requesting or receiving Spot Forecasts, then requesting agencies should call the respective NWS office to request the forecast.

Instructions for submitting a Spot Forecast request by user agencies, and instructions for completing the Spot Forecast by National Weather Service employees via the internet, are found in Appendix B.

When a request for a Spot Forecast is made by phone, National Weather Service employees should use the Spot Forecast form to help prepare the forecast. Upon receiving a call for a Spot Forecast, the NWS forecaster should ask for the location lat/lon, current observation including temperatures, relative humidity, wind direction and speed location. Elevation, aspect, fuel type, and requesting official and contact phone number should also be given for the site before beginning the forecast process.

Whether the Spot Forecast request is made by phone or the internet, NWS employees will complete the request utilizing the internet process (Appendix B). When the forecast is submitted it will produce a product in AWIPS, which is printed automatically and stored locally. This form can be used for faxing.

Red Flag Services:

Fire Weather Watches and Red Flag Warnings -

A Fire Weather Watch or Red Flag Warning event occurs whenever extremely dry fuels combine with critical weather parameters to create an atmosphere that could contribute to extensive wildfires with the potential to threaten life and property. Any watch or warning should be coordinated with the affected land management agency for the zone where the watch or warning was issued.

A Red Flag warning may also be requested by a land management agency, if they feel that due to extreme dryness in the forest, that wildfires are likely. Otherwise, if conditions are expected to be close to or exceed red flag conditions, then an appropriate statement should be put into the Hazardous Weather Outlook (ARBHWOxxx).

Fire Weather Watch Criteria:
Whenever a geographical area has been dry for a week or two (or for a shorter period if before spring green-up or after fall color), the National Fire Danger Rating System (NFDRS) is high to extreme and critical weather conditions are expected then a Fire Weather Watch should be considered. Before issuing a Fire Weather Watch, coordinate you concerns with the United States Forest Service. Consider a watch, whenever the above conditions will combine with these forecast weather parameters within the next 24 to 48 hours are:

1. Sustained wind averaging >= 15 mph (20 ft RAWS winds) or >=20 mph (10m ASOS winds)
2. Relative humidity <= 25 percent
3. Temperature >= 75 degrees.

Red Flag Warning Criteria:
A Red Flag Warning will be issued when the Fire Weather Forecaster has a high degree of confidence that critical weather conditions, listed below, will occur within the next 12 to 24 hours.

1. Sustained wind averaging >= 15 mph (20 ft RAWS winds) or >=20 mph (10m ASOS winds)
2. Relative humidity <= 25 percent and
3. Temperature >= 75 degrees.

Issuing a Red Flag Warning or Fire Weather Watch:

1. Call the affected land management agency for the zone where the watch or warning was issued to inform them of the warning and to coordinate what information is to be included in any public statement.
2. Start an event folder (much like a severe weather package). Included in the package will be an event log (appendix D), and all fire related products issued during the Red Flag event (RFW, FWF, FWS, FWM).
3. Issue the Red Flag Warning as ARBRFWxxx.
4. The warning will include the geographic area, duration of the event and key weather parameters.
5. Headline in the daily Fire Weather Forecast (ARBFWFxxx).
6. Subsequent Red Flag Warning messages or routine weather forecasts will carry the warning or watch headline until it is canceled.

Fire Weather Watch/Red Flag Warning Cancellation/Expiration:

1. Call Land Management officials.
2. Issue the ARBRFWAPX cancels the watch or warning.
3. Headline the cancellation in the daily Fire Weather Forecast.

Non-routine services:

As in years past, the National Weather Service will assist any Federal or State agency in training purposes. Typically, the National Weather Service has served as instructors for the weather portions of the S-290 and S-190 hosted by the USFS or DNR. On different occasions, the National Weather Service has also agreed to supply training/instruction support for state and federal agencies in more general purposes, such as seasonal outlooks during late winter staff meetings or regional gatherings. This type of service will continue in the future.

Verification: Fire Weather Watches and Red Flag Warnings will be verified based on dry thunderstorm and synoptic events. Verification of Red Flag events will be tracked for all fire weather zones. The criteria are as stated previously.

In order to determine if events have happened, forecasters should use all information available to them such as; surface observations, satellite, radar data, RAWS data and the land management agencies' weather observations. Also, forecasters should use experience, judgment, objectivity, consistency when verifying.

Wildland Fire Agency Responsibilities:

The agency responsibility will be as noted in the Interagency Agreement for Meteorological Services, between federal and state user agencies and the National Weather Service. This has been appended.

Effective Date of the AOP:

The beginning and ending dates of the fire weather season are determined by federal and state agencies in coordination with the National Weather Service Fire Weather Program Leader at the respective weather forecast office. These dates are a function of the first or last snow and by the state of vegetation. Typically the fire weather season for Lower Michigan extends from mid-March through mid-November.

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Appendix A

Obtaining Fire Weather Observations:

The past year has seen a great deal of expansion to the access of RAWS and other sources of real time weather data for the fire weather purposes. The original three RAWS sites have expanded as satellite uplinks are now possible. There are many ways to get to these fire weather observations. The main source for observations is the ROMAN page (http://raws.wrh.noaa.gov/roman).

There are links to this page on each of The National Weather Service offices web pages that serve the Lower Peninsula.

Appendix B

Spot Forecast instructions

Instructions for Submitting a Spot Forecast request via the internet - user agency:

- From the respective NWS Homepage click on Fire Weather under Forecasts.
- Click on the county where the fire or burn is or will take place.
- Click on submit a new spot request
- Enter data into the request form (red means a mandatory entry)
- Click submit request at the bottom of the form
- After a period of time, check the status of your request from the Spot Forecast page.
- If your request status is listed as complete (color in red on the map), then click on your request, to see the forecast.
- If there is a question on about the forecast from the forecaster, the Spot will be purple. Click on the spot and look at the question from the forecaster.
- If you have feedback on the forecast, at the bottom of the completed forecast is a space to type in feedback, then push the button <Send Feedback>.

Instructions for completing a Spot Forecast request via the Internet - NWS:

- When a request for a Spot Forecast is submitted, an alarm will be posted to AWIPS.
- Go to the Spot Forecast page, and click on the latest Spot Forecast request.
- Near the bottom of the page, click on Initialize forecast.
- Click initialize
- Click on edit forecast
- Edit the forecast and save edits
- Near the bottom, click on send forecast
- The question is posted, do you want to send the forecast?, click send forecast.
- After about 5 to 10 minutes the product FWSXXX will automatically get into AWIPS.

Instructions for completing a Spot Forecast request via the Phone - NWS:

- After receiving the Spot request on the phone, go to the respective office fire page (either through the office intranet or the internet home page), and click on Submit a New Spot Forecast Request
- Click on submit a new request
- Enter data into the request form (red means mandatory entry)
- Click submit request at the bottom of the form
- When the request is submitted, an alarm will be posted to AWIPS
- Go to the Spot Forecast page, and click on the latest Spot Forecast request.
- Near the bottom of the page, click on Initialize forecast.
- On the next page, Click initialize
- Click on edit forecast
- Edit the forecast and save edits
- Near the bottom click on send forecast

- The question is posted, “do you want to send the forecast?” Click send forecast
- After about 5 to 10 minutes the product FWSXXX will be sent from the webpage server into AWIPS. If your system doesn’t already print out the system automatically, then print out the forecast and Fax or call the requesting agency with the forecast
- File the forecast in the Completed Fire Weather Request Forms slot.

Appendix C

Examples of Fire Weather Products:

Fire Weather Planning Forecast (morning) – ARBFWFxxx (The afternoon format is similar)-

```
FNUS5i KNNN DDHHMM
FWFNNN
FIRE WEATHER PLANNING FORECAST
NATIONAL WEATHER SERVICE CITY STATE
TIME-DATE

...HEADLINE...

.DISCUSSION...

SSZXXX-XXX>XXX-DDHHMM-
GEOGRAPHICAL DESCRIPTORS
TIME-DATE

...RED FLAG WARNING/FIRE WEATHER WATCH HEADLINE...

.TODAY...
SKY/WEATHER.........
MAX TEMPERATURE.....
24 HR TREND......
MIN HUMIDITY........
24 HR TREND......
WIND.(20 FT/10-MIN AVG)...
HAINES INDEX...
MIXING HEIGHT...
TRANSPORT WINDS.(MPH)...
VENTILATION INDEX...

.TONIGHT...
SKY/WEATHER.........
MIN TEMPERATURE.....
24 HR TREND......
MAX HUMIDITY........
24 HR TREND......
WIND.(20 FT/10-min avg)...
HAINES INDEX...
MIXING HEIGHT...
TRANSPORT WINDS.(MPH)...
VENTILATION INDEX...

.TOMORROW...
SKY/WEATHER.........
MAX TEMPERATURE.....
MIN HUMIDITY........
WIND.( 20 FT/10-min avg)....
HAINES INDEX...
MIXING HEIGHT...
TRANSPORT WINDS.(MPH)...
VENTILATION INDEX...
$$
[forecast for next geographical descriptor and fire weather zone group]

$$

.FORECAST DAYS 3 THROUGH 7...
.DAY3...
.DAY4...
.DAY5...
.DAY6...
.DAY7...

$$
```

Fire Weather Watch/Red Flag Warning (RFW).

Single Segment RFW. (Red Flag Warning is similar except product headlined “RED

FLAG WARNING”).

```
WWUS85 Kxxx 012130
RFWxxx
FIRE WEATHER WATCH
NATIONAL WEATHER SERVICE Office MI
330 PM EDT WED SEP 1 2005

ORZ636-637-021800-
/O.NEW.KBOI.FW.A.0005.040902T1800Z-040903T0100Z/
SOUTHEAST OREGON INCLUDES BURNS BLMSOUTHEAST
OREGON INCLUDES VALE BLM-
330 PM MDT WED SEP 1 2005

...FIRE WEATHER WATCH THURSDAY AFTERNOON FOR STRONG SOUTHWEST WINDS AND LOW
HUMIDITY FOR SOUTHEAST OREGON...

THE NATIONAL WEATHER SERVICE IN BOISE HAS ISSUED A FIRE WEATHER WATCH FOR
STRONG SOUTHWEST WINDS AND LOW HUMIDITY THURSDAY AFTERNOON FOR SOUTHEAST
OREGON INCLUDING THE BURNS AND VALE BLM DISTRICTS. A STRONG COLD FRONT WILL
BE APPROACHING THE STATE LATE THURSDAY. VERY LOW HUMIDITY AHEAD OF THE FRONT
AND STRONG WINDS ACCOMPANYING THE FRONT COULD REACH RED FLAG CRITERIA.
PLEASE ADVISE THE APPROPRIATE OFFICIALS OR FIRE CREWS IN THE FIELD OF THIS
FIRE WEATHER WATCH.

$$
```

Multiple Segment RFW

```
WWUS85 KBOI 021630
RFWBOI

RED FLAG WARNING
NATIONAL WEATHER SERVICE BOISE ID
1030 AM MDT WED SEP 2 2005

ORZ636-637-030000-
/O.CON.KBOI.FW.W.0008.000000T0000Z-040903T0100Z/
SOUTHEAST OREGON INCLUDES BURNS BLMSOUTHEAST
OREGON INCLUDES VALE BLM-
1030 AM MDT WED SEP 2 2005

...RED FLAG WARNING REMAINS IN EFFECT THROUGH 8PM MDT ACROSS SOUTHEAST OREGON
FOR STRONG WINDS AND LOW HUMIDITY...

A RED FLAG WARNING CONTINUES FOR STRONG SOUTHWEST WINDS AND LOW HUMIDITY
THROUGH THIS EVENING FOR SOUTHEAST OREGON INCLUDING THE BURNS AND VALE BLM
DISTRICTS. A STRONG COLD FRONT WILL MOVE ACROSS THE AREA THIS AFTERNOON AND
EVENING. HUMIDITY AHEAD OF THE FRONT WILL DROP TO BELOW 10 PERCENT BY EARLY
AFTERNOON AND COMBINE WITH SOUTHWEST WINDS BLOWING 20 TO 25 MPH PRODUCING RED
FLAG CONDITIONS. STRONG WINDS BRIEFLY REACHING 30 MPH WILL ALSO ACCOMPANY THE
FRONTAL PASSAGE.

$$

IDZ408-030000-
/O.NEW.KBOI.FW.A.0006.040904T2100Z-040905T0000Z/
SOUTHWEST IDAHO INCLUDES LOWER SNAKE RIVER BLM-
1030 AM MDT WED SEP 2 2005

...FIRE WEATHER WATCH IN EFFECT FRIDAY AFTERNOON FOR SOUTHWEST IDAHO FOR LOW
HUMIDITY AND WEST WINDS...

THE NATIONAL WEATHER SERVICE IN BOISE HAS ISSUED A FIRE WEATHER WATCH FOR
FRIDAY AFTERNOON FOR SOUTHWEST IDAHO INCLUDING THE LOWER SNAKE RIVER BLM
DISTRICT. THOUGH FRIDAY WILL BE A BIT COOLER...WEST WINDS WILL PICK UP AGAIN
IN THE 15 TO 25 MPH RANGE AND HUMIDITY MAY BE LOW ENOUGH TO PRODUCE CRITICAL
FIRE BEHAVIOR BY FRIDAY AFTERNOON.

$$
```

Multiple Segment RFW with Overview Section

```
WWUS85 KBOI 021630
RFWBOI

RED FLAG WARNING
NATIONAL WEATHER SERVICE BOISE ID
1030 AM MDT WED SEP 2 2005

...RED FLAG WARNING THROUGH 8PM MDT FOR SOUTHEAST OREGON FOR STRONG WINDS AND
LOW HUMIDITY...
...FIRE WEATHER WATCH FRIDAY AFTERNOON ACROSS SOUTHWEST IDAHO FOR STRONG WINDS
AND LOW HUMIDITY...

.A STRONG COLD FRONT WILL MOVE ACROSS SOUTHEAST OREGON THIS AFTERNOON AND
EVENING BRINGING GUSTY WINDS AND LOW RELATIVE HUMIDITY. THE MOST CRITICAL
FIRE WEATHER CONDITIONS WILL OCCUR AHEAD OF AND JUST ALONG THE FRONT. BY
THURSDAY AFTERNOON...THE FRONT WILL HAVE MOVED INTO SOUTHEAST IDAHO. THOUGH
TEMPERATURES WILL BE A BIT COOLER...WINDS AND HUMIDITY MAY BE CLOSE TO
CRITICAL VALUES ACROSS SOUTHWEST IDAHO THURSDAY AFTERNOON.

ORZ636-637-030000-
/O.CON.KBOI.FW.W.0008.000000T0000Z-040903T0100Z/
SOUTHEAST OREGON INCLUDES BURNS BLMSOUTHEAST
OREGON INCLUDES VALE BLM-
1030 AM MDT WED SEP 2 2005

...RED FLAG WARNING REMAINS IN EFFECT THROUGH 8PM MDT FOR STRONG WINDS AND LOW
HUMIDITY FOR SOUTHEAST OREGON...

A RED FLAG WARNING CONTINUES FOR STRONG SOUTHWEST WINDS AND LOW HUMIDITY
THROUGH THIS EVENING FOR SOUTHEAST OREGON INCLUDING THE BURNS AND VALE BLM
DISTRICTS. A STRONG COLD FRONT WILL MOVE ACROSS THE AREA THIS AFTERNOON AND
EVENING. HUMIDITY AHEAD OF THE FRONT WILL DROP TO BELOW 10 PERCENT BY EARLY
AFTERNOON AND COMBINE WITH SOUTHWEST WINDS BLOWING 20 TO 25 MPH PRODUCING RED
FLAG CONDITIONS. STRONG WINDS BRIEFLY REACHING 30 MPH WILL ALSO ACCOMPANY THE
FRONTAL PASSAGE.

$$

IDZ408-030000-
/O.NEW.KBOI.FW.A.0006.040904T2100Z-040905T0000Z/
SOUTHWEST IDAHO INCLUDES LOWER SNAKE RIVER BLM-
1030 AM MDT WED SEP 2 2005

...FIRE WEATHER WATCH IN EFFECT FRIDAY AFTERNOON FOR SOUTHWEST IDAHO FOR LOW
HUMIDITY AND WEST WINDS...

THE NATIONAL WEATHER SERVICE IN BOISE HAS ISSUED A FIRE WEATHER WATCH FOR
FRIDAY AFTERNOON FOR SOUTHWEST IDAHO INCLUDING THE LOWER SNAKE RIVER BLM
DISTRICT. THOUGH FRIDAY WILL BE A BIT COOLER...WEST WINDS WILL PICK UP AGAIN
IN THE 15 TO 25 MPH RANGE AND HUMIDITY MAY BE LOW ENOUGH TO PRODUCE CRITICAL
FIRE BEHAVIOR BY FRIDAY AFTERNOON.

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Point Forecast - ARBFWMxxx:

FCST,202902,950323,13,7,21,85,1,1,NW,10,M,26,9,100,60,2,2,N
FCST,202010,950323,13,7,29,90,1,1,SW,12,M,34,14,90,60,2,2,N

Appendix D

Explanation of Fire Weather indices:

Haines Index (Low elevations):

The Haines index is an Atmospheric severity Index used to determine fire severity due to the stability of the lower atmosphere, typically used for days when plume dominated fires are likely. The terms in the index are the lapse rate between 950mb and 850mb (F1) and the moisture availability at 850mb by calculating the dewpoint depression (F2). Once the lapse rate and dewpoint depressions have been calculated, look up the appropriate value for each term (A and B) and add the numbers together (A+B). The lowest the index will be is 2 and the highest is 6.

Haines Index = A + B

F1 = T950 - T850

F1 = 3 deg C or less then	A = 1
F1 = 4-7 C then	A = 2
F1 = 8 deg C or more then	A = 3

F2 = T850 - Td850

F2 = 3 deg C or less then	B = 1
F2 = 4-7 C then	B = 2
F2 = 8 deg C or more then	B = 3

Ventilation Index:

This index is found by multiplying the mixing height (feet) with the transport wind speed (mph), then dividing by 100.

Example...
Mixing height = 14,000 feet
Transport wind = 15 mph
VI = 14,000 * 15 / 100 = 2100(no units)

Example...
Mixing height = 5,000 feet
Transport wind = 10 mph
VI = 5,000 * 10 / 100 = 500 (no units)

VI scale...
Less than 130 = POOR dispersal
130 – 299 = FAIR dispersal
300 – 599 = GOOD dispersal
600 and greater = EXCELLENT dispersal

A ventilation index of zero implies no ability for the atmosphere to disperse smoke or pollutants, while a value of 600 or greater implies an excellent ability to disperse smoke or pollutants. The United States Forest Service and Department of Natural Resources has requested that when the VI is “fair”, that we include a number value along with the term.