

WILDLAND FIRE WEATHER INFORMATION

for RHODE ISLAND

Wildland Fires, commonly called “forest fires” or “brush fires” have the potential to destroy valuable natural resources, damage real property, and can threaten people’s lives and livelihoods. The accurate prediction of the potential risk of a wildland fire, and the forewarning of dangerous wildland fire conditions can help reduce the incidence and seriousness of wildland fires. It can also provide firefighters critical time needed for important preparation and readiness for wildfire suppression, as well as assist decision makers in the appropriate uses and activities for the public at large during times of extreme fire danger to aid in the prevention efforts. This usually includes decisions on whether or not to issue a permit for open burning. These decisions are made on a local level when the fire danger is lower, but may be superseded by State law and/or mandates when the fire danger reaches the high or extreme risk level.

National Fire Danger Rating System

As fuel types and conditions, and recent, current, and predicted weather play an important role in determining the risk for serious wildland fires, a system has been developed to analyze these and other factors. Using complex mathematical calculations, a numerical value which correlates to “risk” is derived. This number can fall into any of five groups or “Classes”, and the result is reported as a “Class (blank)” fire danger. This system, in one form or another, is used throughout the United States and is called the “National Fire Danger Rating System (NFDRS)”.

The Rhode Island Department of Environmental Management, Division of Forest Environment (“Forestry”) has the legislative obligation statewide for “programs for forest fire protection” which has grown to include the prediction of the risk for wildland fires (R.I.G.L. 42-17.1-4). Forestry uses the NFDRS (with a few modifications to account for local conditions) to aid in the fulfillment of that responsibility.

Fire Weather Forecasts

There are two primary factors that determine fire danger risk: “Spread Index” and “Buildup”. “Spread Index” is a calculated number relating to wind speed and fuel type, and is a prediction of how fast the fire will spread across the surface fuels. “Build-up” is a calculated number that relates to how deep the fire will burn into the ground. Added together these two numbers determine the “Fire Index” which will give us our class day. A fire index of zero occurs when there is snow covering the ground or there has been a prolonged period of substantial rains.

<u>Fire Index</u>	<u>Rating</u>	<u>Description</u>
0	Class 1	No rating
1-30	Class 2	Low danger
31-60	Class 3	Medium danger
61-80	Class 4	High danger
81+	Class 5	Extreme

What does all this mean to the firefighter? The higher the spread index value, the faster the fire will move across the ground especially in fine fuels such as grasses or dry leaves. Under these conditions a fire can spread very quickly, and is why spring grass fires can be extremely dangerous. The higher the calculated build-up number, the longer the firefighter can expect to remain on scene to do extensive mop-up. This generally happens during summer drought conditions and usually requires the addition of wetting agents to help water penetrate deeper into the duff layer in order to extinguish the fire.

In addition to build-up and spread index, the fire index takes into account the vegetative herb stages which directly correlate to the seasons of the year.

- Herb Stage 1 – Known as the “cured stage” occurs when the fuels have been exposed to a prolonged period of full sunlight. (Late fall through early spring)
- Herb Stage 2 – Occurs in the a) spring, from when leaves begin to emerge on the trees and shrubs until full leaf out, and b) in the fall when the leaves and shrubs start to lose their leaves until complete defoliation. This is known as the “transition stage”.
- Herb Stage 3 – During the summer, from full leaf out until the beginning of leaf drop.

When conditions warrant a “Red Flag” warning may be issued to forewarn of significant fire danger risk, regardless of the calculated fire index. “Red Flag” conditions warrant the prohibition of activities that pose a high risk of accidentally starting a wild fire, such as could occur from any form of open burning.

RED FLAG WARNING CRITERIA FOR NEW ENGLAND

When in Herb Stage 1 & 2

(cured & pre-green up stage – Spring/Autumn)

- Winds sustained, or frequently gusting higher than 25 mph
- Relative humidity at or below 30%
- Rainfall total less than .25” during the last 5 days

When in Herb Stage 3

(greened up stage – Summer)

- Winds sustained, or frequently gusting higher than 25 mph
 - Relative humidity at or below 30%
 - Rainfall total less than .25” during the last 8 days
 - Keetch-Byram drought index values of 300 or greater
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Wildland Fire Danger ratings are commonly posted at rural fire department locations (often on a Smokey Bear sign), and, for Rhode Island may also be broadcast by Forestry over local channels during the peak spring fire season, and any other time of the year we get into a high fire danger situation.

When conditions warrant there may be a predicted fire danger given in the morning followed by the actual fire danger given at 1300 hrs EST or 1400 DST. Often times Forestry will call local dispatch centers who will then broadcast the fire danger rating through their communications system. You can also go to the National Weather Service on line to get the daily fire weather information at <http://www.erh.noaa.gov/box/firewx.shtml>

When is “Fire Season”?

Wildland fires can, and do occur any time of year. Any time of the year when there is no rain or snow, when it is windy and the humidity is in the 30’s or below, if there is an ignition source you can have a fire. A good example of when we see this happen would be during the heating season when there has been an improper disposal of woodstove ashes on or in proximity to 1 hour fuels. The ashes can sit for a week and still have enough embers to cause an ignition.

What we call the “Fire Season” are those times of the year when there is an increased frequency of wildland fires, and the potential for a large and destructive fire is greatest. It is also true, especially in the case of the summer fire season, that it is that time of year when there is the greatest need of resources to control and/or suppress the fire.

Spring (March through May)

Traditionally this is our busiest and potentially most destructive fire season. During this time of year there is no leaf canopy so the sun quickly dries out grasses and last autumn’s fallen leaves (1 hour fuels), as well as dormant brush, and dead twigs and small branches (10 hour fuels). Even after some rain events the 1 hour fuels are ready to burn within 1 hour. Other factors increasing fire risk are the windy conditions and low humidity (commonly less than 40%) occurring at this time.

Summer (End of May through September)

Once the trees and shrubs have fully “leafed out” and there is full canopy cover, there is more moisture in the fuel (fuel moisture), and the fuels on the forest floor are not being dried by the sun’s rays. The risk for wildland fires decreases dramatically. However as the summer goes on and we end up with dry to droughty conditions we can start to have summer fires. These fires burn in the duff layer (the upper layer of the forest floor comprised of organic matter). Once you get a “ground fire” ignited it tends to burn deep. It takes lots of water, wetting agent and hand tools to put these fires out. Most summer fires are not declared out until we receive a significant rain fall.

Another problem with summer fires is that you usually don’t get a complete burn of the available fuels. You end up with patches of dried out fuels throughout the burn area. Additionally, shrubs and trees in the burn area often end up with scorched but unburned stems, branches and foliage which have the potential to re-burn. Dried leaves or pine needles can fall onto a smoldering “hot

spot” reigniting these unburned fuels which could then allow the fire to escape over the control line. Spot checking summer fires is essential to prevent a “flare-up”.

Fall

Usually from October until snow fall. This time of year is similar to spring but conditions change from full green-up, to the transition stage, to the cured stage. Typically we don’t have as many fires in the fall as we do in spring but again it all depends on the weather.

Open Air Burning

Open air burning (“open burning”) in Rhode Island is defined as “Any fire in the outdoors or in a structure not completely enclosed by walls and a roof”. All open air fires require a written permit any time of the year, even if it is raining, or snow is covering the ground. The decision on whether to issue a permit for open burning is generally made at the local level of government, usually by the local fire department. Attended fires in incinerators, fireplaces, or rubbish burners are exempt from the burning permit requirements, but are still subject to all liability provisions of State law (R.I.G.L. 2-12-7). However, from March 15th through May 15th, burning in incinerators, fireplaces, or rubbish burners without a permit must occur before 10:00 a.m. or after 5 p.m. Burning in these devices between 10:00 and 5:00 p.m. *does* require a permit. Failure to obtain the proper permit is punishable by law. All permitted fires must be attended.

Liability

Anyone who starts a fire in violation of any applicable laws, rules, and/or regulations, is subject to punishments as proscribed by law, which range from fines of \$10 to \$2000, or to imprisonment from 10 days to 5 years. In addition, said person *may* also be liable for all costs incurred for the suppression of the fire, and any damages to property, regardless of whether or not it was permitted!!

Always check with your local fire department before doing any type of outside burning.

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