The 'Fire Behavior Nomograms' are excerpted from "How to Predict the Spread and Intensity of Forest and Range Fires", Richard C. Rothermel, June 1963, with the exception of the nomogram for fuel model #7 which was updated for this publication.

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APPENDIX A
Nomograms

Fuel model 1 - low windspeeds

1. SHORT GRASS (1 FT) - LOW WINDSPEEDS
Fuel model 1 - high windspeeds

1. SHORT GRASS (1 FT) - HIGH WINDSPEEDS

- Dead fuel moisture percent
- Rate of spread, chains/h
- Flame length, ft
- Heat per unit area, BTU/sq ft
- Effective value of windspeed, min
- Effective windspeed (mid-flame), m/h
- Percent slope in wind direction

[Graphs and curves showing different parameters and their relationships]
Fuel model 2 - low windspeeds

2. TIMBER (GRASS & UNDERSTORY) - LOW WINDSPEEDS

- Dead fuel moisture percent
- Live fuel moisture percent
- Heat per unit area, BTU/sq. ft.
- Flame length, ft.
- Rate of spread, chains/h
- Effective value of windspeed, mi/h
- Effective windspeed, midflame, mi/h
- Percent slope in wind direction
Fuel model 2 – high windspeeds

2. TIMBER (GRASS & UNDERSTORY) – HIGH WINDSPEEDS

- Graphs showing relationships between live fuel moisture, percent, dead fuel moisture, percent, rate of spread, chains/h, flame length, ft, heat per unit area, BTU/sq. ft., and effective value of windspeed, mi/h, with percent slope in wind direction.
Fuel model 3 - low windspeeds

3. TALL GRASS (2.5 FT) - LOW WINDSPEEDS

- Dead fuel moisture percent
- Rate of spread, chains/h
- Flame length, ft
- Heat per unit area, Btu/sq. ft.
- Pre-line intensity, Btu/sq. ft.
- Effective value of wind speed, m/s
- Mid-flame wind speed
- Effective wind speed (midflame), m/s
- Percent slope in wind direction
3. TALL GRASS (2.5 FT) - HIGH WINDSPEEDS

Fuel model 3 - high windspeeds

[Graphs showing relationships between various parameters such as dead fuel moisture percent, flame length, rate of spread, chain h, heat per unit area, BTU/sq ft, effective value of windspeed, mid-flame windspeed, and effective windspeed.]
Fuel model 4 - low windspeeds

4. CHAPARRAL (6 FT) - LOW WINDSPEEDS

- Heat per unit area, BTU/sq ft
- Flame length, ft
- Effective value of windspeed, MPH
- Mid-flame windspeed
- Percent slope in wind direction
5. BRUSH (2 FT) - LOW WINDSPEEDS

- Effective Value of Windspeed, M/M
- Dead Fuel Moisture, Percent
- Live Fuel (Foliage) Moisture, Percent
- Flame Length, FT
- Rate of Spread, Chains/H
- Heat Per Unit Area, BTU/SQ. FT
- Percent Slope in Wind Direction
- Effective Windspeed (Mid Flame) with
Fuel model 5 - high windspeeds

S. BRUSH (2 FT) - HIGH WINDSPEEDS

[Graphs showing various parameters like dead fuel moisture, percent, rate of spread, length, flame, heat per unit area, effective value of windspeed, mid-flame windspeed, etc.]
Fuel model 6 - low windspeeds

6. DORMANT BRUSH, HARDWOOD SLASH - LOW WINDSPEEDS

- Dead fuel moisture percent
- Rate of spread, chains/h
- Flame length, ft
- Heat per unit area, BTU/sq. ft
- Effective value of windspeed, mi/h
- Mid-flame windspeed
- Percent slope in wind direction
- Effective windspeed (mid-flame), mi/h
6. DORMANT BRUSH, HARDWOOD SLASH—HIGH WINDSPEEDS
7. SOUTHERN ROUGH - LOW WINDSPEEDS

Fuel model 7 - low windspeeds
Fuel model 7 - high windspeeds

7. SOUTHERN ROUGH - HIGH WINDSPEEDS

- Dead fuel moisture, percent
- Rate of spread, chains/h
- Flame length, ft
- Heat per unit area, BTU/sq ft
- Effective value of windspeed, m/h
- Mid-lame windspeed
- Percent slope in wind direction

Revised Jan., 1991
8. CLOSED TIMBER LITTER - LOW WINDSPEEDS

Fuel model B - low windspeeds
Fuel model 8 - high windspeeds

8. CLOSED TIMBER LITTER - HIGH WINDSPEEDS

- Dead fuel moisture, percent
- Rate of spread, chains/h
- Flame length, ft
- Heat per unit area, BTU/sq. ft.
- Effective value of windspeed, MPH
- Mid-flame windspeed
- Percent slope in wind direction

Note: The diagrams illustrate the relationship between the various parameters under different conditions of wind speed and slope.
9. HARDWOOD LITTER - LOW WINDSPEEDS

Fuel model 9 - low windspeeds
Fuel model 9 - high windspeeds

9. HARDWOOD LITTER - HIGH WINDSPEEDS

- Dead fuel moisture, percent
- Flame length, ft
- Rate of spread, chains/h
- Heat per unit area, BTU/sq. ft
- Effective value of windspeed, m/h
- Effective windspeed (mid-flame), m/h
- Mid-flame windspeed
- Percent slope in wind direction
Fuel model 10 - low windspeeds

10. TIMBER (LITTER & UNDERSTORY) - LOW WINDSPEEDS

- Dead fuel moisture, percent
- Live fuel (foliage) moisture, percent
- Rate of spread, cm/h
- Flame length, ft
- Heat per unit area, BTU/sq. ft.
- Fireline intensity, BTU/sq. ft.
- Effective value of windspeed, mi/h
- Mid-flame windspeed
- Percent slope in wind direction
Fuel model 10 — high windspeeds

10. TIMBER (LITTER & UNDERSTORY) — HIGH WINDSPEEDS

[Graphs and diagrams showing relationships between various fuel moisture percentages, flame lengths, heat per unit area, effective wind speeds, and percent slope in wind direction.]
Fuel model 11 - low windspeeds

11. LIGHT LOGGING SLASH - LOW WINDSPEEDS

- Dead fuel moisture, percent
- Flame length, ft
- Heat per unit area, Btu/sq. ft
- Effective value of windspeed, m/h
- Mid-flame windspeed
- Effective windspeed, m/h
- Percent slope in wind direction

The diagrams illustrate the relationship between various factors affecting wildfires in light logging slash conditions at low windspeeds.
11. LIGHT LOGGING SLASH - HIGH WINDSPEEDS

Fuel model 11 - high windspeeds
Fuel model 12 – high windspeeds

12. MEDIUM LOGGING-SLASH-HIGH WINDSPEEDS

DEAD FUEL MOISTURE, PERCENT

RATE OF SPREAD, CHAINS/H

FLAME LENGTH, FT

HEAT PER UNIT AREA, BTU/SQ. FT.

EFFECTIVE VALUE OF WINDSPEED, M/H

MID-FLAME WINDSPEED

PERCENT SLOPE IN WIND DIRECTION

EFFECTIVE WINDSPEED MID-FLAME - M/H