

Prescribed Fire Practicum

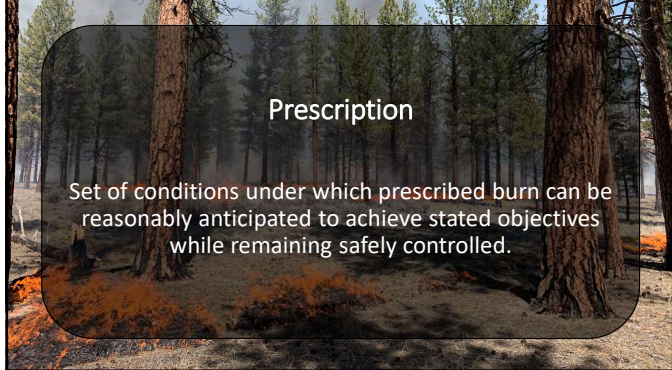
Developing Prescriptions

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Prescription

Set of conditions under which prescribed burn can be reasonably anticipated to achieve stated objectives while remaining safely controlled.

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Prescription components

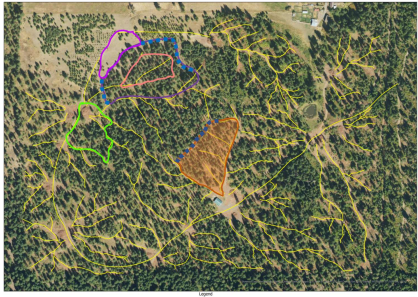
- Depend on objectives
- Temp, RH, wind speed and direction, transport winds, fine dead fuel moisture
- May include flame length, rate of spread, etc.
- Allowable range of conditions
- Specific – but not too specific

Parameter	Low	High
Temperature (°F)	40	85
Relative Humidity (%)	25	80
20-ft Wind Speed (forecasted)	7	23
20-ft Wind Direction (forecasted)	N, NW, NW, W, SW	
Eye-level Wind Speed (observed)	2	7
Eye-level Wind Direction	Any	
Transport Wind Direction	N, NW, NW, W, SW	
Fine Dead Fuel Moisture (%)	4	14
Flame Length (ft)	1	4
Rate of Spread (ch/hr)	1	20

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Start with site

- Unit descriptions
- Fuel loading
- Adjacent fuels
- Values at risk
- Holding challenges
- Control line options
- Smoke transport
- Access
- Water
- Pre-burn actions



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Consider goals and objectives

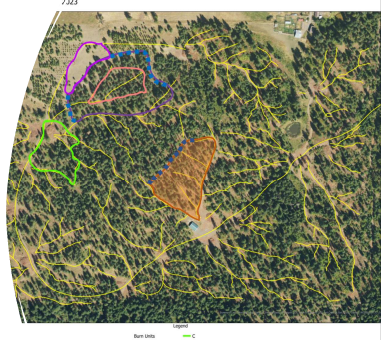
- Fuels reduction/ecological/ag-resource/cultural
- Season of year / stage of development
- How hot?
- Invasive species
- Consult experts
- Consult FEIS

RESOURCE MANAGEMENT GOALS
<ul style="list-style-type: none"> • Reinvegetate native bunchgrasses and forbs in understory as forage for wildlife. • Reduce intensity of future fire and protect ponderosa pine by managing accumulation of litter and duff, consuming coarse wood, and killing small trees to prevent their development as ladder fuels. • Reduce probability of crown fire by scorching lower crowns to induce crown lift. • Reduce risk of wildfire transmission across property. • Train personnel for prescribed fire responsibilities.
PRESCRIBED FIRE OBJECTIVES
<p>Burn at least 70% of the area within the unit (patchy burn is anticipated). Kill 50 to 70% of seedlings/saplings. Within burned areas consume 40-70% of dead grass thatch and pine litter and 30 to 70% of duff, as observed/estimated at conclusion of burn. Shrub mortality expected to be low but expect 50 percent topkill – any amount of mortality acceptable. Limit scorch height to 30', as observed 1 week after burn. Train personnel in unit preparation, firing, holding, mop-up, and monitoring techniques.</p>

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Two stages

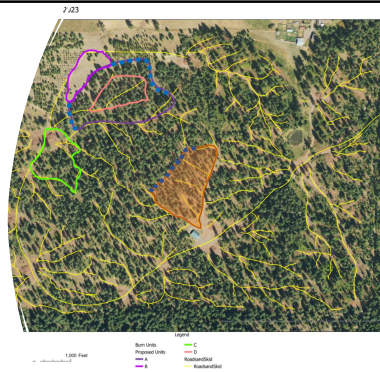
- Prescription for "in-unit"
 - Meet burn objectives
- Consideration for "out-of-unit"
 - Holding and contingency requirements



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In-unit prescription

- ID fuel that will carry fire
- Slope and aspect
- Live fuel moisture
- Anticipate fire behavior
 - What's acceptable?
 - What accomplishes objectives?



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Prescription components

- Start with desired/acceptable fire behavior
 - Flame length – how much heat is generated. Impacts tactics and plant scorch or mortality.
 - Rate of spread – movement of flaming front. Impacts tactics, how long fire resides in a particular location, how long it takes to complete the burn.

Parameter	Low	High
Temperature (°F)		
Relative Humidity (%)		
20-ft Wind Speed (forecasted)		
20-ft Wind Direction (forecasted)		
Eye-level Wind Speed (observed)		
Eye-level Wind Direction		
Transport Wind Direction		
Fine Dead Fuel Moisture (%)		
Flame Length (ft)		
Rate of Spread (ch/hr)		

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Consider crown scorch

- FL < 4' ~ crown scorch < 20'
- FL < 5' ~ crown scorch < 30'
- 2 to 3 mph wind helps disperse heat
- Depends on air temp and fuel model
- Use fire modeling software to refine estimates – but couple with local knowledge



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Consider tactics/personnel

- FL < 4' = hand crew personnel can make direct attack
- RIO under 20 ch/hr = fire moves less than ¼ mph



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Prescription components

- Start with desired/acceptable fire behavior
 - Flame length – 0.5 to 4' in this example
 - Rate of spread – under 20ch/hr, but not zero

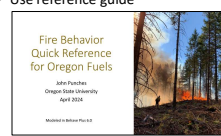
How can I get other parameters that result in desired FL and ROI?

Parameter	Low	High
Temperature (°F)		
Relative Humidity (%)		
20-ft Wind Speed (forecasted)		
20-ft Wind Direction (forecasted)		
Eye-level Wind Speed (observed)		
Eye-level Wind Direction		
Transport Wind Direction		
Fine Dead Fuel Moisture (%)		
Flame Length (ft)	0.5	4
Rate of Spread (ch/hr)	1	20

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Anticipate fire behavior

- Model it
 - Behave Plus
 - IFTDSS
- Use reference guide



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What drives fire behavior?

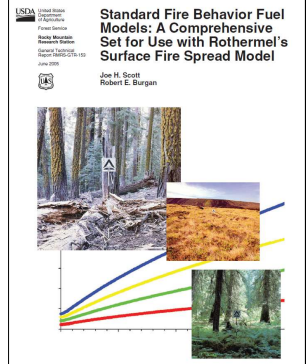
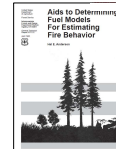
- Fuel characteristics (fuel model)
- Fine dead fuel moisture
- Eye-level wind speed
- Topography
- Live fuel moisture (if applicable)



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Select your fuel model

- Generally - use one of Scott & Burgan's 40 "new" models
- Sometimes an "original" from the 13 described by Anderson will be appropriate



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Select fuel model

- ID appropriate fuel type for surface fuel that will carry fire
- Use your fuel load data to find most likely model
- Draw on local knowledge if available – use the fuel model that represents observed fire behavior rather than the one the fits the description

Table 7—Fuel model parameters.

Fuel model code	Fuel load (lb/ft²)				Fuel model type	SAV ratio (100%)				Fuel bed depth (in)	Dead fuel moisture (percent)	Heat content (BTU/lb)
	1-hr	10-hr	100-hr	Live		Dead	Live	Live				
GRT1	0.10	0.00	0.00	0.30	0.00	dynamic	2200	2000	9999	0.4	15	8000
GRT2	0.10	0.00	0.00	1.00	0.00	dynamic	2000	1800	9999	1.0	15	8000
GRT3	0.10	0.00	0.00	1.50	0.00	dynamic	1800	1500	9999	2.0	25	8000
GRT4	0.25	0.00	0.00	1.50	0.00	dynamic	2000	1800	9999	2.0	15	8000
GRT5	0.40	0.00	0.00	2.50	0.00	dynamic	1800	1500	9999	1.5	40	8000
GRT6	0.10	0.00	0.00	2.40	0.00	dynamic	2000	2000	9999	1.5	40	8000
GRT7	1.00	0.00	0.00	5.40	0.00	dynamic	2000	1800	9999	3.0	15	8000
GRT8	1.00	0.00	0.00	7.20	0.00	dynamic	1800	1500	9999	4.0	30	8000
GRT9	1.00	1.00	0.00	9.00	0.00	dynamic	1800	1400	9999	5.0	40	8000
GRT10	0.00	0.00	0.00	0.50	0.00	dynamic	2000	1800	1800	0.5	15	8000
GRT11	0.00	0.00	0.00	1.45	1.25	dynamic	1800	1600	1600	1.8	40	8000
GRT12	0.00	0.00	0.00	0.15	1.25	dynamic	2000	1600	1600	2.1	40	8000
GRT13	0.25	0.25	0.00	0.15	1.25	dynamic	2000	1600	1600	1.5	15	8000
GRT14	1.80	0.30	0.10	3.40	7.10	dynamic	1800	1600	1600	2.1	40	8000
GRT15	0.25	0.25	0.00	0.15	1.25	dynamic	2000	1600	1600	1.5	15	8000
GRT16	1.35	2.40	0.75	0.00	3.85	N/A	2000	9999	1600	1.0	15	8000
GRT17	0.40	3.00	0.00	0.00	6.20	N/A	1800	9999	1400	2.4	40	8000
GRT18	0.85	1.15	0.20	0.00	2.50	N/A	2000	1800	1600	3.0	35	8000
GRT19	3.80	2.10	0.00	0.00	2.30	N/A	750	9999	1800	6.0	15	8000
GRT20	2.90	1.40	0.00	0.00	1.40	N/A	750	9999	1600	2.0	30	8000
GRT21	3.50	5.30	2.50	0.00	3.40	N/A	750	9999	1600	6.0	15	8000
GRT22	3.00	3.40	0.00	0.00	4.20	N/A	750	9999	1600	3.0	40	8000
GRT23	4.50	2.45	0.00	1.55	7.00	dynamic	750	1800	1500	4.4	40	8000
TU1	0.20	0.00	1.50	0.20	0.00	dynamic	2000	1800	1600	0.6	20	8000
TU2	0.95	1.80	1.25	0.00	0.20	N/A	2000	9999	1600	1.0	30	8000
TU3	1.10	0.15	0.25	0.65	1.10	dynamic	1800	1600	1400	1.3	30	8000
TU4	4.50	0.00	0.00	0.00	2.00	N/A	2300	9999	2000	0.5	12	8000
TU5	4.00	4.00	3.00	0.00	3.00	N/A	1800	9999	750	1.5	25	8000
TU6	1.00	2.00	3.00	0.00	0.00	N/A	2000	9999	9999	0.2	30	8000
TU7	1.40	2.40	2.20	0.00	0.00	N/A	2000	9999	9999	0.2	25	8000
TU8	0.80	2.20	2.20	0.00	0.00	N/A	2000	9999	9999	0.3	25	8000
TU9	0.90	1.90	4.20	0.00	0.00	N/A	2000	9999	9999	0.4	25	8000
TU10	1.10	2.20	4.40	0.00	0.00	N/A	2000	9999	9999	0.4	25	8000
TU11	2.40	1.20	1.20	0.00	0.00	N/A	2000	9999	9999	0.3	25	8000
TU12	0.90	1.40	8.10	0.00	0.00	N/A	2000	9999	9999	0.4	25	8000
TU13	5.80	1.40	1.10	0.00	0.00	N/A	1800	9999	9999	0.3	35	8000
TU14	4.65	3.50	4.15	0.00	0.00	N/A	1800	9999	1600	0.6	25	8000
TU15	1.50	3.00	11.00	0.00	0.00	N/A	2000	9999	9999	1.0	25	8000
TU16	4.25	4.25	4.20	0.00	0.00	N/A	2000	9999	9999	1.0	25	8000
SBR1	5.50	2.75	3.00	0.00	0.00	N/A	2000	9999	9999	1.2	25	8000
SBR2	4.25	3.50	5.25	0.00	0.00	N/A	2000	9999	9999	2.7	25	8000

* Fuel model type does not apply to fuel models without live herbaceous fuel.

* The value 9999 was assigned to cases where there is no load in a particular fuel class or category.

* The same heat content value was applied to both live and dead fuel categories.

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Model to find acceptable range of FL and ROS

- Acceptable fire behavior: function of fine dead fuel moisture and eye-level wind speed, for a specific fuel model, slope, and live fuel moisture.
- 10-hr and 100-hr fuel moisture generally have minimal impact on behavior, but big impact on consumption and soil heating

Flame Length (ft) (heading)

1-hr fuel MC (%)	Midflame Wind Speed (upslope) mi/h				
	2	4	6	8	10
4	3.3	5.0	6.5	7.9	9.1
6	3.1	4.7	6.1	7.3	8.5
8	2.9	4.4	5.7	6.8	7.9
10	2.6	4.0	5.1	6.2	7.2
12	2.2	3.4	4.4	5.3	6.1
14	0.5	0.5	0.5	0.5	0.5
16	0.0	0.0	0.0	0.0	0.0

Example in which flame lengths under 4' are fully acceptable and 5' is tolerable.

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Firing pattern/spacing can manage behavior

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Direction of spread has big impact on behavior

BACKING Flame Length (ft)

1-hr fuel MC (%)	Midflame Wind Speed (upslope) mi/h				
	2	4	6	8	10
4	1.4	1.5	1.5	1.5	1.5
6	1.2	1.3	1.4	1.4	1.4
8	1.1	1.2	1.3	1.3	1.3
10	1.0	1.1	1.2	1.2	1.2
12	0.8	0.9	0.9	0.9	0.9
14	0.4	0.4	0.4	0.4	0.4
16	0.0	0.0	0.0	0.0	0.0

FLANKING Flame Length (ft)

1-hr fuel MC (%)	Midflame Wind Speed (upslope) mi/h				
	2	4	6	8	10
4	2.5	2.9	3.3	3.6	3.8
6	2.2	2.6	2.9	3.2	3.4
8	2.1	2.5	2.8	3.0	3.2
10	1.9	2.2	2.5	2.7	2.8
12	1.5	1.8	2.0	2.0	2.0
14	0.7	0.7	0.7	0.7	0.7
16	0.0	0.0	0.0	0.0	0.0

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Acceptable fire behavior reveals range of FDFM and eye-level wind speed

- Wind: 4 or less
- FDFM: 4-12
- Maybe a bit more wind, or lower FDFM, if live fuel moisture is high.
- Tighter prescription if slope is steep
- Caution if FDFM low and wind high at same time

1-hr fuel MC (%)	Flame Length (ft) (heading)				
	Midflame Wind Speed (upslope) mi/h				
	2	4	6	8	10
4	3.3	5.0	6.5	7.9	9.1
6	3.1	4.7	6.1	7.3	8.5
8	2.9	4.4	5.7	6.8	7.9
10	2.6	4.0	5.1	6.2	7.2
12	2.2	3.4	4.4	5.3	6.1
14	0.5	0.5	0.5	0.5	0.5
16	0.0	0.0	0.0	0.0	0.0

Example in which flame lengths under 4' are fully acceptable and 5' is tolerable.

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Eye-level winds and FDFM

- For this example
 - Assume strip head firing
- Eye-level winds
 - Max of 4
 - Min of 1 (some wind is generally desirable for smoke dispersal and predictable fire movement)
- FDFM
 - Min of 4
 - Max of 12

How can I get other parameters that result in desired FL and ROI?

Parameter	Low	High
Temperature (°F)		
Relative Humidity (%)		
20-ft Wind Speed (forecasted)		
20-ft Wind Direction (forecasted)		
Eye-level Wind Speed (observed)	1	4
Eye-level Wind Direction		
Transport Wind Direction		
Fine Dead Fuel Moisture (%)	4	12
Flame Length (ft)	0.5	4
Rate of Spread (ch/hr)	1	20

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Identify min and max temp and RH

- Backtrack from FDFM tables
- Highest FDFM = lowest T, highest RH (assume 1000 hrs)
- Lowest FDFM = highest T, lowest RH (assume 1400 hrs)
- Assume level with fire
- Use table for season
- Consider time of day, aspect, slope, shading

Table A: Reference Fuel Moisture

Dry Bulb Temp (°F)	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
30	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
35	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
40	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
45	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
50	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
55	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
60	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
65	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
70	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
75	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
80	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
85	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
90	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
95	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
100	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Table B: 1-hr fuel moisture corrections May-June-July

Aspect	Slope	8000-8999	10000-10999	12000-12999	14000-14999	16000-16999	18000-18999
N	0%	B	L	A	B	L	A
N	10%	3	4	4	1	2	2
N	20%	3	4	4	1	2	2
N	30%	3	4	4	1	2	2
N	40%	3	4	4	1	2	2
N	50%	3	4	4	1	2	2
N	60%	3	4	4	1	2	2
N	70%	3	4	4	1	2	2
N	80%	3	4	4	1	2	2
N	90%	3	4	4	1	2	2
N	100%	3	4	4	1	2	2
E	0%	B	L	A	B	L	A
E	10%	3	4	4	1	2	2
E	20%	3	4	4	1	2	2
E	30%	3	4	4	1	2	2
E	40%	3	4	4	1	2	2
E	50%	3	4	4	1	2	2
E	60%	3	4	4	1	2	2
E	70%	3	4	4	1	2	2
E	80%	3	4	4	1	2	2
E	90%	3	4	4	1	2	2
E	100%	3	4	4	1	2	2
S	0%	B	L	A	B	L	A
S	10%	3	4	4	1	2	2
S	20%	3	4	4	1	2	2
S	30%	3	4	4	1	2	2
S	40%	3	4	4	1	2	2
S	50%	3	4	4	1	2	2
S	60%	3	4	4	1	2	2
S	70%	3	4	4	1	2	2
S	80%	3	4	4	1	2	2
S	90%	3	4	4	1	2	2
S	100%	3	4	4	1	2	2
W	0%	B	L	A	B	L	A
W	10%	3	4	4	1	2	2
W	20%	3	4	4	1	2	2
W	30%	3	4	4	1	2	2
W	40%	3	4	4	1	2	2
W	50%	3	4	4	1	2	2
W	60%	3	4	4	1	2	2
W	70%	3	4	4	1	2	2
W	80%	3	4	4	1	2	2
W	90%	3	4	4	1	2	2
W	100%	3	4	4	1	2	2

Shaded: 50% or more shading of surface fuels due to canopy and/or cloud cover

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Identify min and max temp and RH

- ID reasonable low and high T for your burn area and time of year
- Use tables to find RH associated with your allowable FDFM
- For this example, assume May, unshaded, S aspect, low slope, level
- We said FDFM from 4 to 12 was acceptable
- Lowest FDFM = 4 = highest T, lowest RH (assume 1400 hrs)
 - If reasonable max T is 85
 - Then associated lowest RH is 25
- Highest FDFM = 12 = lowest T, highest RH (assume 1000 hrs)
 - If reasonable low T is 40
 - Then associated highest RH is 84

Table A: Reference Fuel Moisture

Dry Bulb Temp (°F)	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
30	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
35	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
40	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
45	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
50	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
55	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
60	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
65	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
70	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
75	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
80	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
85	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
90	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
95	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
100	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Table B: 1-hr fuel moisture corrections May-June-July

Aspect	Slope	8000-8999	10000-10999	12000-12999	14000-14999	16000-16999	18000-18999
N	0%	B	L	A	B	L	A
N	10%	3	4	4	1	2	2
N	20%	3	4	4	1	2	2
N	30%	3	4	4	1	2	2
N	40%	3	4	4	1	2	2
N	50%	3	4	4	1	2	2
N	60%	3	4	4	1	2	2
N	70%	3	4	4	1	2	2
N	80%	3	4	4	1	2	2
N	90%	3	4	4	1	2	2
N	100%	3	4	4	1	2	2
E	0%	B	L	A	B	L	A
E	10%	3	4	4	1	2	2
E	20%	3	4	4	1	2	2
E	30%	3	4	4	1	2	2
E	40%	3	4	4	1	2	2
E	50%	3	4	4	1	2	2
E	60%	3	4	4	1	2	2
E	70%	3	4	4	1	2	2
E	80%	3	4	4	1	2	2
E	90%	3	4	4	1	2	2
E	100%	3	4	4	1	2	2
S	0%	B	L	A	B	L	A
S	10%	3	4	4	1	2	2
S	20%	3	4	4	1	2	2
S	30%	3	4	4	1	2	2
S	40%	3	4	4	1	2	2
S	50%	3	4	4	1	2	2
S	60%	3	4	4	1	2	2
S	70%	3	4	4	1	2	2
S	80%	3	4	4	1	2	2
S	90%	3	4	4	1	2	2
S	100%	3	4	4	1	2	2
W	0%	B	L	A	B	L	A
W	10%	3	4	4	1	2	2
W	20%	3	4	4	1	2	2
W	30%	3	4	4	1	2	2
W	40%	3	4	4	1	2	2
W	50%	3	4	4	1	2	2
W	60%	3	4	4	1	2	2
W	70%	3	4	4	1	2	2
W	80%	3	4	4	1	2	2
W	90%	3	4	4	1	2	2
W	100%	3	4	4	1	2	2

Shaded: 50% or more shading of surface fuels due to canopy and/or cloud cover

20-ft and transport wind direction?

- 20-ft winds NOT blowing at neighbor's house
- Transport winds NOT blowing at neighbor's house
- Or road, or vineyard, or town, or powerline, etc.
- Allowable 20-ft and transport wind directions may not always be the same

What about eye-level wind direction?

Parameter	Low	High
Temperature (°F)	40	85
Relative Humidity (%)	25	84
20-ft Wind Speed (forecasted)	3	13
20-ft Wind Direction (forecasted)	Any except SW	
Eye-level Wind Speed (observed)	1	4
Eye-level Wind Direction	Any	
Transport Wind Direction	Any except SW	
Fine Dead Fuel Moisture (%)	4	12
Flame Length (ft)	0.5	4
Rate of Spread (ch/hr)	1	20

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Eye-level wind direction?

- Will eye-level winds always align with 20-ft and/or transport wind directions?

NO

What can you tolerate and still have an effective fire?

Parameter	Low	High
Temperature (°F)	40	85
Relative Humidity (%)	25	84
20-ft Wind Speed (forecasted)	3	13
20-ft Wind Direction (forecasted)	Any except SW	
Eye-level Wind Speed (observed)	1	4
Eye-level Wind Direction	Any	
Transport Wind Direction	Any except SW	
Fine Dead Fuel Moisture (%)	4	12
Flame Length (ft)	0.5	4
Rate of Spread (ch/hr)	1	20

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Prescription components

- Will eye-level winds always align with 20-ft and/or transport wind directions?
- Maybe any direction will work
- Maybe slope aligned will work
- Maybe we can't allow wind blowing toward property line
- Chose what's reasonable

Parameter	Low	High
Temperature (°F)	40	85
Relative Humidity (%)	25	84
20-ft Wind Speed (forecasted)	3	13
20-ft Wind Direction (forecasted)	Any except SW	
Eye-level Wind Speed (observed)	1	4
Eye-level Wind Direction	Any	
Transport Wind Direction	Any except SW	
Fine Dead Fuel Moisture (%)	4	12
Flame Length (ft)	0.5	4
Rate of Spread (ch/hr)	1	20

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Use the comments section

- Wind/FDFM combos allowed
- Anticipated trends
- Areas where things may differ
- Watch-out situations
- Containment considerations may restrict prescription

ENVIRONMENTAL PARAMETERS AND FIRE BEHAVIOR					
ENVIRONMENTAL PRESCRIPTION			ACCEPTABLE FIRE BEHAVIOR		
	Low	High		Low	High
Temperature (°F)	40	85	Flame Length (ft)	0.2	4
Relative Humidity (%)	25	80	Rate of Spread (ch/hr)	0.2	7
20-R Wind Speed (Forecasted)	0	23			
20-R Wind Direction (Forecasted)	N, NW, NE, W, SW				
Eye-Level Wind Speed (Observed)	0	7			
Eye-Level Wind Direction (Observed)	Any				
Transport Wind Direction	N, NW, NE, W, SW				
Fine Dead Fuel Moisture (%)	4	14			

Prescription Comments:
Assumes live fuel conditions at 50% MC – will likely be higher and thus decrease flame length and rate of spread. Low intensity conditions (low temp with high RH) may not achieve desired consumption or seedling mortality levels but burning may proceed for training purposes and to reduce needle litter. Scorch height anticipated to be less than 10'. NOTE: Check live fuel moisture in shrub foliage and grass within 48 hours in advance and adjust parameters or holding resources accordingly. Fire behavior will become more active and intense as live fuels approach 30%.

Containment based on 15 chain per hour total line production rate. Achieved under all conditions at 30% live fuel MC, except when FDFMC 4 and wind speed 7 or greater. At 30% live fuel MC do not burn if sustained eye-level winds exceed 5mph or FDFMC drops to 4.

20-R wind speed calculation assumes surface fuels are partially sheltered from wind. WAF 0.3.

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Alternate way to organize prescription

- Label as Low Intensity and High Intensity
- Arrange parameters accordingly

Parameter	Low Intensity	High Intensity
Temperature (°F)	40	85
Relative Humidity (%)	84	25
20-ft Wind Speed (forecasted)	3	13
20-ft Wind Direction (forecasted)	Any except SW	
Eye-level Wind Speed (observed)	1	4
Eye-level Wind Direction	Any	
Transport Wind Direction	Any except SW	
Fine Dead Fuel Moisture (%)	12	4
Flame Length (ft)	0.5	4
Rate of Spread (ch/hr)	1	20

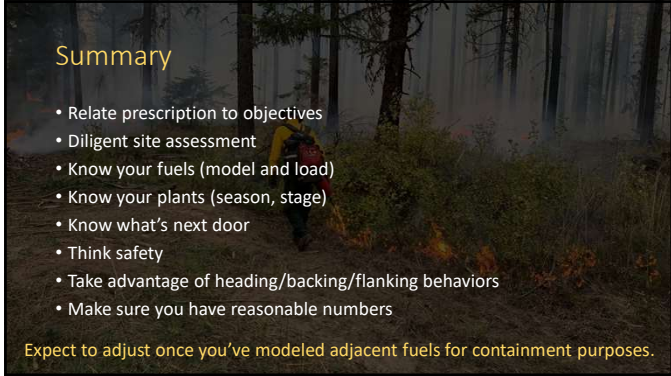
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Another alternate way to organize prescription

- Articulate minimum, maximum, and desired ranges

Parameter	Minimum	Desired	Maximum
Temperature (°F)	40	55 to 65	85
Relative Humidity (%)	25	35 to 60	84
20-ft Wind Speed (forecasted)	3	6 to 10	13
20-ft Wind Direction (forecasted)	Any except S or SW	N, NE, E, NW	Any except SW
Eye-level Wind Speed (observed)	1	2 to 3	4
Eye-level Wind Direction	Any except SW	Upslope	Any except SW
Transport Wind Direction	Any except S or SW	N, NE, E, NW	Any except SW
Fine Dead Fuel Moisture (%)	4	5 to 10	12
Flame Length (ft)	0.5	1 to 3	4
Rate of Spread (ch/hr)	1	3 to 10	20

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A firefighter in a yellow jacket and helmet is visible in the background of a forest. The air is filled with smoke, suggesting a controlled burn or wildfire. The scene is dimly lit, with the firefighter's gear providing some contrast.

Summary

- Relate prescription to objectives
- Diligent site assessment
- Know your fuels (model and load)
- Know your plants (season, stage)
- Know what's next door
- Think safety
- Take advantage of heading/backing/flanking behaviors
- Make sure you have reasonable numbers

Expect to adjust once you've modeled adjacent fuels for containment purposes.