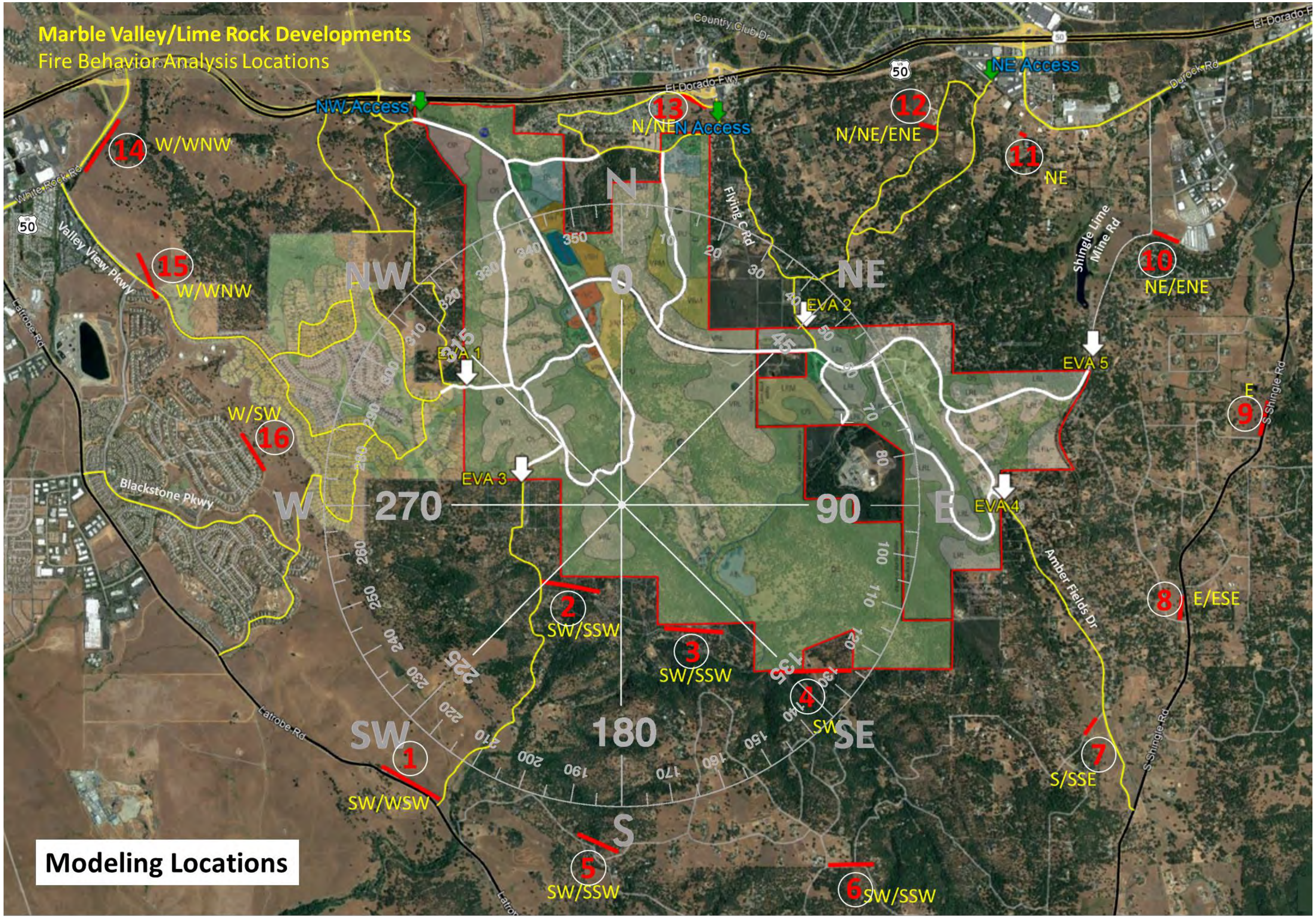
Fire Behavior Modeling Conclusions and Recommendations

- The fire behavior modeling conclusions and recommendations presented herewith are summarized from the following comprehensive analyses and reports, both of which can be found at Appendix M of the Draft Environmental Impact Report (Wildfire Risk Analysis) for each project:
  - **Wildland Fire Evacuation Risk Report - Fire Behavior - The Village of Marble Valley Project**, prepared by Firesafe Planning Solutions dated October 24, 2023
  - **Wildland Fire Evacuation Risk Report - Fire Behavior - Lime Rock Project**, prepared by Firesafe Planning Solutions dated November 1, 2023
  - Note: The modeling outputs, wind speed impacts, and development impacts shown on pages 5-7 of this document is one example only. Refer to the Wildland Fire Evacuation Risk Reports for the Village of Marble Valley and Lime Rock Valley for the complete analyses.
- A review of the expected fire behavior, using the worst-case scenarios, in the interface of the Marble Valley and Lime Rock Valley developments, indicates that the fire behavior could produce extreme fire behavior, and as such, risk reduction measures will be necessary.
- The configuration of the Project Site, the placement of the structures and features on the topography and the nature of the wildland fuels surrounding the project create conditions where the fire will travel at great speeds when wind, slope and fuel align BUT all of the access points are not impacted by fire at the same time.
- The fire behavior static modeling in this report with flame lengths of up to 55' under the worst-case scenario would be protected by compliance with the Fire Department fuel modification/defensible space standards. Fuel modification/defensible space is designed to reduce and change the fuel types as the combustible vegetation gets closer to the structure. As a "rule of thumb," two times the maximum flame length is adequate protection from radiant heat in a hardened structure. These distances also protect from direct flame contact (a distance greater than the flame length by a factor of two) and convected heat (less impactful than the radiant heat distance as discussed previously). The structure hardening (including ember intrusion projection) protects from embers and brands which may travel long distances under worst-case conditions. Fire burning through the development area is improbable.
- Risk reduction measures are required by the State and Local fire/building regulations, fire department standards, and guidelines, and by risk reduction measures already considered and applied by the development review process.

Fire Behavior Modeling Conclusions and Recommendations

- Fire behavior modeling predicts that there will be varied timeframes for evacuation of the Project Site under fire scenarios where the fire is burning into the community from an adjacent area. Each scenario has its own set of parameters.
- Where fires are initialized within the Project Site or near its boundary, the fire incident command and control may have to determine if the population will be moved or "sheltered in place."
- The proposed community with its increased built-in fire protection features (defensible space, fuel modification, hardening of the structures and required maintenance), placement of the structures on the topography, overall orientation to the fuels, wind, and slope and nested (safe center) configuration would be a candidate for a "shelter in place" decision. While "shelter in place" is never a first option, history shows us that moving populations, once the fire has arrived, has increased risk, and should not be attempted when safe alternatives exist.
- It has been determined that, with the implementation of the risk reduction measures set forth in this report, the proposed development areas set forth as project configurations will have a less than significant impact from the wildland fire-related issues raised under the AG Guidelines, as well as under CEQA Guidelines Appendix G, Section XX Wildfire.



Marble Valley/Lime Rock Developments
Fire Behavior Analysis Locations
NW Access
N Access
NE Access
EVA 1
EVA 2
EVA 3
EVA 4
EVA 5
1 SW/WSW
2 SW/SSW
3 SW/SSW
4 SW
5 SW/SSW
6 SW/SSW
7 S/SSE
8 E/ESE
9 E
10 NE/ENE
11 NE
12 N/NE/ENE
13 N/NE
14 W/WNW
15 W/WNW
16 W/SW
Modeling Locations

Modeling Assumptions:

1. Moisture Scenario will be 3, 4, 5, 30, 50 (extreme)
2. Wind will be assumed to be from:
    a. N, NNE, NE at 45 mph
    b. SE, SSE, S, SSW, SW at 65 mph
3. Fuel models to be used
    a. LCP_LF2022_FBFM40_220_CONUS
    b. No modifications have been done to any layers
4. Development area are used as fire barriers due to fuel modification and defensible space protection. Community burn through is not expected.
5. Fire scenario will be with sustained winds (no diurnal effect)
6. No fuel conditioning is used with worst-case moisture scenario
7. Arrival Times are shown to eight hours, but fire scenario is unlimited
8. Foliar Moistures are assumed to be 100
9. Crown Fire Calculation Method is set to Finney (2004)
10. Spotting Probability is set to 0.99
11. Spotting Delay is set to 0
12. Fuels have not been adjusted to any disease or drought impacts
13. Slopes and Aspects have not been adjusted in the development area (barrier file adjusts this to some degree)

Inputs: SURFACE

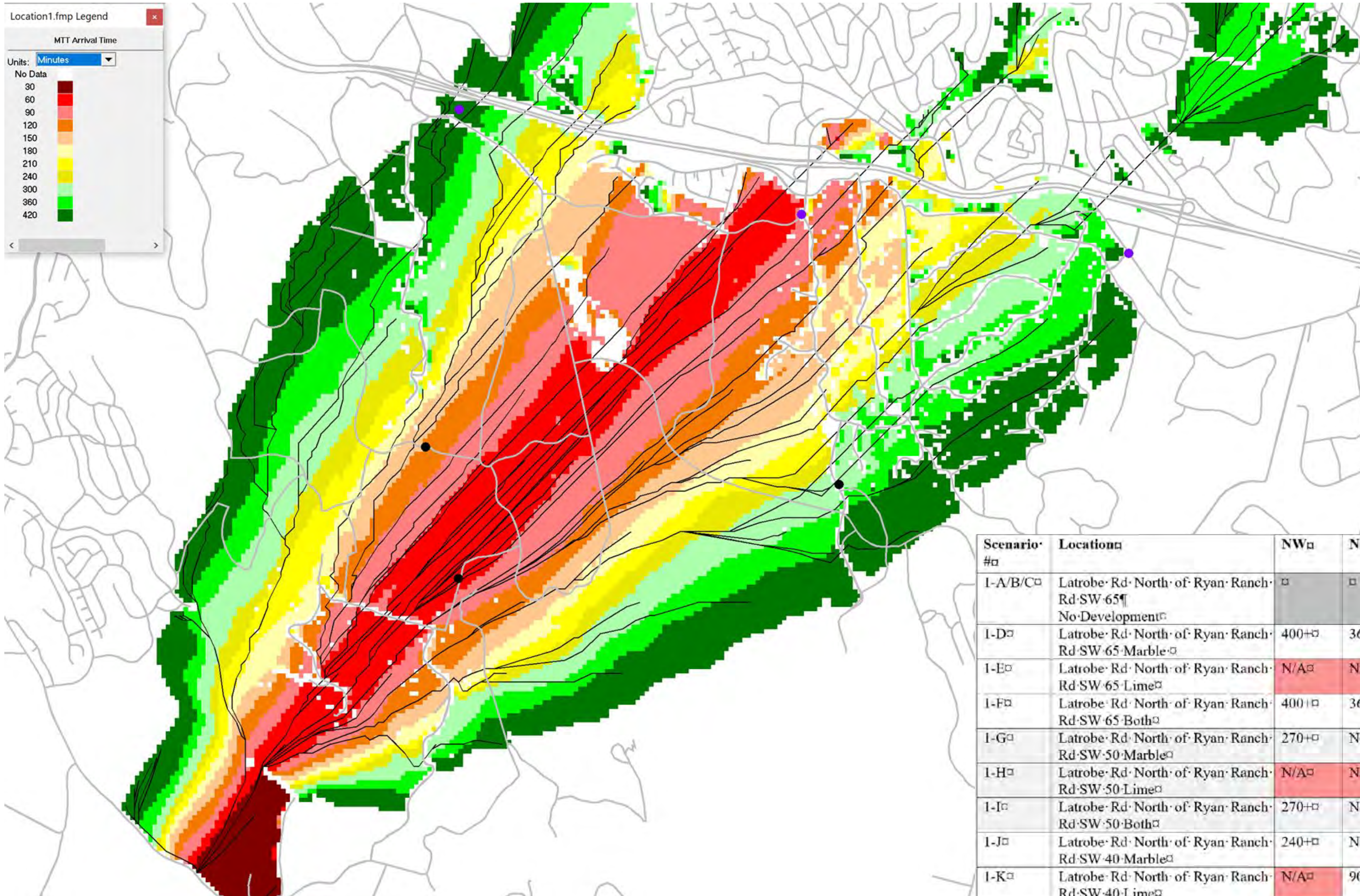
Description		Marble Valley Fuel Comparison
Fuel/Vegetation, Surface/Understory		
Fuel Model		gr1, gr2, gr4, gs1, gs2, sh2, sh5, s
Fuel Moisture		
1-h Fuel Moisture	%	3
10-h Fuel Moisture	%	4
100-h Fuel Moisture	%	5
Live Herbaceous Fuel Moisture	%	30
Live Woody Fuel Moisture	%	50
Weather		
20-ft Wind Speed (upslope)	mi/h	0, 30, 40, 50, 65
Wind Adjustment Factor		0.5
Terrain		
Slope Steepness	%	50

Marble Valley Fuel Comparison
Head Fire
Surface Fire Flame Length (ft)

Fuel Model	20-ft Wind Speed (upslope) mi/h 0	30	40	50	65
gr1	1.8	2.6	2.6	2.6	2.6
gr2	4.2	11.6	11.6	11.6	11.6
gr4	7.8	25.1	30.1	33.7	33.7
gs1	3.5	11.1	11.7	11.7	11.7
gs2	5.1	16.1	19.2	22.2	23.4
sh2	4.8	13.5	16.0	18.2	21.4
sh5	12.2	36.8	42.5	47.7	54.7
sh7	12.0	34.6	39.9	44.7	51.2
tu4	5.5	17.3	21.1	24.7	29.8
tu5	7.3	18.2	20.8	23.2	26.5
tl1	0.6	0.8	0.8	0.8	0.8
tl2	0.8	1.4	1.4	1.4	1.4
tl3	1.0	1.9	1.9	1.9	1.9
tl4	1.3	2.8	2.8	2.8	2.8
tl5	1.9	5.4	6.0	6.0	6.0
tl6	2.5	7.2	8.6	10.0	10.5
tl8	3.1	8.5	10.1	11.5	13.6
SCAL14	9.8	25.2	28.1	30.6	34.0
SCAL15	7.3	20.1	22.9	25.3	28.6
SCAL16	9.6	27.3	31.1	34.5	39.0
SCAL17	6.5	20.2	23.9	27.3	32.1

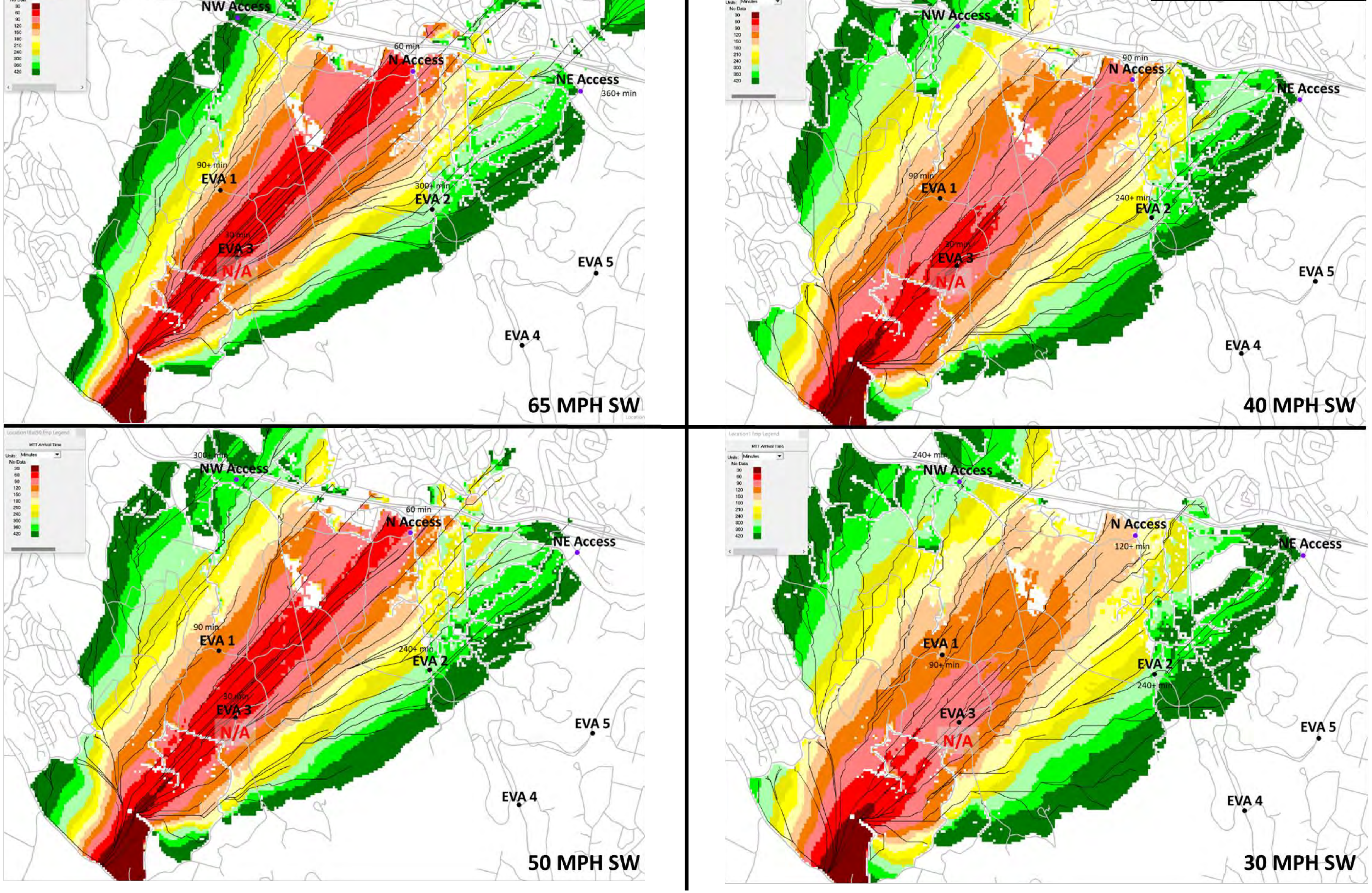
Fuel Model	Label	Description
101	gr1	Short, sparse, dry climate grass (D)
102	gr2	Low load, dry climate grass (D)
104	gr4	Moderate load, dry climate grass (D)
121	gs1	Low load, dry climate grass-shrub (D)
122	gs2	Moderate load, dry climate grass-shrub (D)
142	sh2	Moderate load, dry climate shrub (S)
145	sh5	High load, dry climate shrub (S)
147	sh7	Very high load, dry climate shrub (S)
164	tu4	Dwarf conifer understory (S)
165	tu5	Very high load, dry climate timber-shrub (S)
181	tl1	Low load, compact conifer litter (S)
182	tl2	Low load broadleaf litter (S)
183	tl3	Moderate load conifer litter (S)
184	tl4	Small downed logs (S)
185	tl5	High load conifer litter (S)
186	tl6	High load broadleaf litter (S)
188	tl8	Long-needle litter (S)
14	SCAL14	Manzanita
15	SCAL15	Chamise 1
16	SCAL16	North Slope Ceanothus
17	SCAL17	Chamise 2

Modeling Outputs



Scenario #	Location	NW	N	NE	EVA 1	EVA 2	EVA 3	EVA 4	EVA 5
1-A/B/C	Latrobe Rd North of Ryan Ranch Rd SW 65 No Development								
1-D	Latrobe Rd North of Ryan Ranch Rd SW 65 Marble	400+	360+	None	100	270+	40 – N/A	None	None
1-E	Latrobe Rd North of Ryan Ranch Rd SW 65 Lime	N/A	N/A	None	N/A	180	N/A	None	None
1-F	Latrobe Rd North of Ryan Ranch Rd SW 65 Both	400+	360+	None	100	270+	40 – N/A	None	None
1-G	Latrobe Rd North of Ryan Ranch Rd SW 50 Marble	270+	None	None	90	400+	45 – N/A	None	None
1-H	Latrobe Rd North of Ryan Ranch Rd SW 50 Lime	N/A	N/A	None	N/A	360	N/A	None	None
1-I	Latrobe Rd North of Ryan Ranch Rd SW 50 Both	270+	None	None	105	None	45 – N/A	None	None
1-J	Latrobe Rd North of Ryan Ranch Rd SW 40 Marble	240+	None	None	85	None	45 – N/A	None	None
1-K	Latrobe Rd North of Ryan Ranch Rd SW 40 Lime	N/A	90	None	N/A	210	N/A	None	None
1-L	Latrobe Rd North of Ryan Ranch Rd SW 40 Both	270+	None	None	90	None	55 – N/A	None	None
1-M	Latrobe Rd North of Ryan Ranch Rd SW 30 Marble	270	None	None	110	None	65	None	None
1-N	Latrobe Rd North of Ryan Ranch Rd SW 30 Lime	N/A	120	None	N/A	230	N/A	None	None
1-O	Latrobe Rd North of Ryan Ranch Rd SW 30 Both	270	None	None	110	None	65	None	None
1-Q	Latrobe Rd North of Ryan Ranch Rd WSW 65 Marble	None	None	None	None	200	N/A	360+	360+
1-R	Latrobe Rd North of Ryan Ranch Rd WSW 65 Lime	N/A	360+	None	N/A	220	N/A	None	None

Wind Speed Impacts



Prepared by

Development Impacts