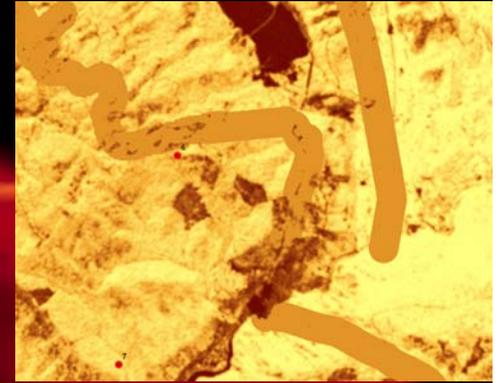




Fuels, Fire & Vegetation



at the Landscape Scale

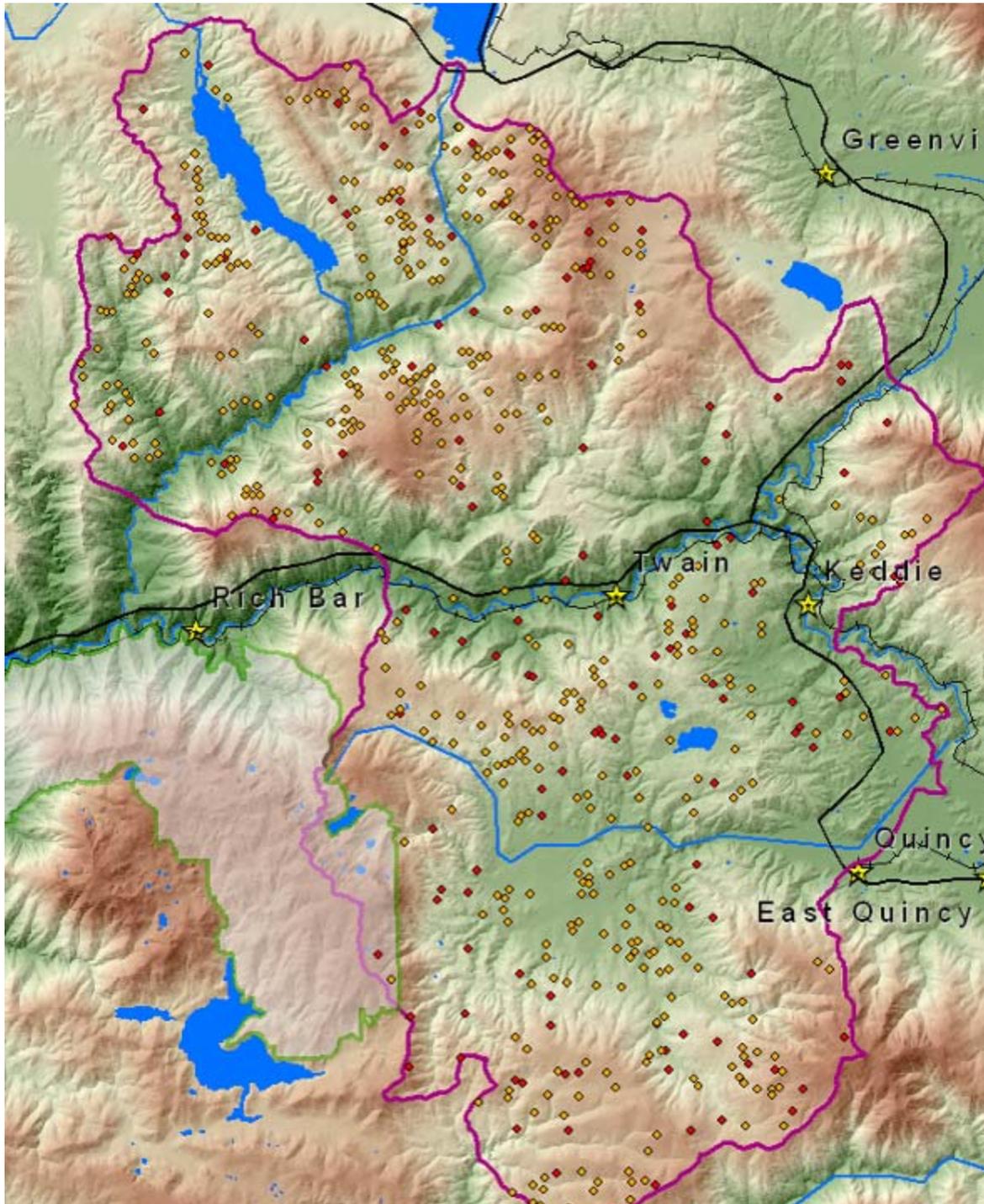


Kurt Menning & Scott Stephens
University of California, Berkeley

Primary Objective

How do landscape-level fuels treatments affect fuel loads, fire behavior and fire effects?



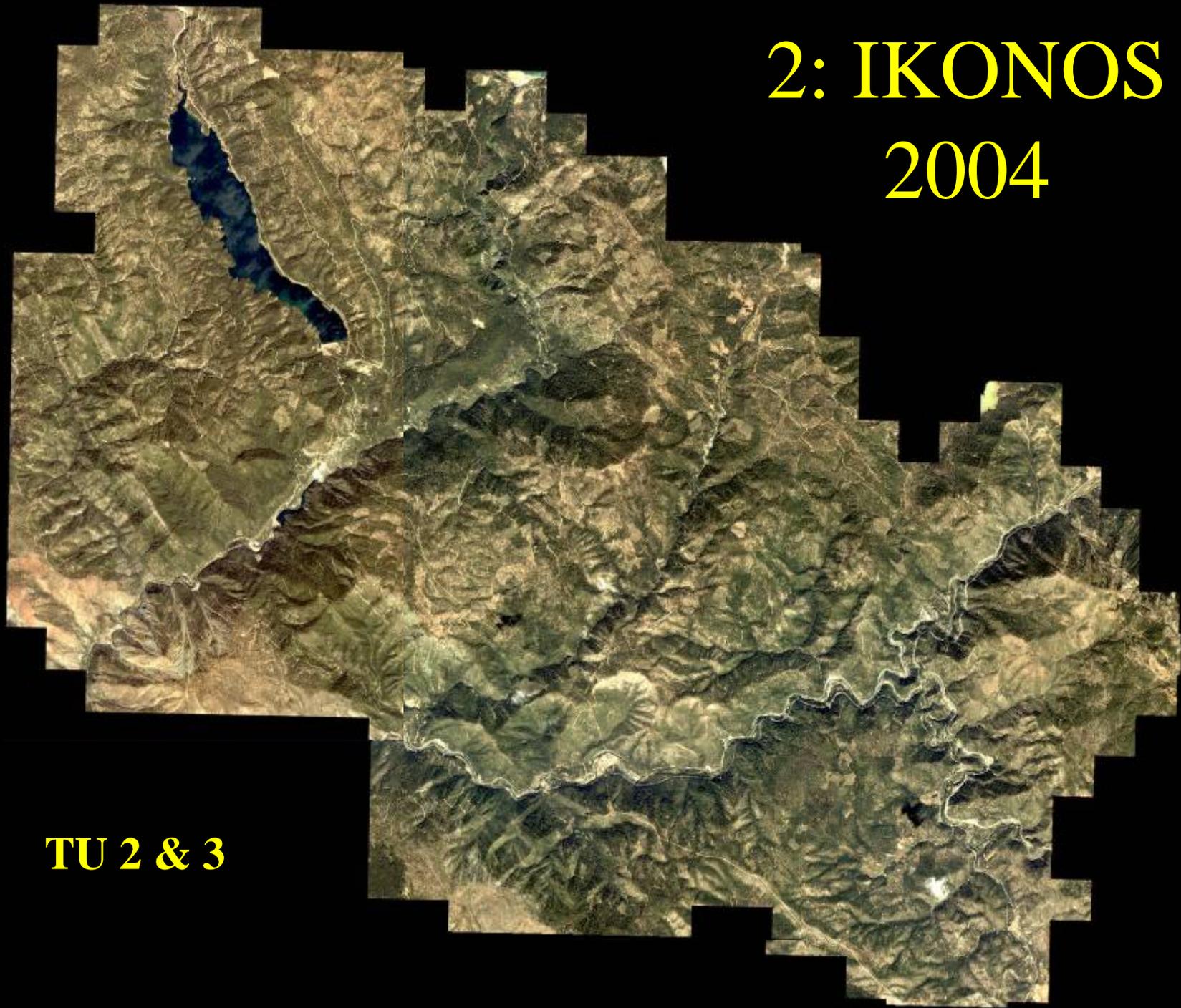


Plot locations

- 600 plots
- 493
- Stratified
- 108 Random
- 17,000 trees
- 150,000 acres

March 30, 2008

2: IKONOS 2004



TU 2 & 3

Status: Steps taken

1. Assess current conditions
2. Model current fire behavior & effects
3. Model fire given landscape fuels treatments (DFPZs)
4. Beyond fire: integrate vegetation, fire and habitat



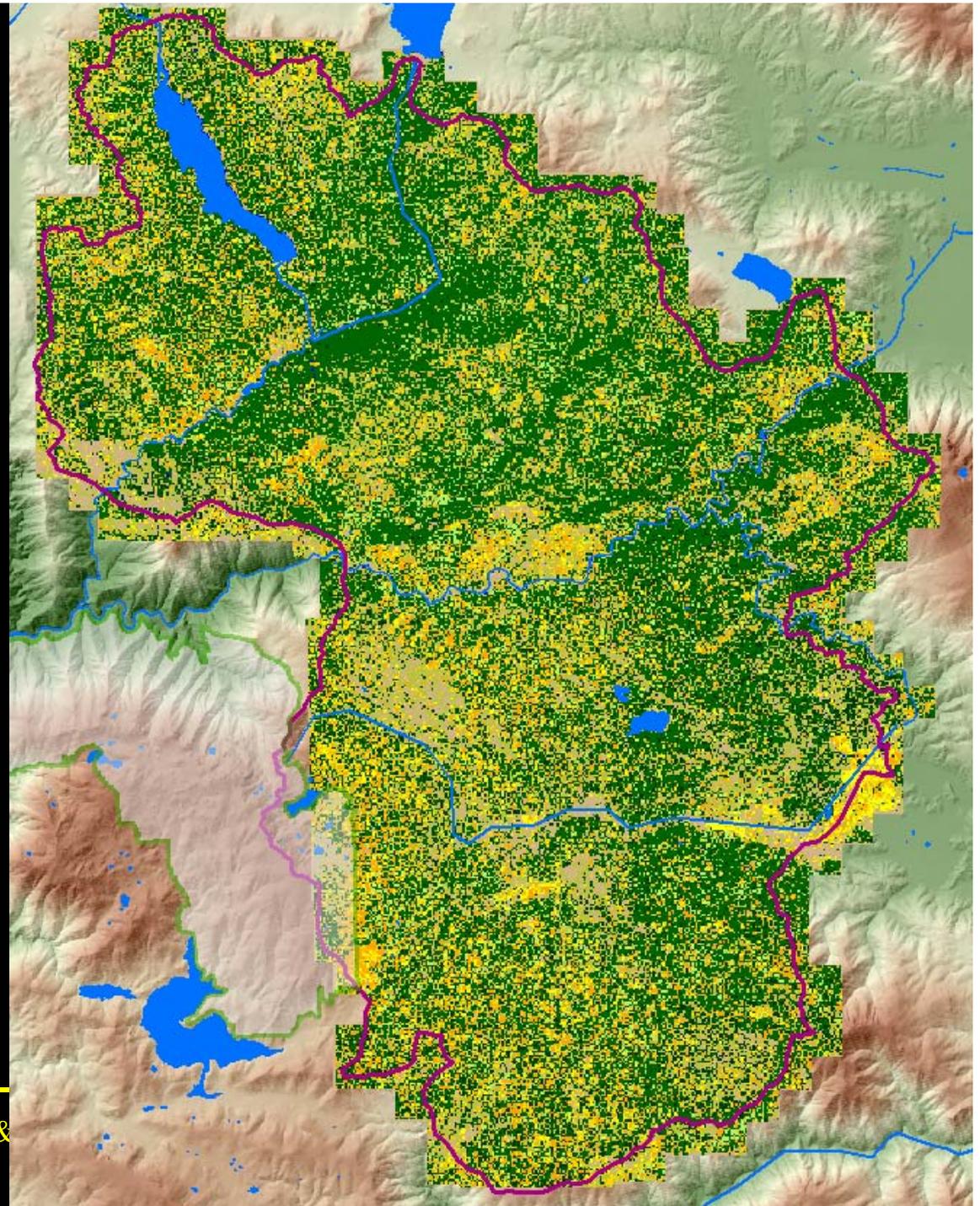
Fuels Classification

#	Fuel Model	Description	Occurrence in study area
98	NB8	Water	<ul style="list-style-type: none">•Major water bodies
99	NB9	Bare ground	<ul style="list-style-type: none">•Bare ground, talus, roads, semi-urban areas
102	GR2	Grass – Low load	<ul style="list-style-type: none">•Extensive grasslands (American Valley, Indian Valley)
122	GS2	Grass-shrub mod	<ul style="list-style-type: none">•South facing slopes•Recovering timber harvest areas
147	SH7	Shrub – chaparral	<ul style="list-style-type: none">•Chaparral type, dense, south and west aspects
165	TU5	Timber-shrub	<ul style="list-style-type: none">•South aspects only•dominant classification by Landfire
181	TL1	Timber low fuel	<ul style="list-style-type: none">•Red fir, and higher white fir areas•<i>Fresh timber operations, DFPZs, just after cuts</i>
186	TL6	Hardwood with fuel	<ul style="list-style-type: none">•Aspen stands•Oak stands in (?) riparian areas
184	TL4	Conifer mod fuel	<ul style="list-style-type: none">•Extensive
185	TL5	Conifer high fuel	<ul style="list-style-type: none">•Northern aspects only

Supervised Classification

- 11 classes
- 30-40 training sites
- 4m grain

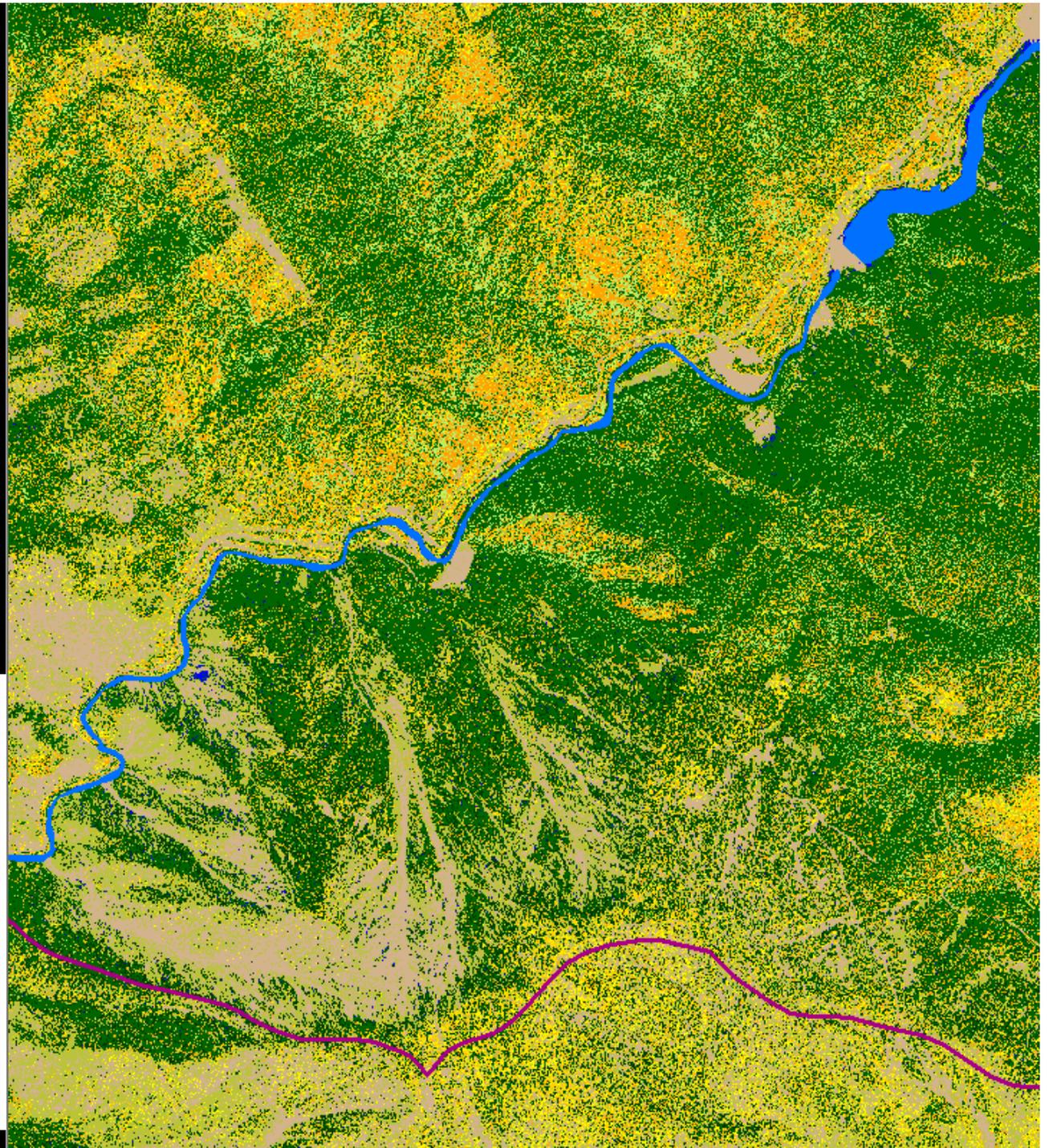
	NB8 Water 3
	NB9 Bare Ground 7 Spanish Pk
	GR2 Grass 4
	G52 Grass Shrub 2
	SH7 Shrub-chap 5
	TU5 Timber shrub 2
	TL1 Timber low volume fuel 1
	TL5 Timber high fuel 1
	TL5 Timber high fuel 3
	TL6 Hardwood 2



Red Mt.

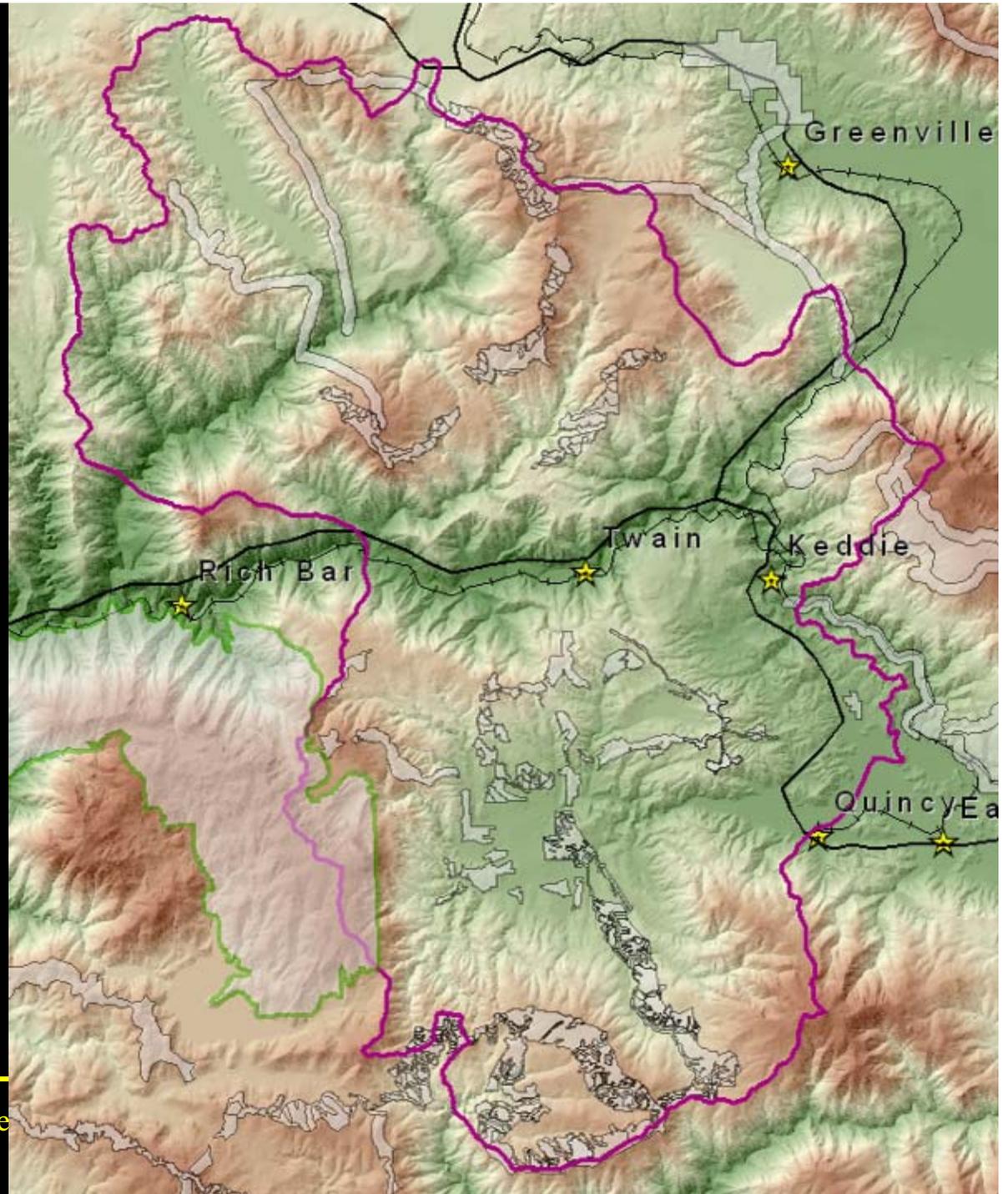
- Detail
- Fine grain

-  NB8 Water 3
-  NB9 Bare Ground 7 Spanish Pk
-  GR2 Grass 4
-  GS2 Grass Shrub 2
-  SH7 Shrub-chap 5
-  TU5 Timber shrub 2
-  TL1 Timber low volume fuel 1
-  TL5 Timber high fuel 1
-  TL5 Timber high fuel 3
-  TL6 Hardwood 2



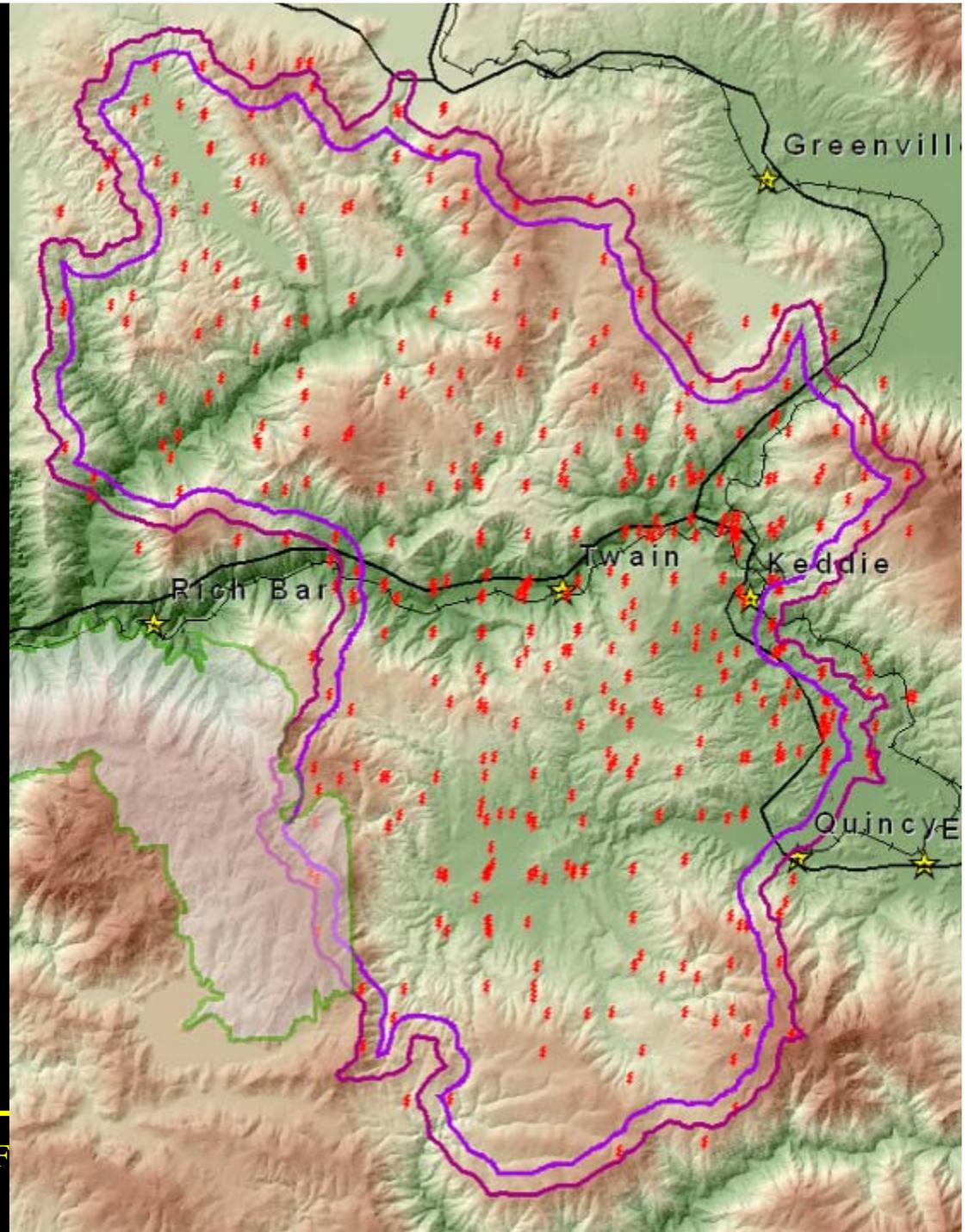
DFPZs

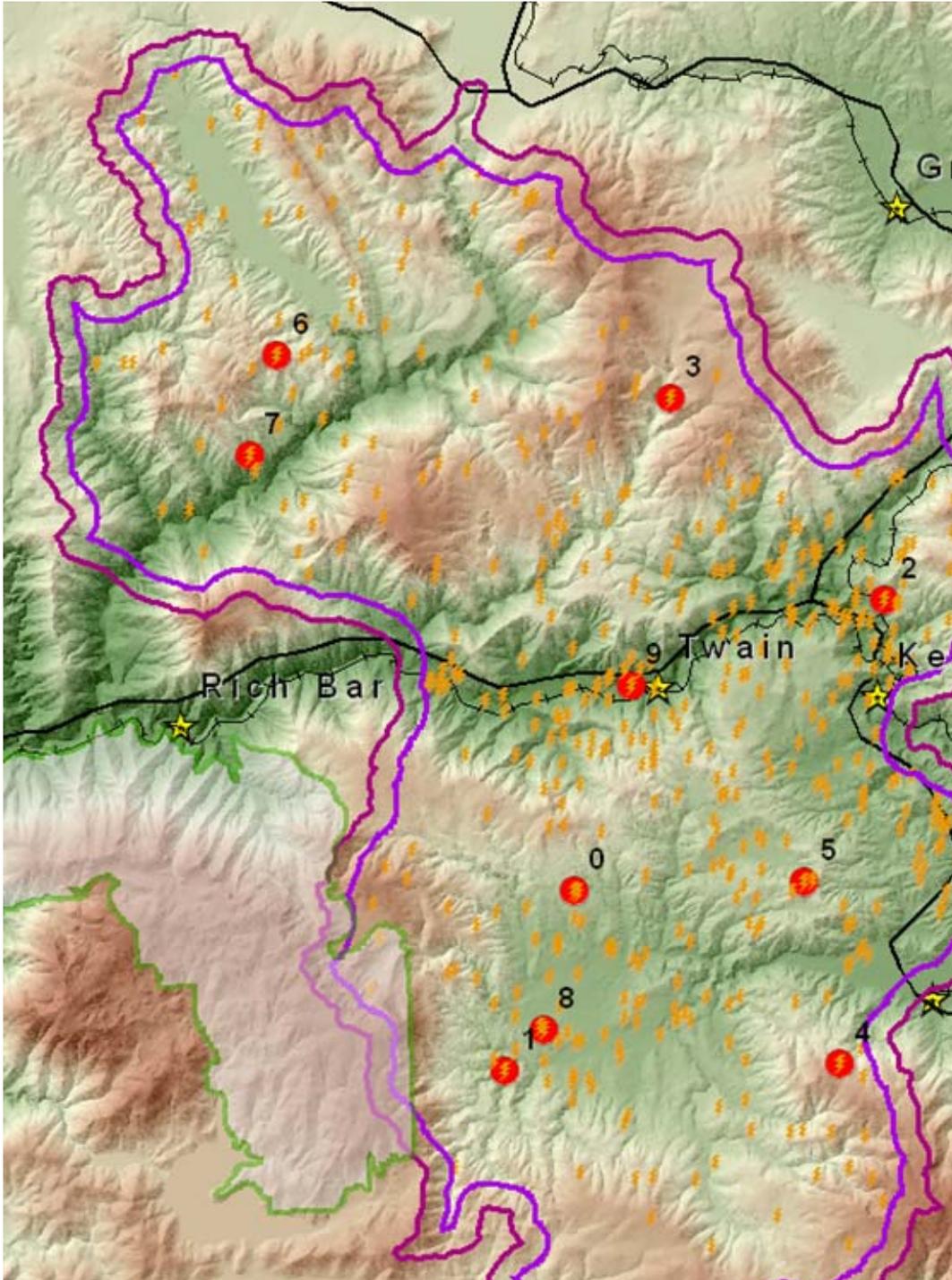
- Defensible Fuel Profile Zones
- Low fuel, wide gaps, few ladder fuels



Ignitions

- All ignitions from Plumas
- Clipped to our area



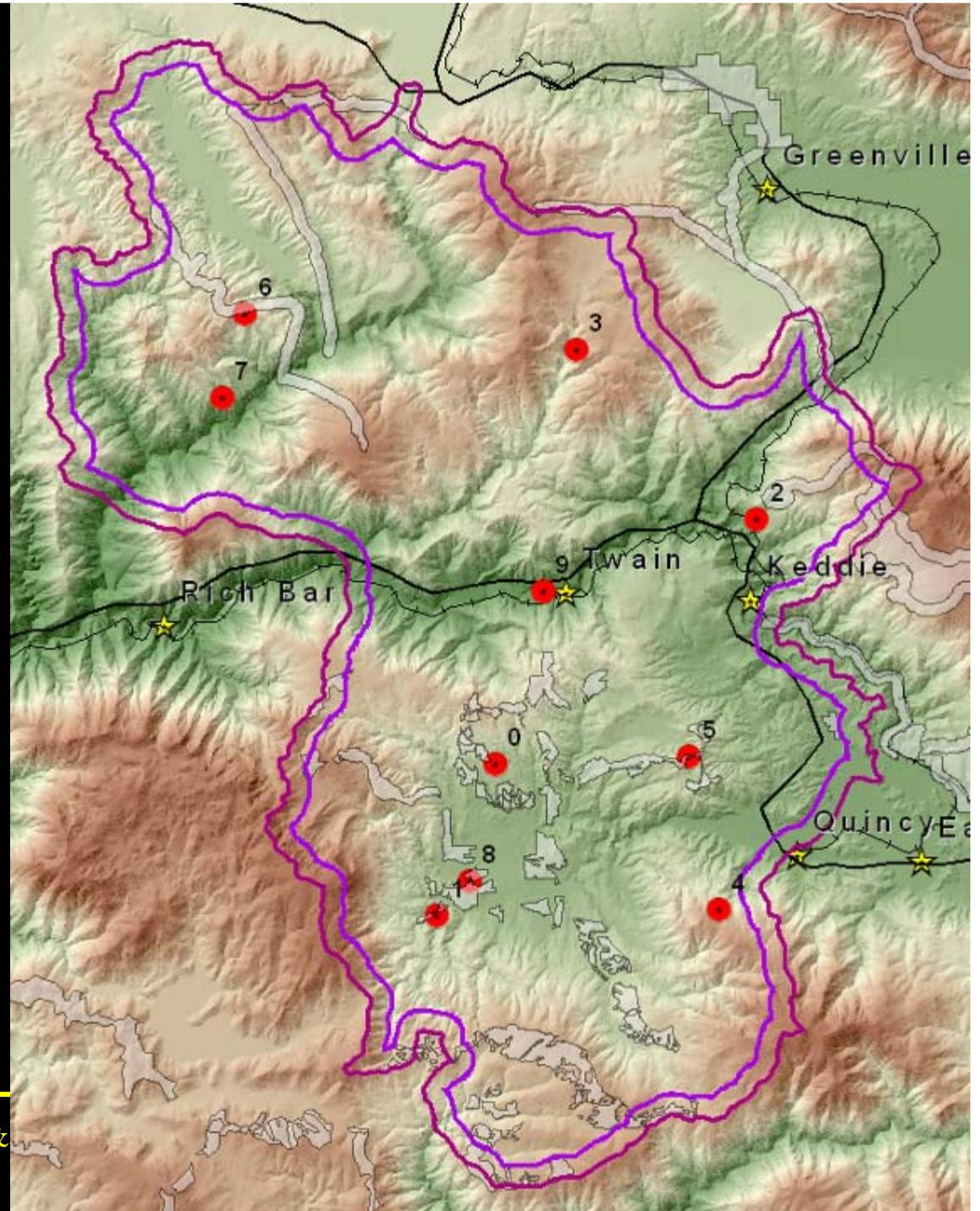


Ignitions Modeled

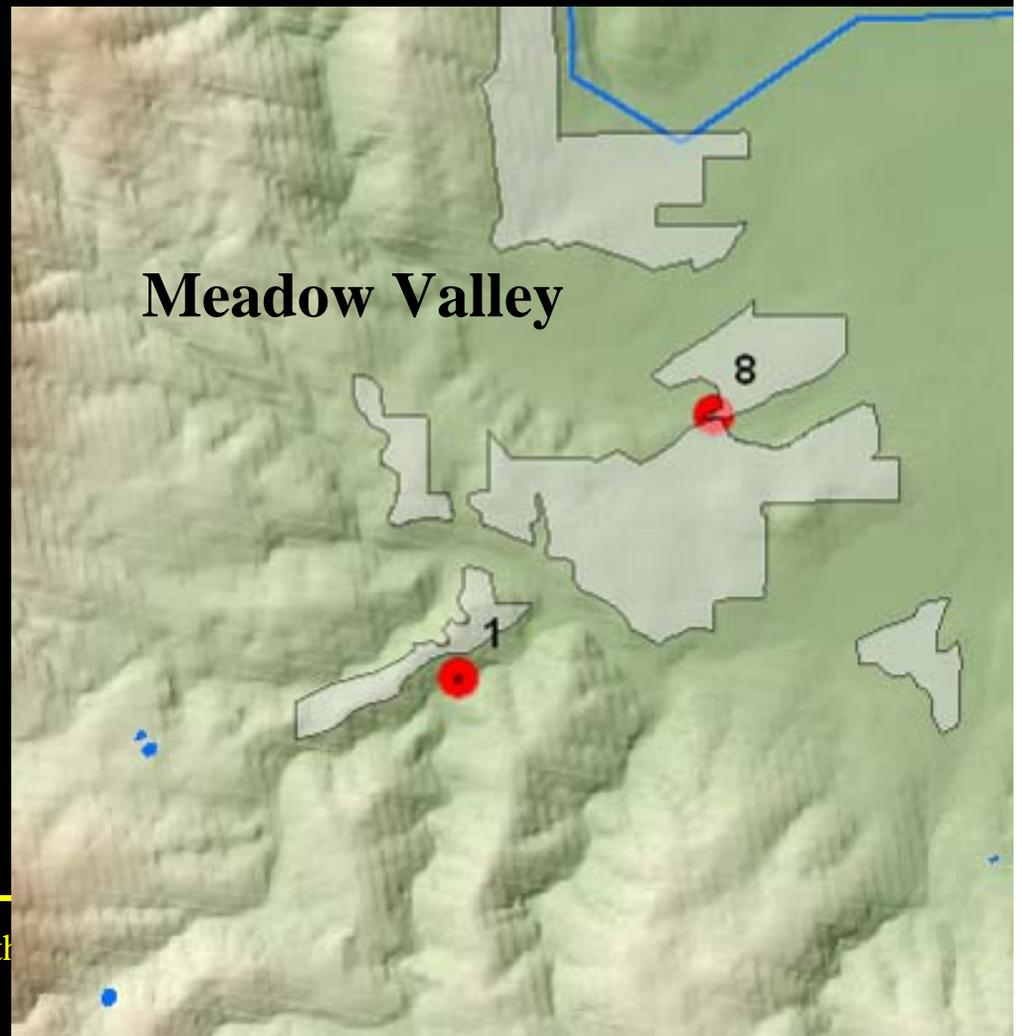
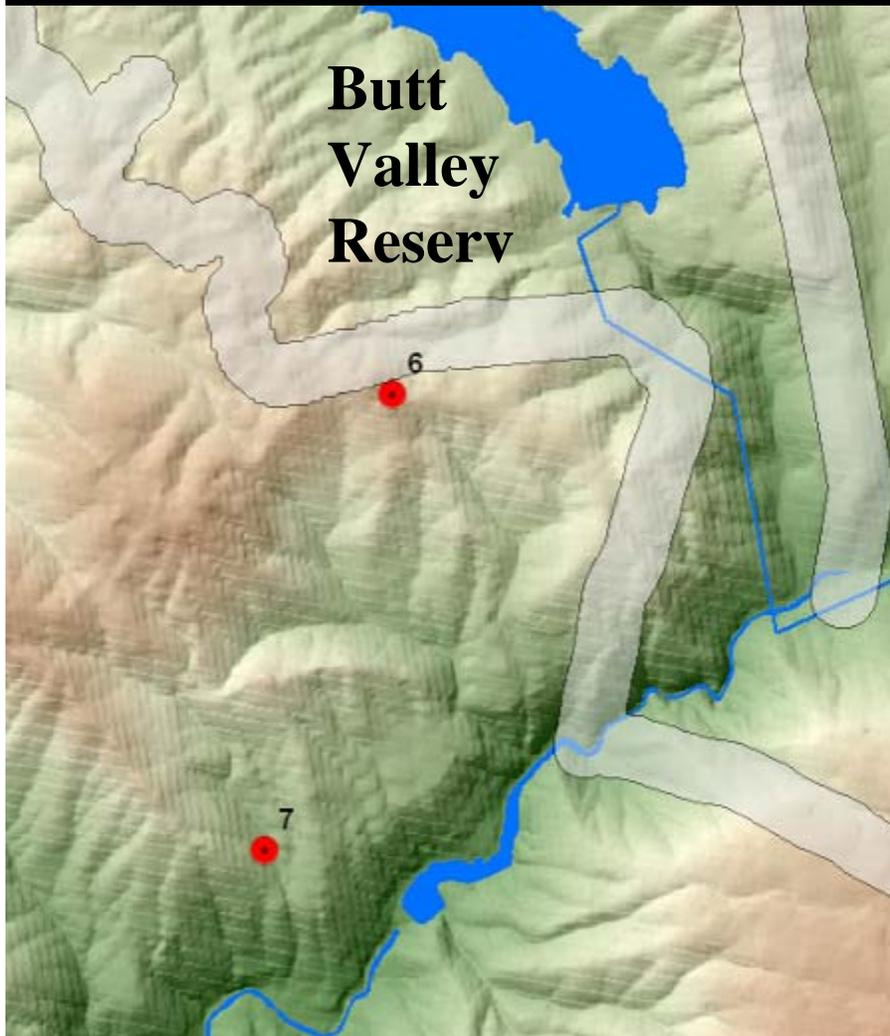
- Ten ignitions randomly sampled from candidate list

Ignitions and DFPZs

- Some fires affected by DFPZs
- Some not



Ignitions near DFPZs (Butt Valley Res, Meadow Valley)



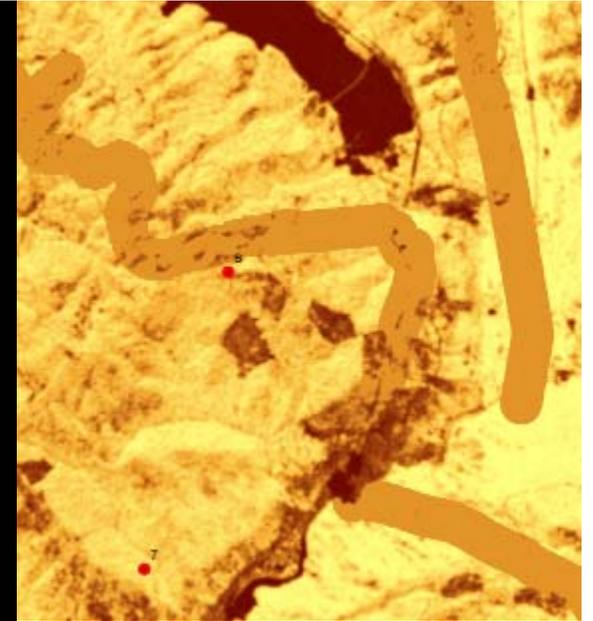
Creating a Landscape: Fuels Mapping & DEFPZ Modification

- NB8 Water 3
- NB9 Bare Ground 7 Spanish Pk
- GR2 Grass 4
- GS2 Grass Shrub 2
- SH7 Shrub-chap 5
- TU5 Timber shrub 2
- TL1 Timber low volume fuel 1
- TL5 Timber high fuel 1
- TL5 Timber high fuel 3
- TL6 Hardwood 2

Meadow Valley Area



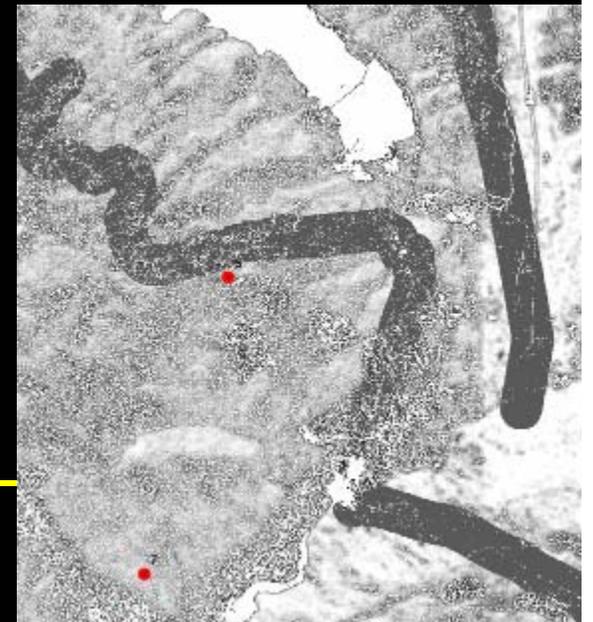
5 DFPZ-altered layers as inputs to Farsite & Flammap



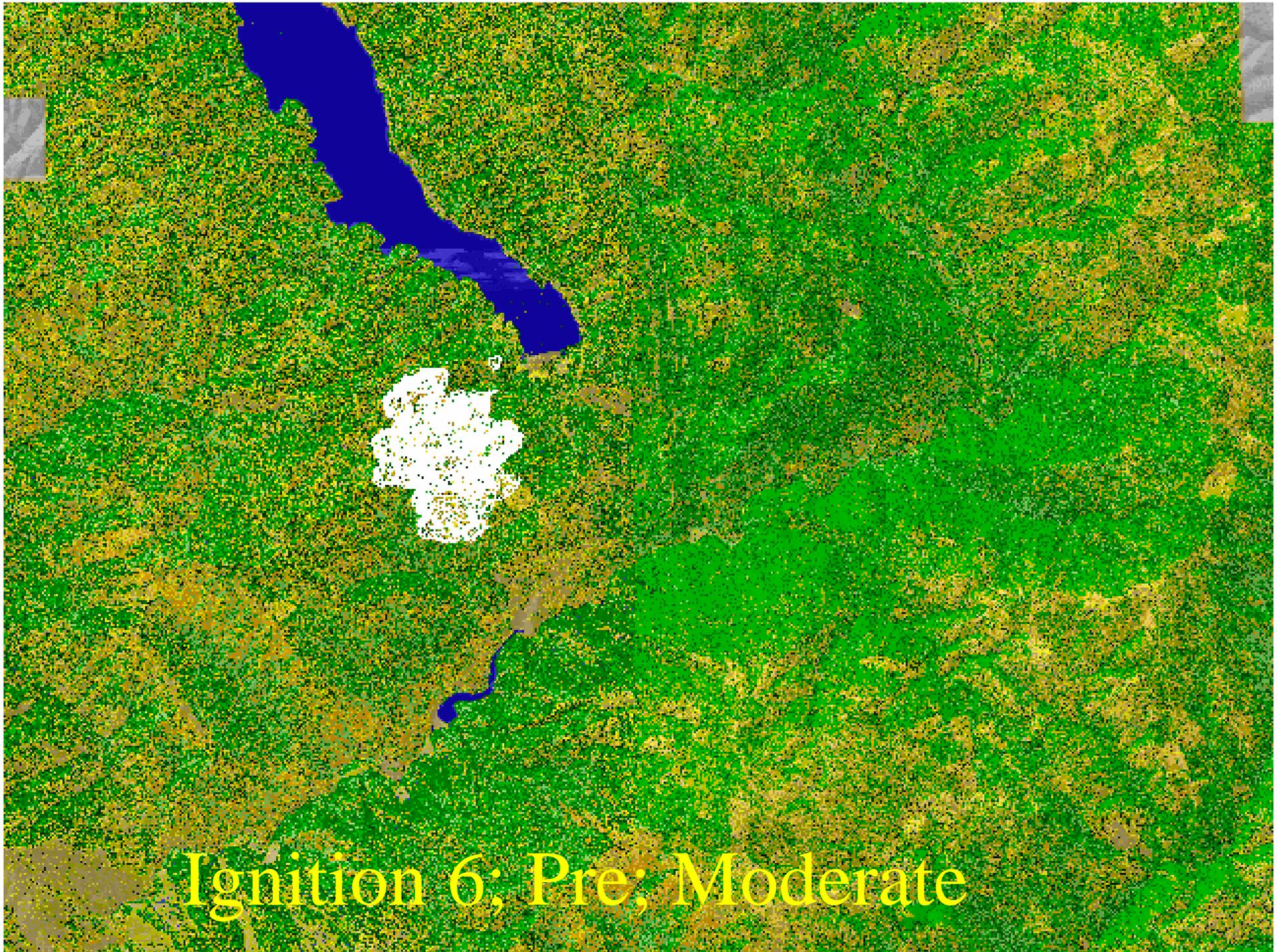
Fuels
Canopy Height

Canopy Base Height

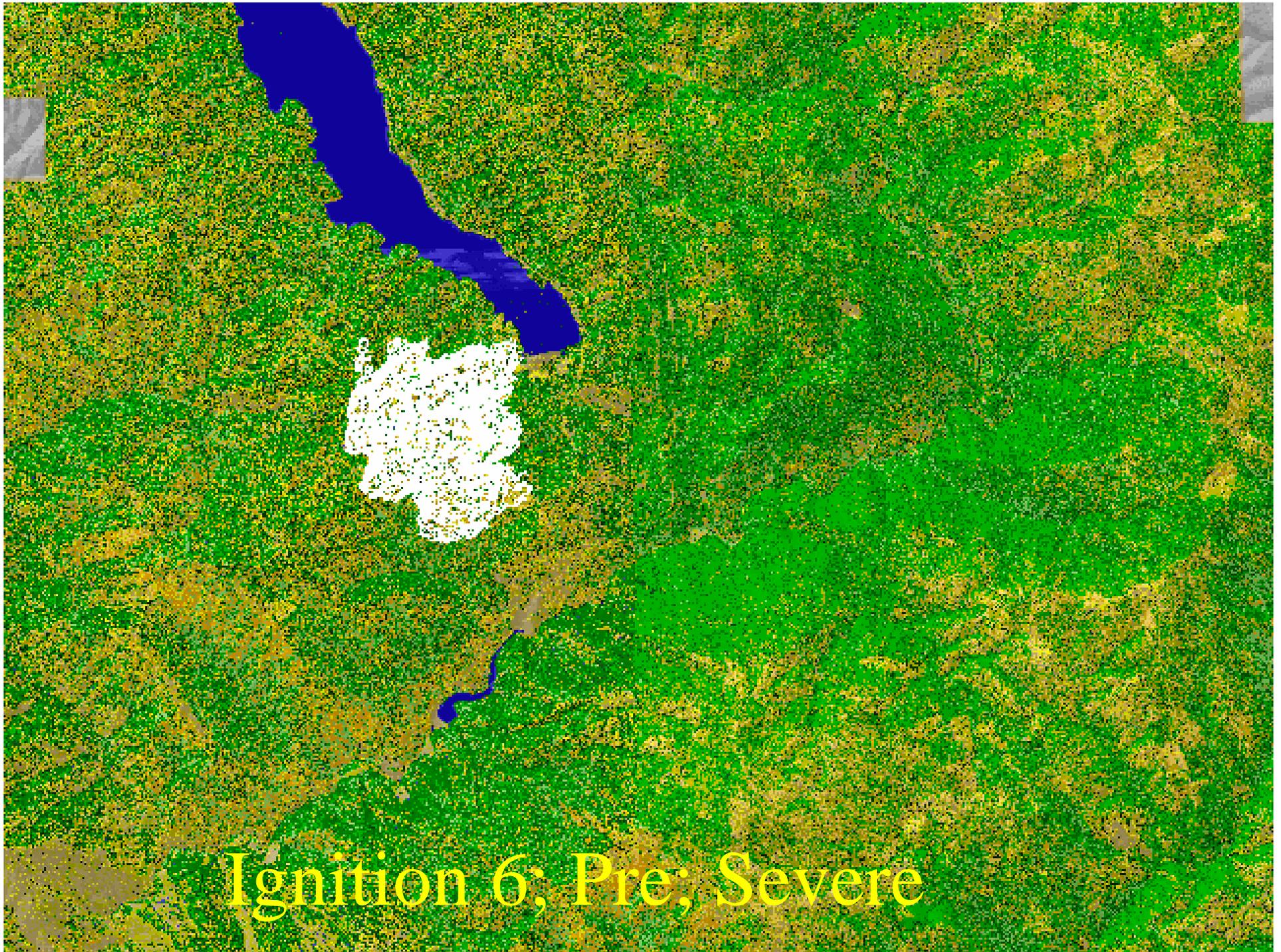
Canopy Cover
Bulk Density



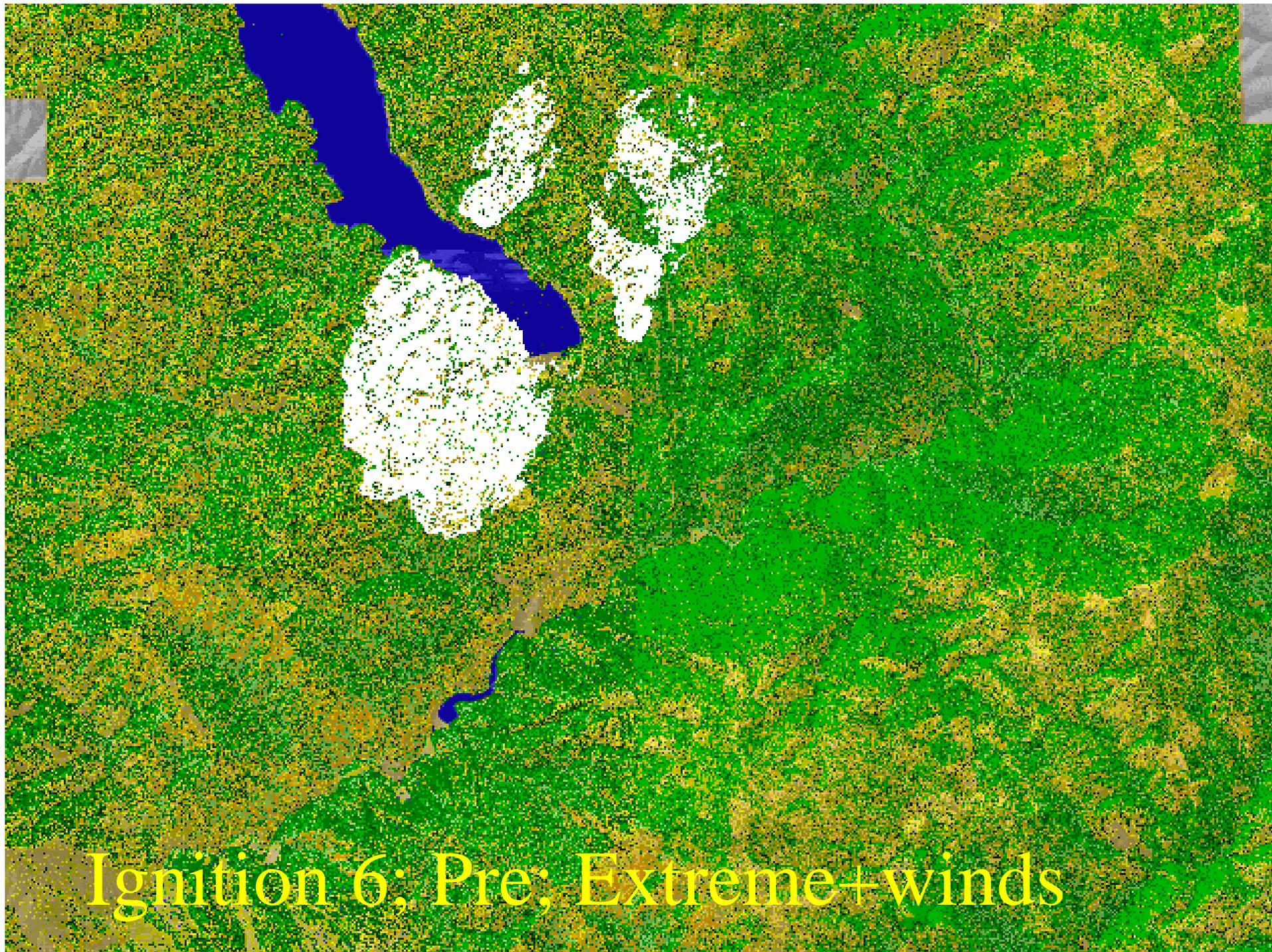
RESULTS



Ignition 6; Pre; Moderate



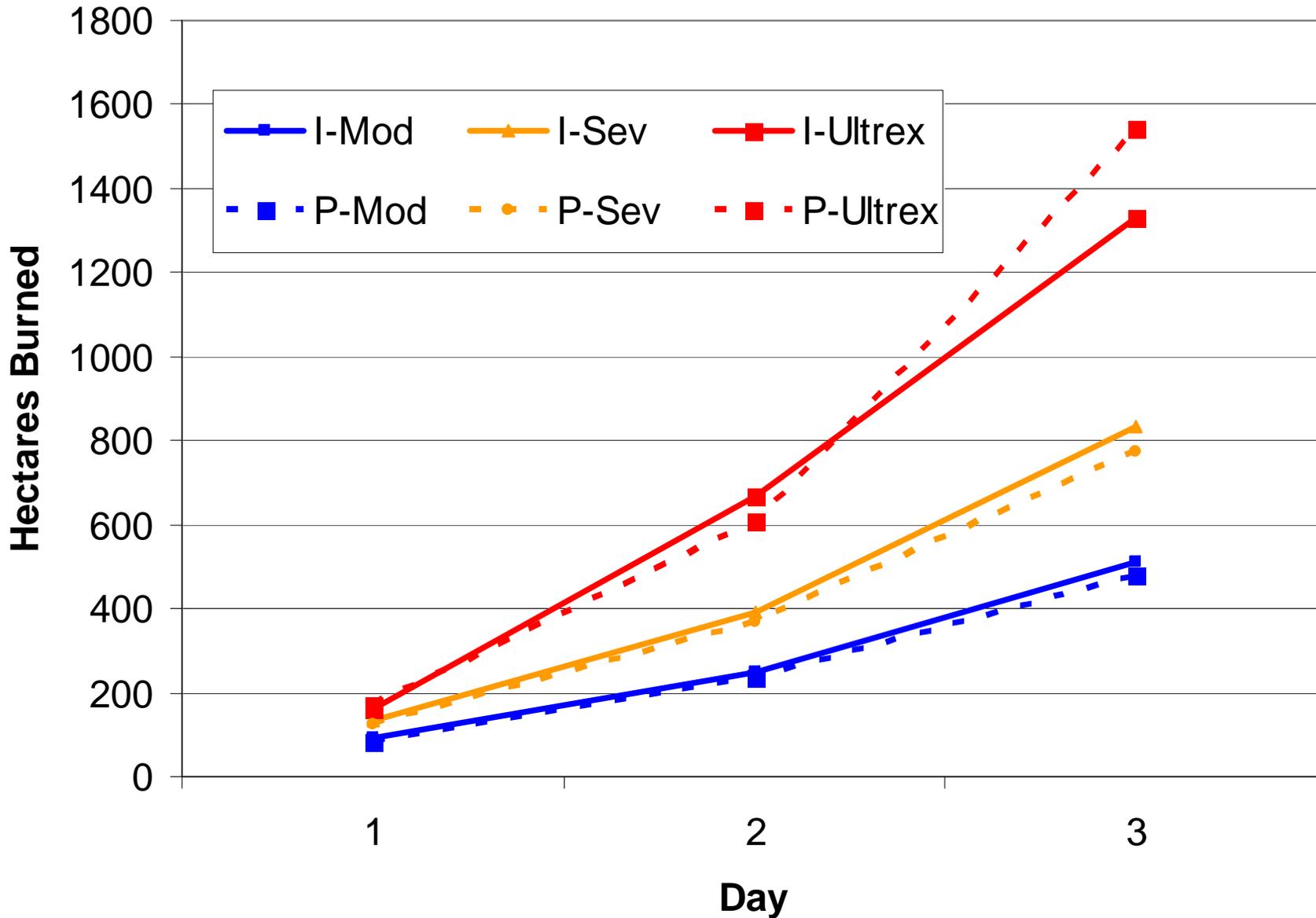
Ignition 6; Pre; Severe



Ignition 6; Pre; Extreme+winds

Hectares Burned by Weather Scenario

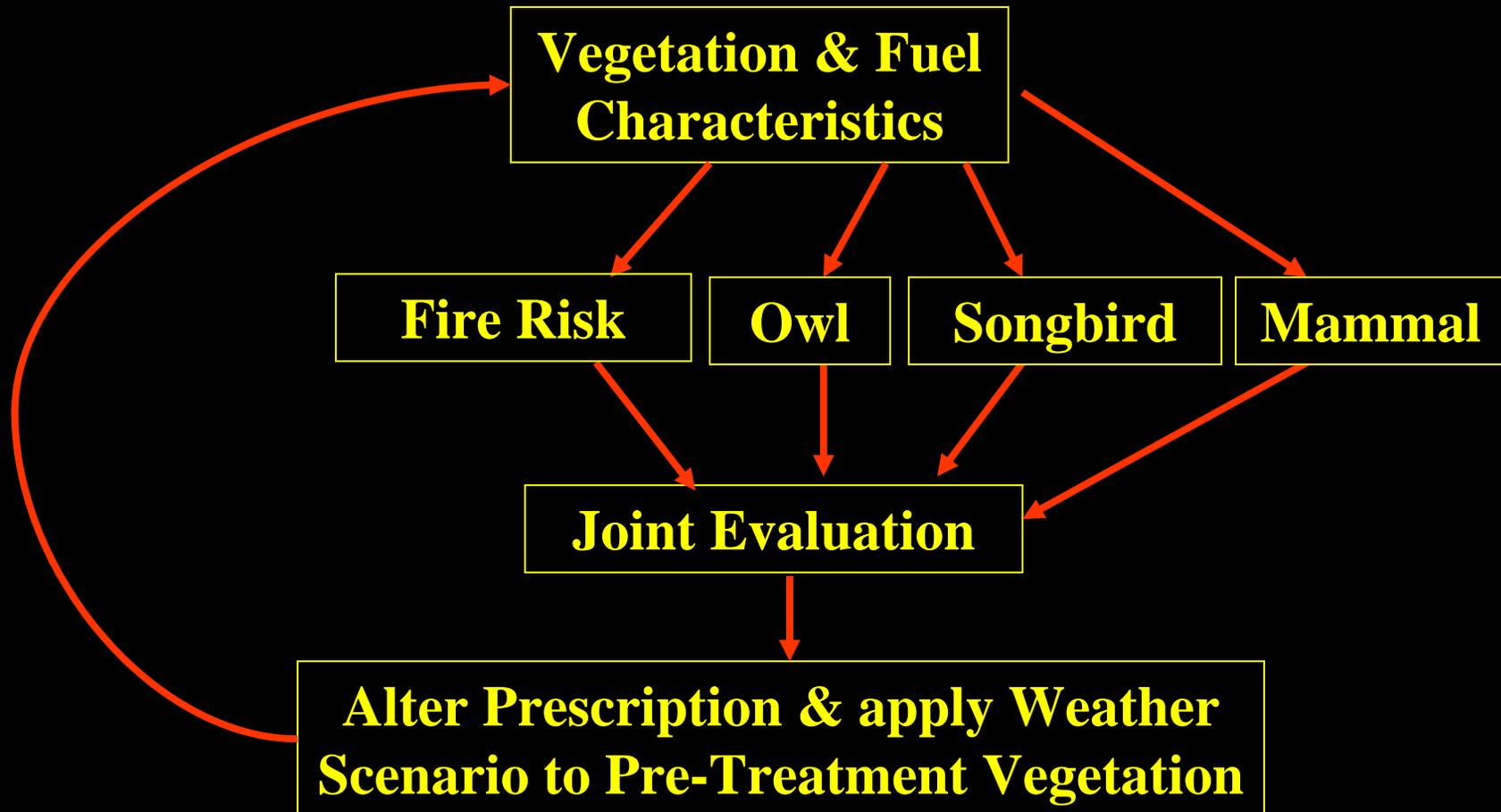
Only Ignitions **Not** affected by Treatments (3,4,9,7m&s)



Work to Complete

1. Complete simulations of DFPZ effects
2. Compare different landscape fuels treatment strategies (SPLATs)
3. Effects given suppression
4. Integrative Analysis with wildlife teams

Landscape vegetation, fire, and habitat model integration and projection



Thanks!

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kmenning@nature.berkeley.edu
stephens@nature.berkeley.edu
510-643-4773

