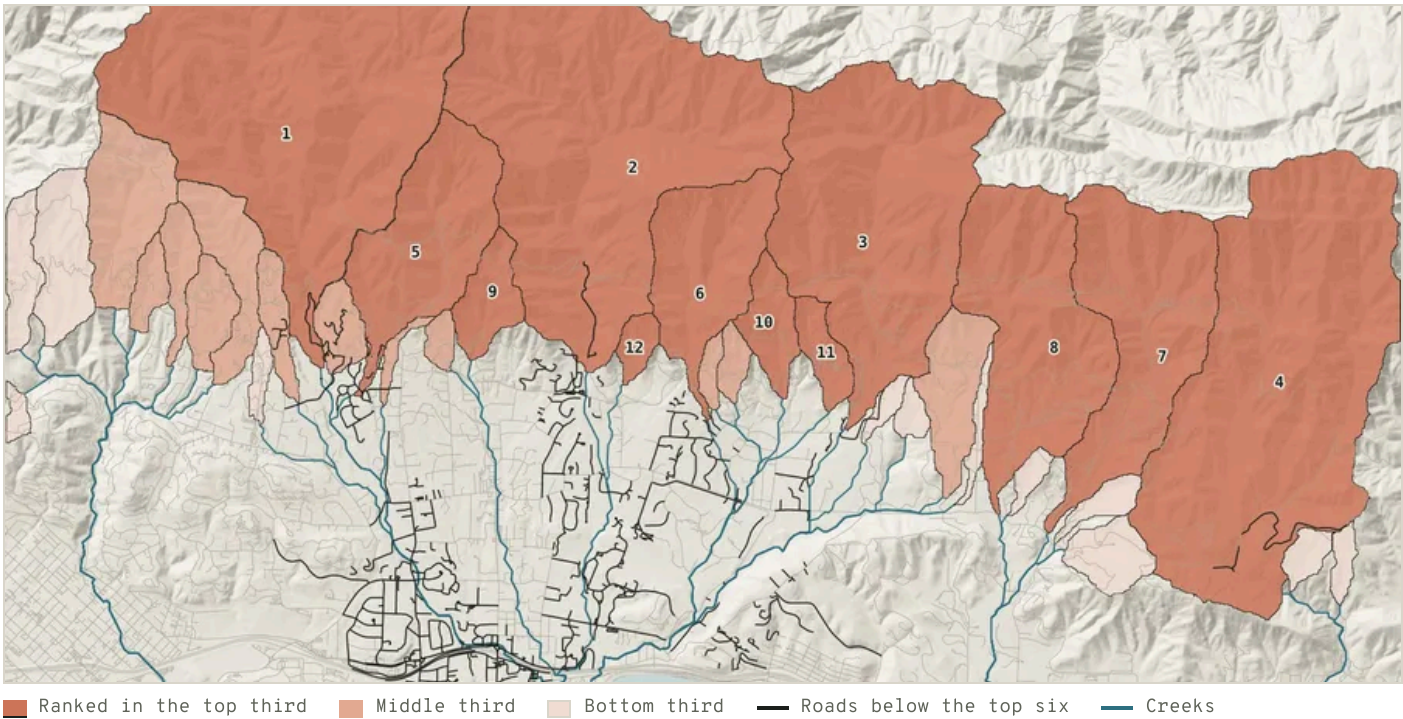


Montecito front, Thomas Fire scar

FIRE	BURN INPUT	TERRAIN
Thomas Fire, December 2017	BAER soil burn severity	USGS 3DEP, 10 m
CANYONS RANKED	PUBLIC ASSETS BELOW THE TOP SIX	PREPARED
36	563	October 2026, as a sample

This ranks the canyons on the scar against each other, first to last, so a team knows which drainages to plan around first. It is not a probability or a volume, and it does not compare fires. This sample re-runs our method on the 2017 Thomas Fire; page 2 shows what happened on January 9, 2018.



The six canyons to plan around first

RANK	CANYON	AREA	BURN	SLOPE	PUBLIC ASSETS ON THE FLOW PATHS BELOW
1	Cold Spring Creek	9.5 km ²	0.55	32°	230 road segments, 40 power poles and lines incl. Olive Mill Road, North Jameson Lane, Hot Springs Road
2	San Ysidro Creek	7.8 km ²	0.61	33°	151 road segments incl. Glen Oaks Drive, East Mountain Drive, Ennisbrook Drive
3	Romero Creek	5.2 km ²	0.53	34°	64 road segments, 12 power poles and lines incl. Ortega Ridge Road, Winding Creek Lane, East Valley Road
4	Unnamed canyon	8.0 km ²	0.31*	29°	3 road segments incl. Toro Canyon Park Road
5	Hot Springs Creek	2.2 km ²	0.56	30°	23 road segments incl. Meadow Lane, Rockbridge Road, Clover Lane
6	Buena Vista Creek	1.8 km ²	0.57	33°	40 road segments incl. Alisos Drive, Boundary Drive, Buena Vista Drive

* Under 80% of the canyon has a BAER severity class; the rest (outside the map, or masked as developed) counts as unburned. Burn is the mean BAER weight, 0 to 1.

All 36 canyons, ranked within this fire

#	CANYON	BURN	SLOPE	KM ²	#	CANYON	BURN	SLOPE	KM ²	#	CANYON	BURN	SLOPE	KM ²
1	<i>Cold Spring Creek</i>	0.55	32°	9.5	13	—	0.12*	24°	0.8	25	—	0.00*	25°	0.9
2	<i>San Ysidro Creek</i>	0.61	33°	7.8	14	—	0.25*	17°	0.4	26	—	0.00*	24°	0.4
3	<i>Romero Creek</i>	0.53	34°	5.2	15	—	0.29	27°	0.2	27	—	0.00*	12°	0.1
4	—	0.31*	29°	8.0	16	—	0.09*	19°	0.9	28	—	0.00*	4°	0.1
5	<i>Hot Springs Creek</i>	0.56	30°	2.2	17	—	0.04*	31°	1.2	29	—	0.00*	21°	0.1
6	<i>Buena Vista Creek</i>	0.57	33°	1.8	18	—	0.26	19°	0.1	30	—	0.00*	14°	0.1
7	—	0.38*	30°	3.1	19	—	0.17*	21°	0.1	31	—	0.00*	8°	0.1
8	—	0.36*	29°	3.3	20	—	0.07*	13°	0.3	32	—	0.00*	17°	0.1
9	<i>Oak Creek</i>	0.45	28°	0.6	21	—	0.03*	18°	0.4	33	—	0.00*	17°	0.2
10	—	0.36	30°	0.5	22	—	0.01*	29°	0.4	34	—	0.00*	19°	0.5
11	—	0.28*	26°	0.4	23	—	0.02*	26°	0.3	35	—	0.00*	18°	0.2
12	—	0.45	27°	0.2	24	—	0.05*	8°	0.1	36	—	0.00*	19°	0.1

Burn: mean BAER soil burn severity weight, 0 to 1 · Slope: mean gradient in degrees · Area: ground draining to the canyon mouth · * under 80% of the canyon has a BAER severity class; the rest counts as unburned, which can rank a canyon lower than it should be

What happened on January 9, 2018



6 of 6 canyons that flowed were ranked in the top third (ranks 1, 2, 3, 5, 6, 9).

3.5 km² of debris-flow inundation mapped by USGS.

0.97 rank-AUC: a canyon that flowed outranks one that didn't in about 97% of pairings.

162 structures recorded as destroyed, of 558 in CAL FIRE's damage inspection.

HOW TO READ THIS

- The ranking compares canyons within this fire only. It is never a probability, a volume, or a cross-fire comparison.
- Rainfall is not an input. The ranking assumes the canyons get similar rain, which holds for a compact scar under one storm.
- Area counts in full, so a large, moderately burned canyon can outrank a small, severely burned one.
- The method is validated on one event, this one. How well it transfers is not yet established.
- For likelihood and volume, USGS publishes the official assessments; we show them where they exist, attributed.

SOURCES

- Terrain: USGS 3DEP, 10 m.
- Burn severity: USFS BAER soil burn severity, Thomas Fire.
- 2018 debris flows, inundation, damage inspection and field photos: Kean, J.W., et al. 2018, USGS data release, doi:10.5066/P9JQJU0E; Kean, J.W., et al. 2019, Geosphere 15(4).
- Roads and power: © OpenStreetMap contributors (ODbL). Dams: USACE National Inventory of Dams.
- Assets are counted along the drainage paths below each canyon mouth. Asset counts are not a statement that any asset is at risk.