

Statewide Vegetation Burn Severity Mapping

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SB 1101

...the Fire and Resource Assessment Program...shall develop maps of the severity of impacts from wildfires that includes fires of significant size across all land ownerships.

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The department shall make the maps...available to the public on its internet website.

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...the Fire and Resource Assessment Program...shall develop maps of the severity of impacts from wildfires that includes fires of significant size across all land ownerships.

The department shall make the maps...available to the public on its internet website.

The department shall annually review the effects of recent fires...to identify priorities for prescribed fire

Fire Severity = a measure of fire's effects on vegetation



<https://www.nps.gov/articles/wildland-fire-in-ponderosa-pine.htm>

Unknown Accuracy in Shrublands and Grasslands



Richard Halsey



Don Hankins

Phases



Phases

Phase 1: Make severity maps publicly available



Phases

Phase 1: Make severity maps publicly available

Phase 2: Assess accuracy and improve the product to best meet user needs



Phases

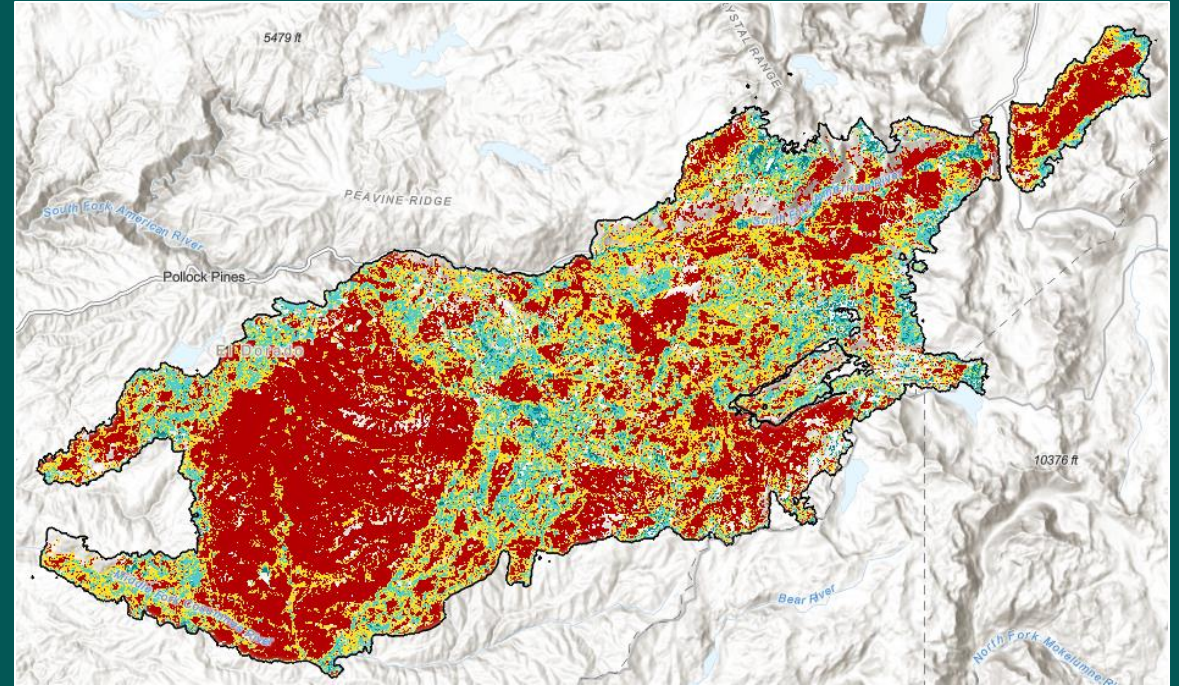
Phase 1: Make severity maps publicly available

Phase 2: Assess accuracy and improve the product to best meet user needs

Phase 3: Evaluate wildfire effects for informing Rx fire priorities



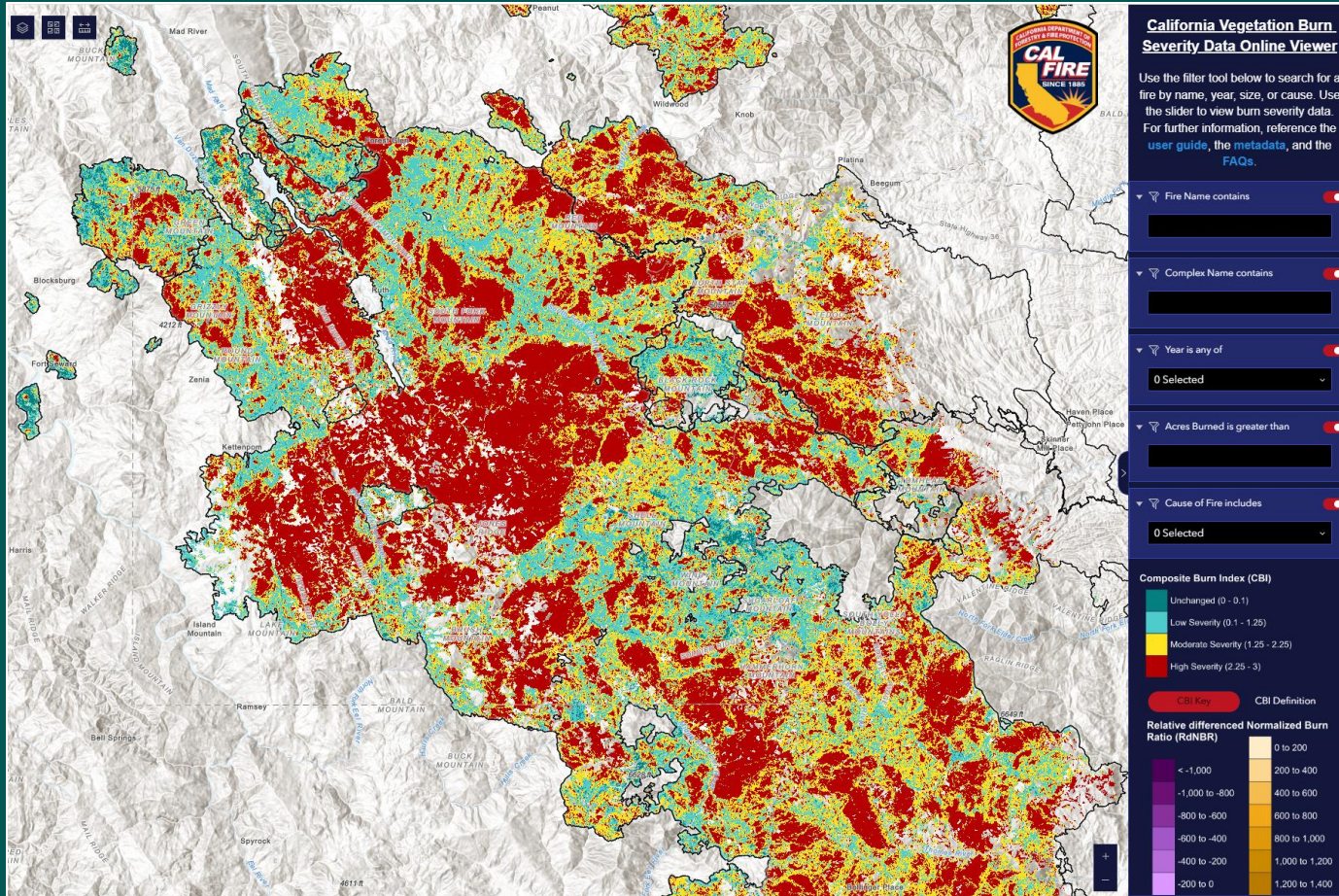
Potential Uses



2021 Caldor Fire Composite Burn Index

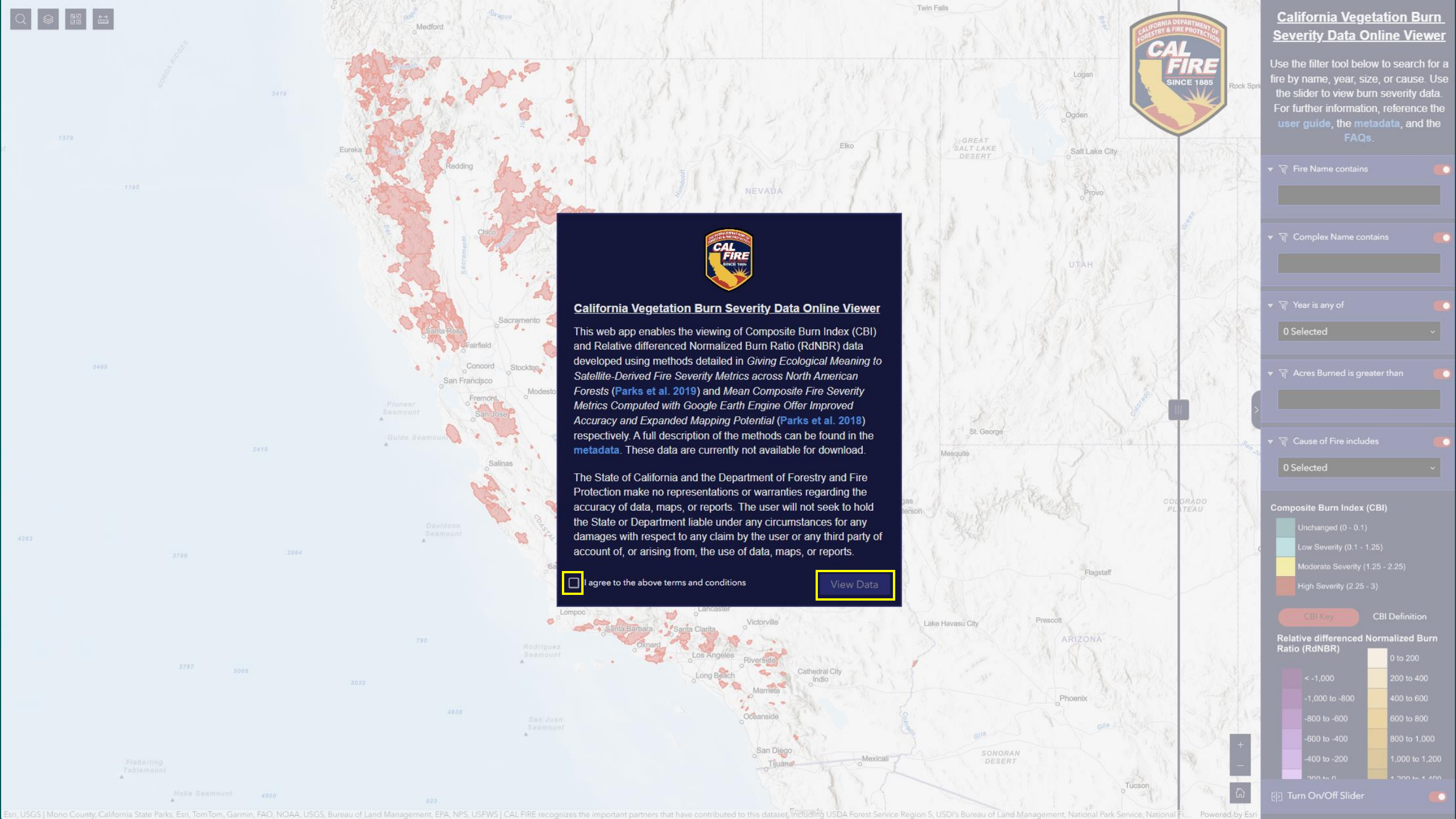
- Prescribed fire planning
- Post-fire restoration and reforestation needs
- Fire suppression planning
- Prediction of post-fire fuel changes over time
- Informing habitat management

Viewer



- Fires > 1000 acres
- 2015-2023
- 1-year post-fire assessment of severity
- Composite Burn Index – forested areas
- RdNBR – all vegetation types

fire.ca.gov/what-we-do/fire-resource-assessment-program



California Vegetation Burn Severity Data Online Viewer

Use the filter tool below to search for a fire by name, year, size, or cause. Use the slider to view burn severity data. For further information, reference the [user guide](#), the [metadata](#), and the [FAQs](#).

☒ Fire Name contains

☒ Complex Name contains

☒ Year is any of

0 Selected

☒ Acres Burned is greater than

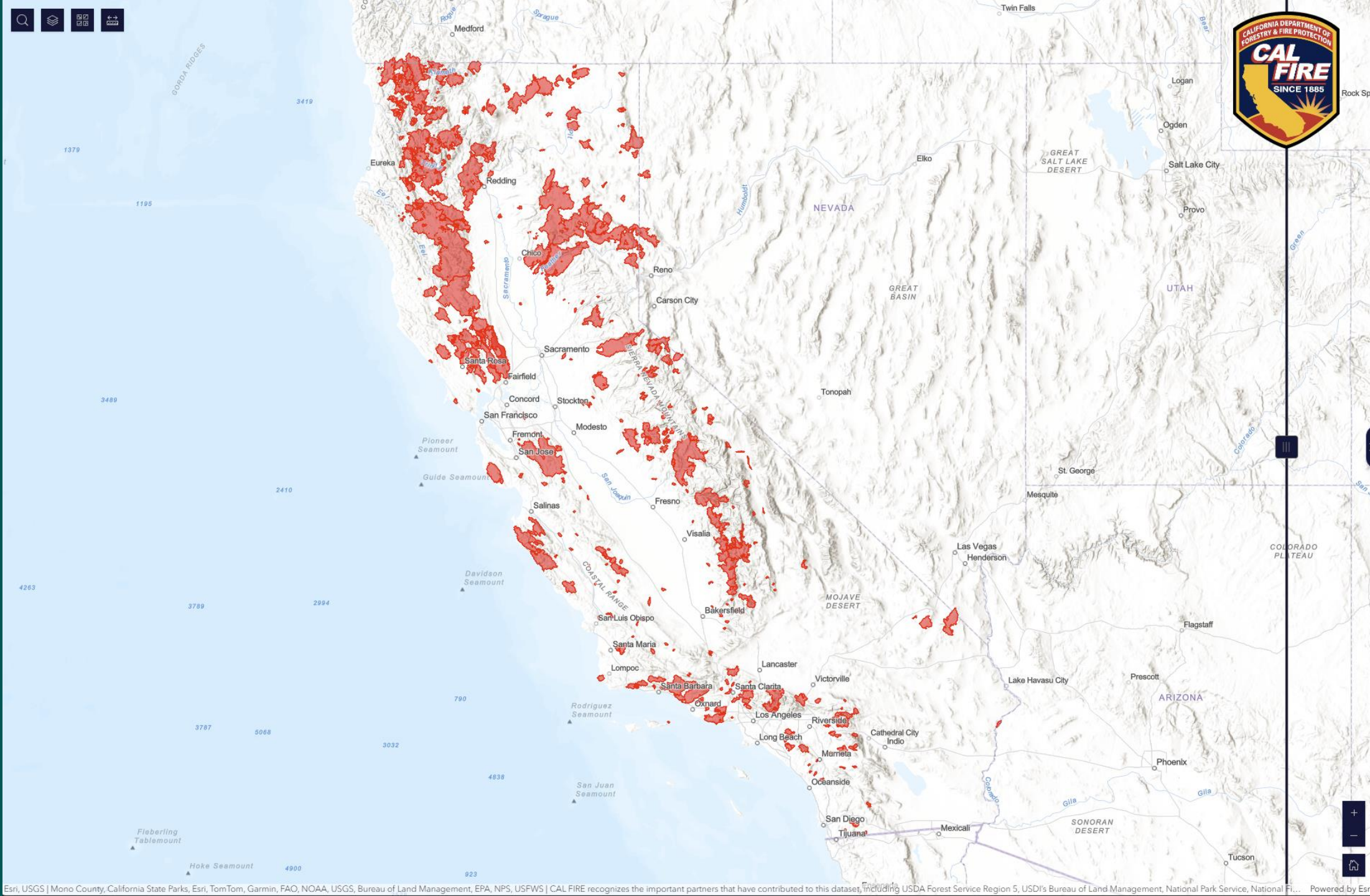
☒ Cause of Fire includes

0 Selected

Composite Burn Index (CBI)	
	Unchanged (0 - 0.1)
	Low Severity (0.1 - 1.25)
	Moderate Severity (1.25 - 2.25)
	High Severity (2.25 - 3)

CBI Key		CBI Definition	
Relative differenced Normalized Burn Ratio (RdNBR)			
	< -1,000		0 to 200
	-1,000 to -800		200 to 400
	-800 to -600		400 to 600
	-600 to -400		600 to 800
	-400 to -200		800 to 1,000
	-200 to 0		1,000 to 1,200
	0 to 1,000		1,200 to 1,400

Turn On/Off Slider ☒



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▼ 🔍 Fire Name contains

▼ 🔍 Complex Name contains

▼ 🔍 Year is any of

0 Selected

▼ 🔍 Acres Burned is greater than

▼ 🔍 Cause of Fire includes

0 Selected

Composite Burn Index (CBI)

Unchanged (0 - 0.1)

Low Severity (0.1 - 1.25)

Moderate Severity (1.25 - 2.25)

High Severity (2.25 - 3)

CBI Key

CBI Definition

Relative differenced Normalized Burn Ratio (RdNBR)

< -1,000

-1,000 to -800

-800 to -600

-600 to -400

-400 to -200

-200 to 0

0 to 200

200 to 400

400 to 600

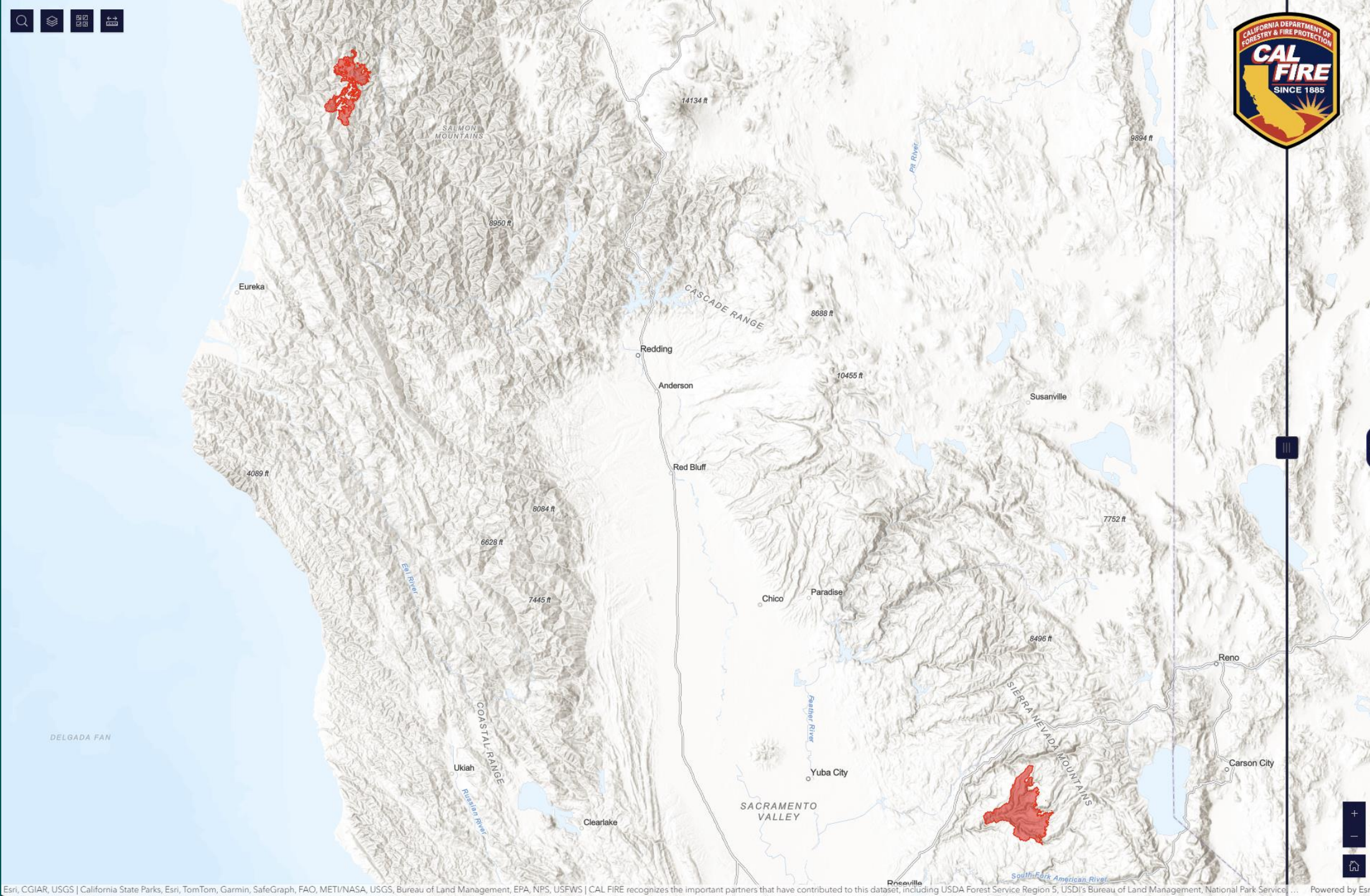
600 to 800

800 to 1,000

1,000 to 1,200

1,200 to 1,400

Turn On/Off Slider



California Vegetation Burn Severity Data Online Viewer

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Fire Name contains

Mosquito

Complex Name contains

0 Selected

Acres Burned is greater than

0 Selected

Composite Burn Index (CBI)

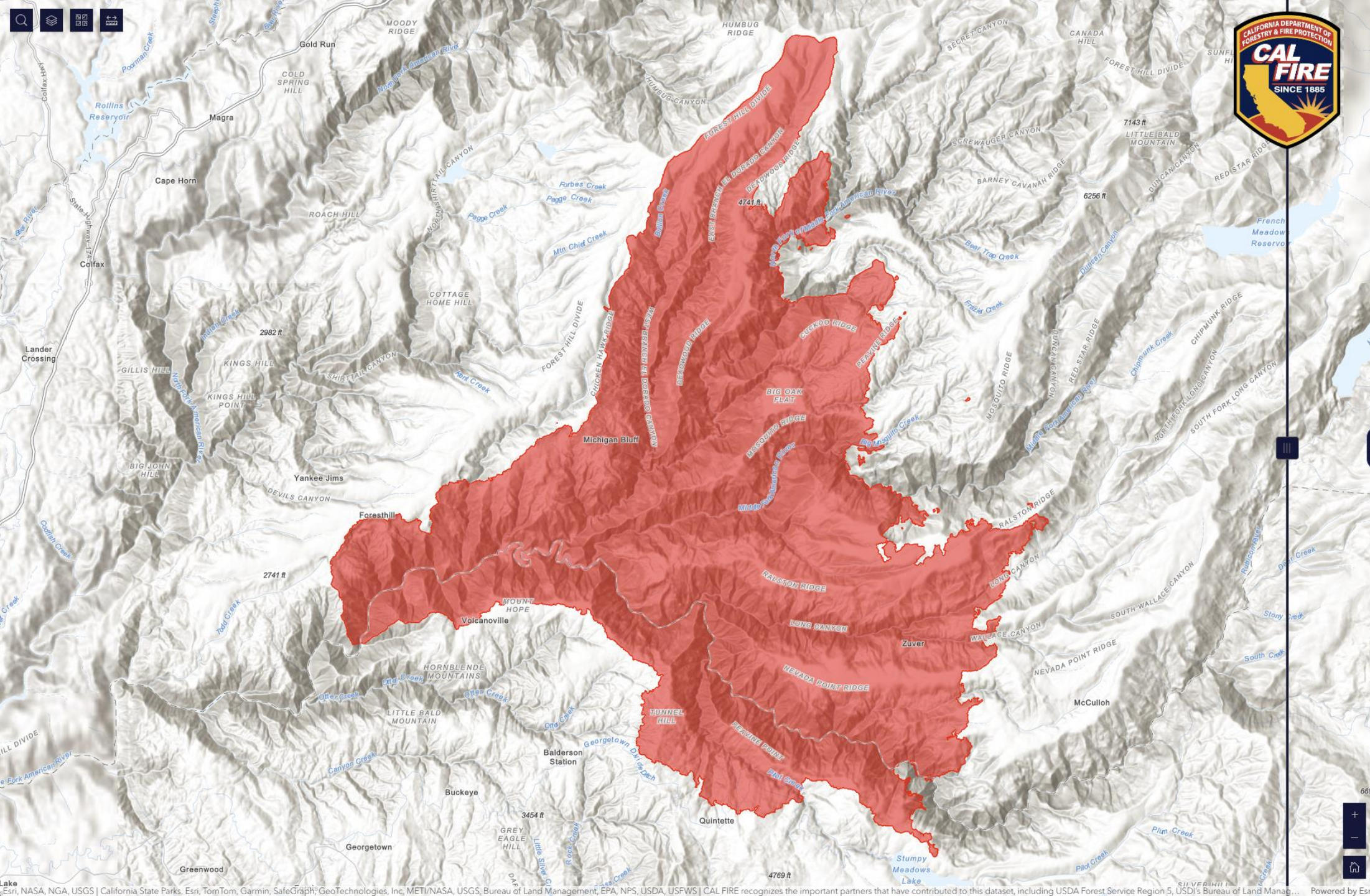
Unchanged (0 - 0.1)
Low Severity (0.1 - 1.25)
Moderate Severity (1.25 - 2.25)
High Severity (2.25 - 3)

CBI Key CBI Definition

Relative differenced Normalized Burn Ratio (RdNBR)

< -1,000	0 to 200
-1,000 to -800	200 to 400
-800 to -600	400 to 600
-600 to -400	600 to 800
-400 to -200	800 to 1,000
-200 to 0	1,000 to 1,200
0 to 200	1,200 to 1,400

Turn On/Off Slider



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Fire Name contains

Complex Name contains

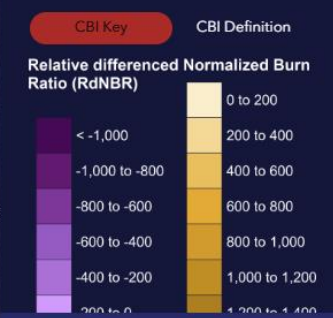
Year is any of

1 Selected

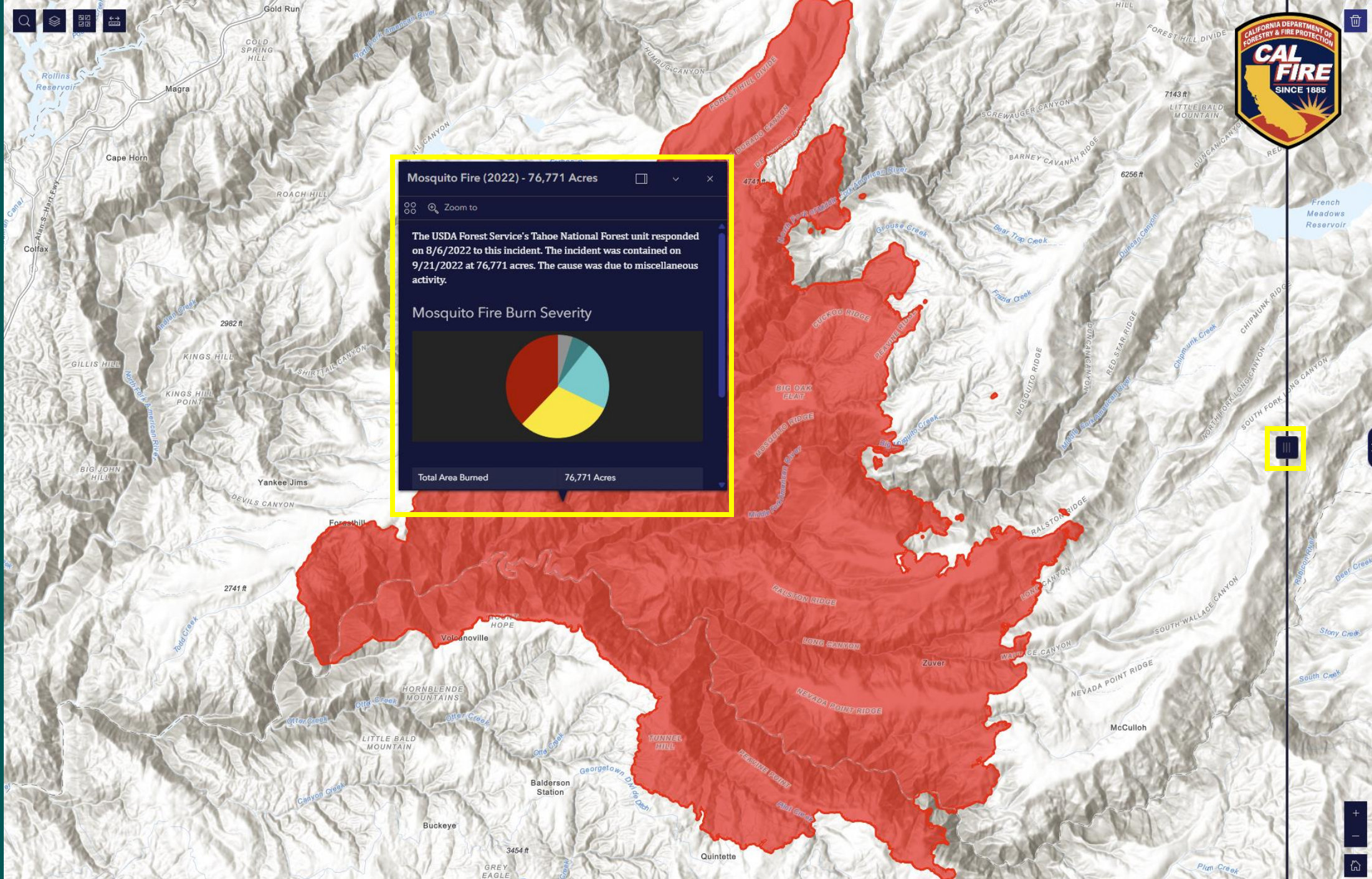
Search

- ☐ 2017
- ☐ 2018
- ☐ 2019
- ☐ 2020
- ☒ 2021
- ☐ 2022
- ☐ 2023

- Low Severity (0.1 - 1.25)
- Moderate Severity (1.25 - 2.25)
- High Severity (2.25 - 3)



Turn On/Off Slider ☐



California Vegetation Burn Severity Data Online Viewer

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Complex Name contains

Year is any of

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Acres Burned is greater than

Cause of Fire includes

0 Selected

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Unchanged (0 - 0.1)

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Moderate Severity (1.25 - 2.25)

High Severity (2.25 - 3)

CBI Key

CBI Definition

Relative differenced Normalized Burn Ratio (RdNBR)

< -1,000

-1,000 to -800

-800 to -600

-600 to -400

-400 to -200

-200 to 0

0 to 200

200 to 400

400 to 600

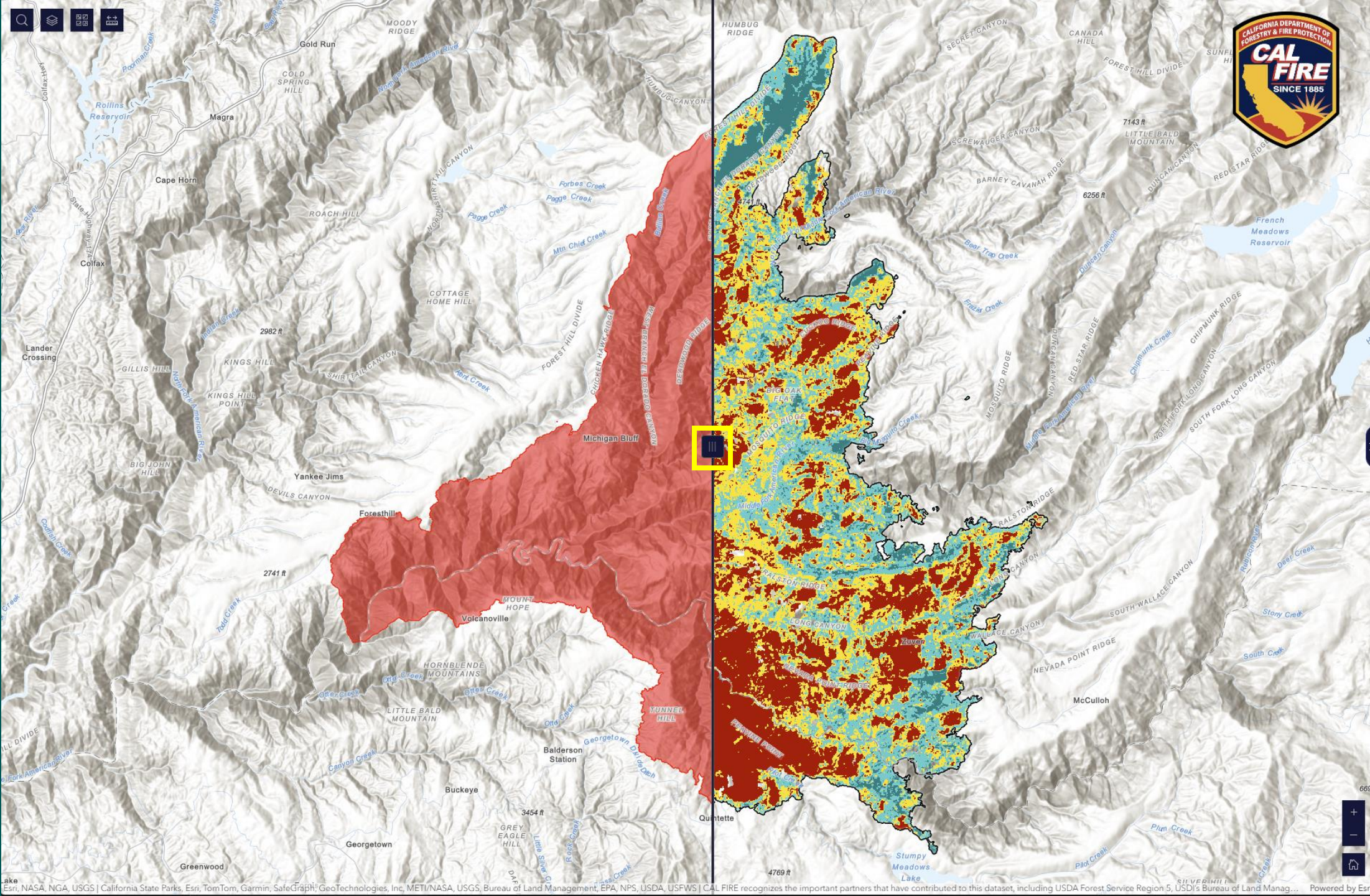
600 to 800

800 to 1,000

1,000 to 1,200

1,200 to 1,400

Turn On/Off Slider



California Vegetation Burn Severity Data Online Viewer

Use the filter tool below to search for a fire by name, year, size, or cause. Use the slider to view burn severity data. For further information, reference the [user guide](#), the [metadata](#), and the [FAQs](#).

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Cause of Fire includes

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CBI Key

CBI Definition

Relative difference Normalized Burn Ratio (RdNBR)

< -1,000

-1,000 to -800

-800 to -600

-600 to -400

-400 to -200

-200 to 0

0 to 200

200 to 400

400 to 600

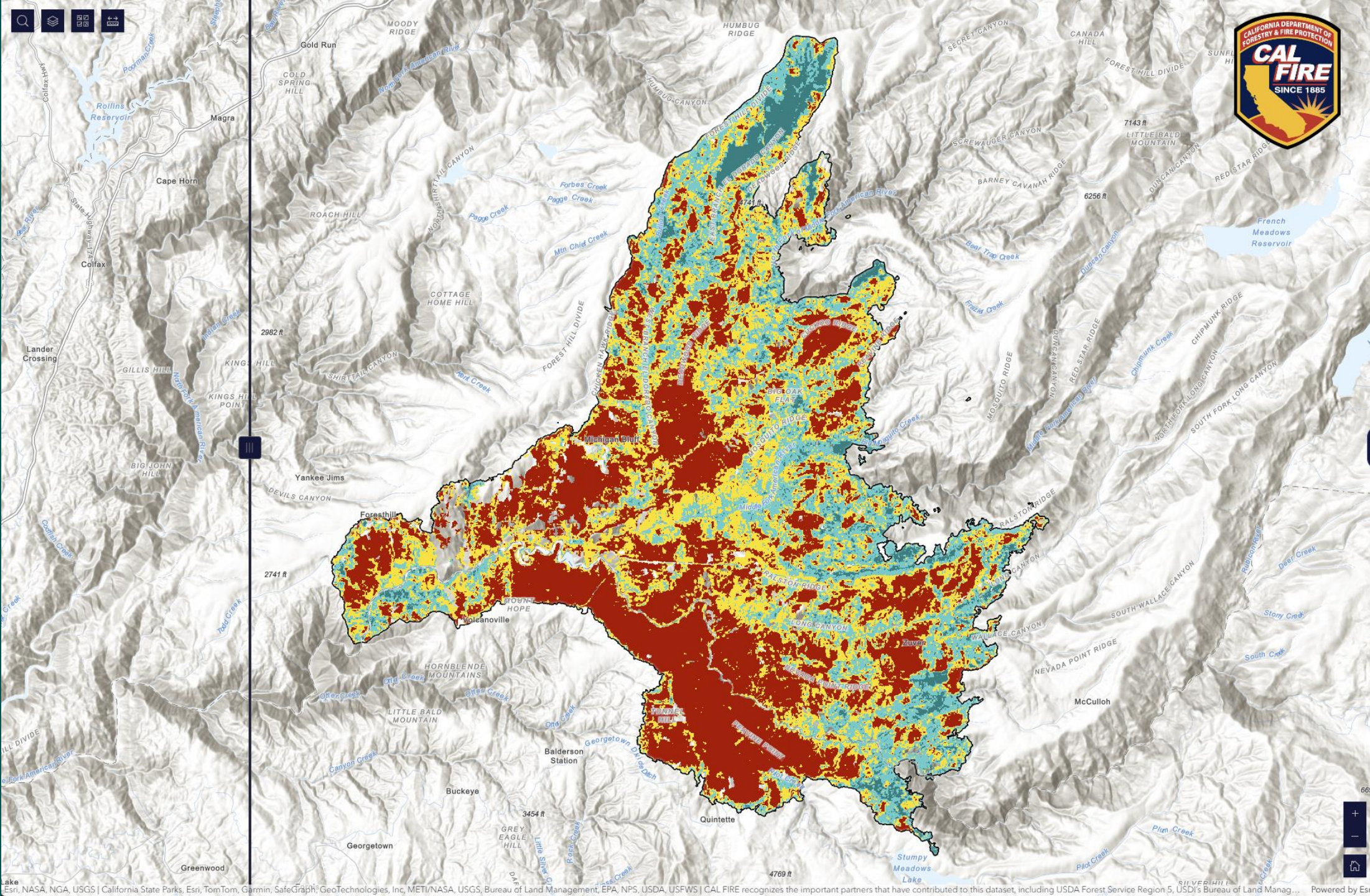
600 to 800

800 to 1,000

1,000 to 1,200

1,200 to 1,400

Turn On/Off Slider



California Vegetation Burn Severity Data Online Viewer

Use the filter tool below to search for a fire by name, year, size, or cause. Use the slider to view burn severity data. For further information, reference the [user guide](#), the [metadata](#), and the [FAQs](#).

Fire Name contains ☒

Complex Name contains ☒

Year is any of ☒

Acres Burned is greater than ☒

Cause of Fire includes ☒

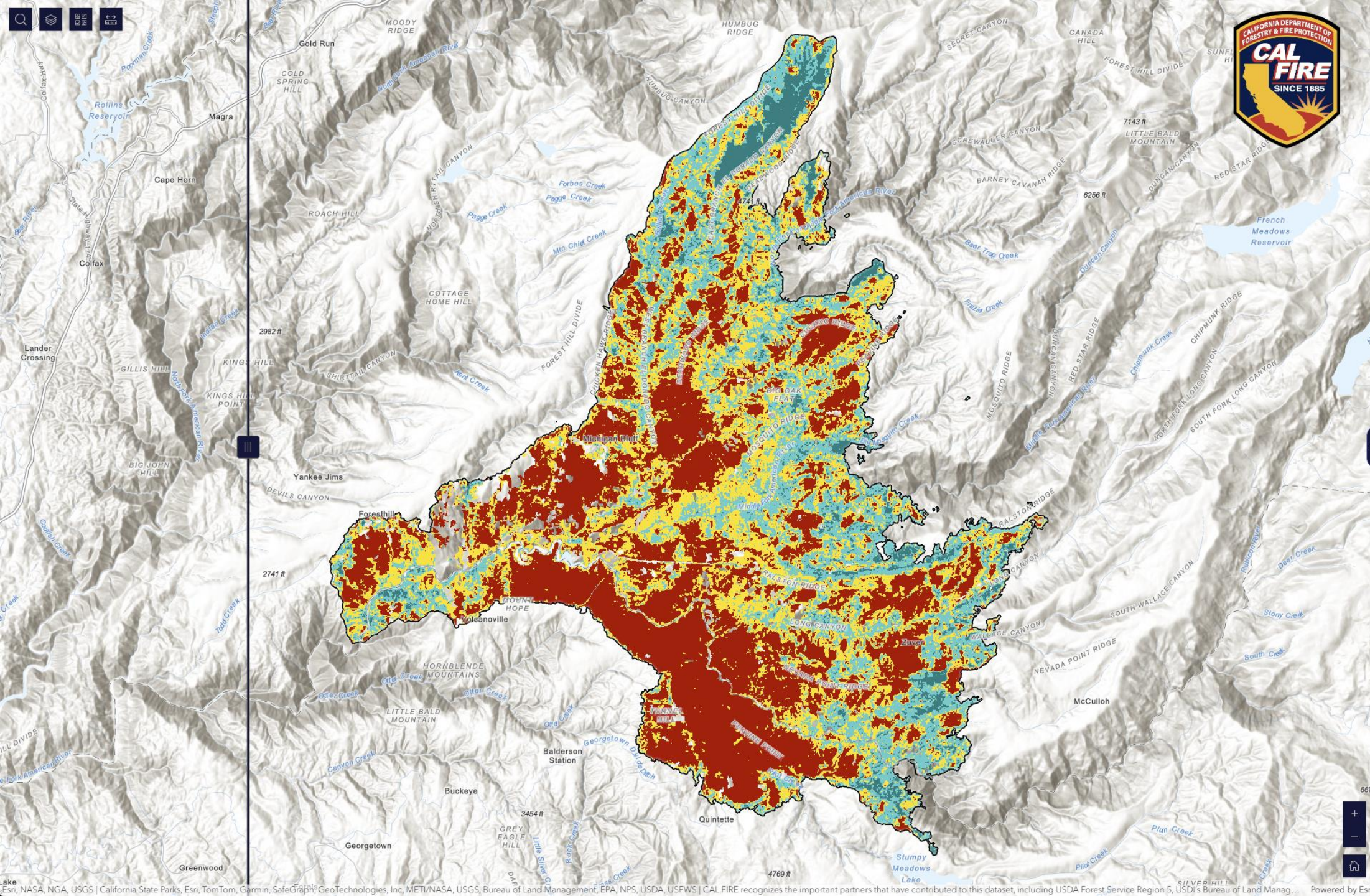
The Composite Burn Index (CBI) is provided only for vegetation identified as Conifer or Hardwood Forest by the most recent FVEG dataset prior to the burn date. The relationship between remotely-sensed data and CBI is not yet well-established for other vegetation types.

CBI Key ☒ CBI Definition

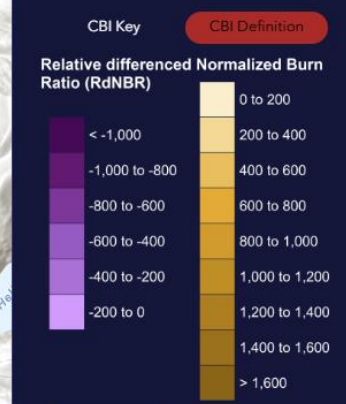
Relative differenced Normalized Burn Ratio (RdNBR)

< -1,000	0 to 200
-1,000 to -800	200 to 400
-800 to -600	400 to 600
-600 to -400	600 to 800
-400 to -200	800 to 1,000
-200 to 0	1,000 to 1,200
0 to 200	1,200 to 1,400

Turn On/Off Slider ☒



The Composite Burn Index (CBI) is provided only for vegetation identified as Conifer or Hardwood Forest by the most recent FVEG dataset prior to the burn date. The relationship between remotely-sensed data and CBI is not yet well-established for other vegetation types.



- Turn On/Off Composite Burn Index (CBI)
- Turn On/Off Relative differenced Normalized Burn Ratio (RdNBR)

There is currently no added data.

+ Click to add data

Print template Results

Template

A3 Landscape

Title

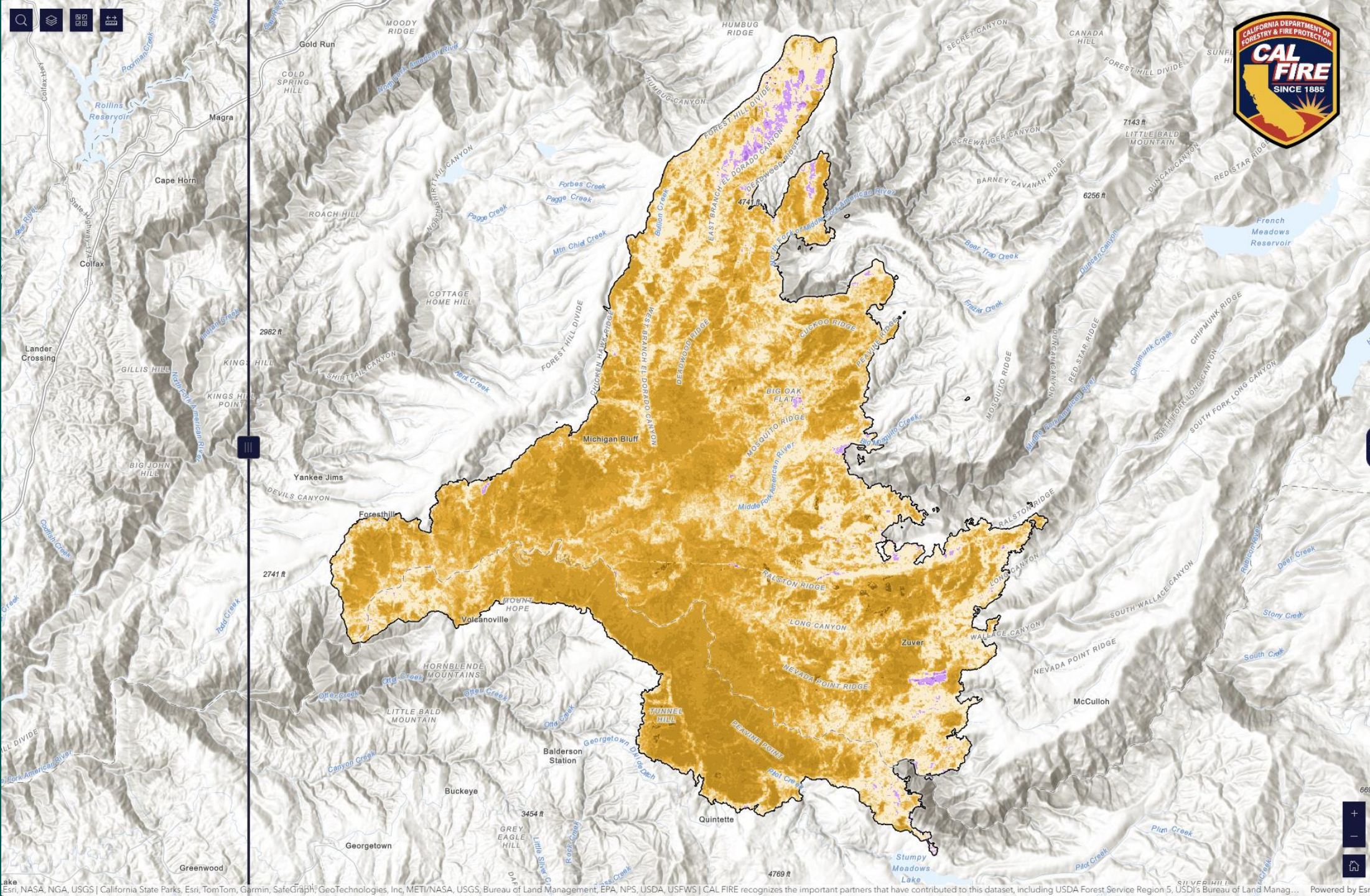
ArcGIS Web Map

Advanced

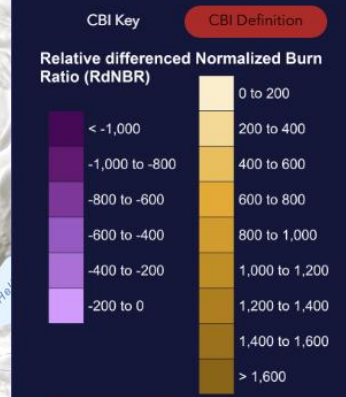
Show print area

Print

Turn On/Off Slider



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RdNBR Key

RdNBR Definition

Turn On/Off Composite Burn Index (CBI)

Turn On/Off Relative differenced Normalized Burn Ratio (RdNBR)

There is currently no added data.

+ Click to add data

Print template

Results

Template

A3 Landscape

Title

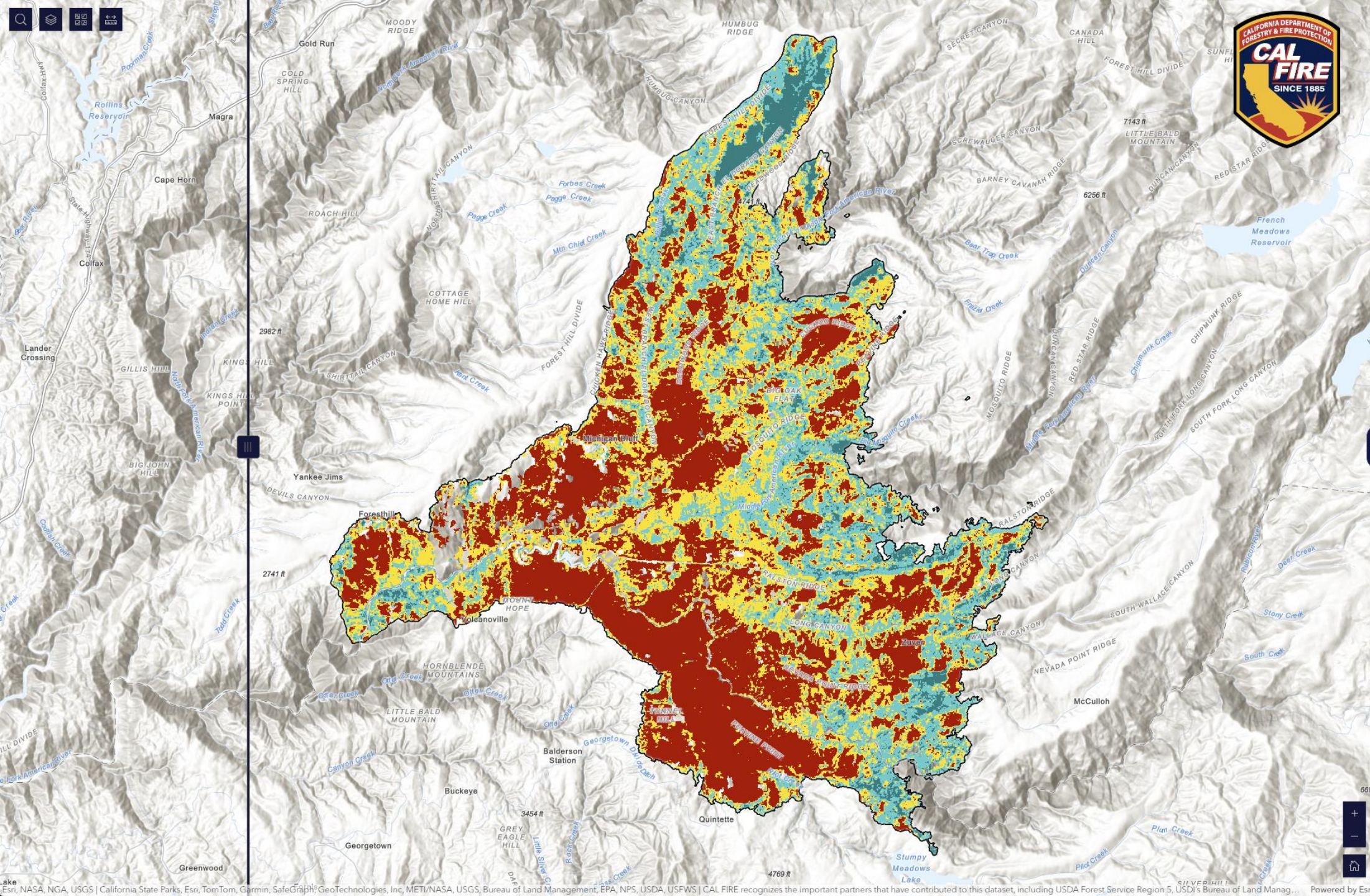
ArcGIS Web Map

Advanced

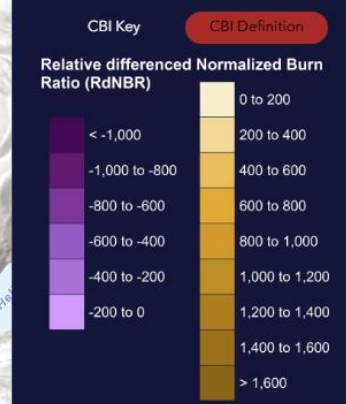
Show print area

Print

Turn On/Off Slider



The Composite Burn Index (CBI) is provided only for vegetation identified as Conifer or Hardwood Forest by the most recent FVEG dataset prior to the burn date. The relationship between remotely-sensed data and CBI is not yet well-established for other vegetation types.



- RdNBR Key
- RdNBR Definition
- Turn On/Off Composite Burn Index (CBI) ...
 - Turn On/Off Relative differenced Normalized Burn Ratio (RdNBR) ...

There is currently no added data.

+ Click to add data

Print template Results

Template

A3 Landscape

Title

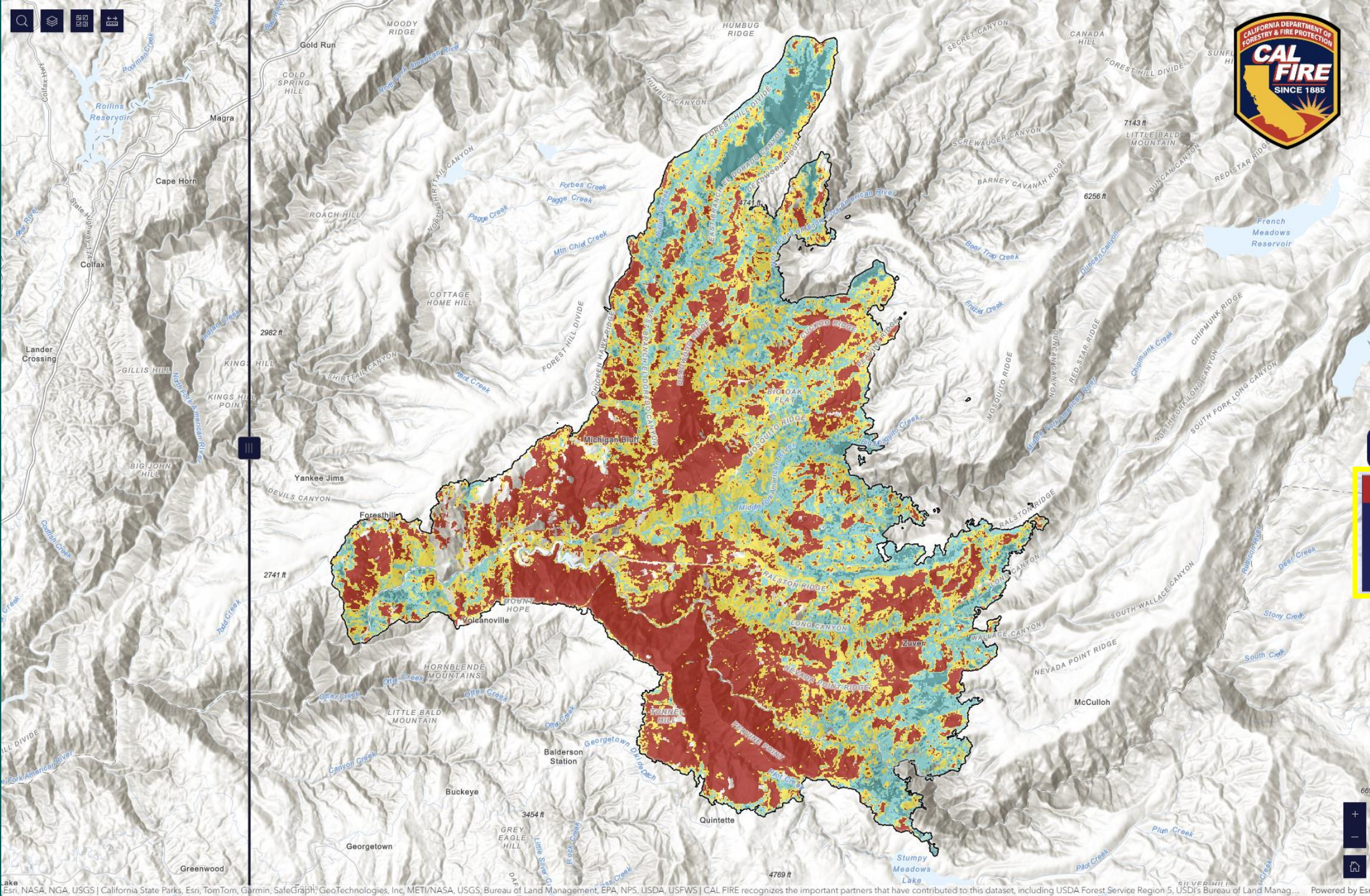
ArcGIS Web Map

Advanced

Show print area

Print

Turn On/Off Slider



The Composite Burn Index (CBI) is provided only for vegetation identified as Conifer or Hardwood Forest by the most recent FVEG dataset prior to the burn date. The relationship between remotely-sensed data and CBI is not yet well-established for other vegetation types.

CBI Key

CBI Definition

Relative differenced Normalized Burn Ratio (RdNBR)

< -1,000	0 to 200
-1,000 to -800	200 to 400
-800 to -600	400 to 600
-600 to -400	600 to 800
-400 to -200	800 to 1,000
-200 to 0	1,000 to 1,200
	1,200 to 1,400
	1,400 to 1,600
	> 1,600

RdNBR Key

RdNBR Definition

Turn On/Off Composite Burn Index (CBI)

Transparency

Turn On/Off Composite Burn Index (CBI)

0

50%

100%

+ Click to add data

Print templateResults

Template

A3 Landscape

Title

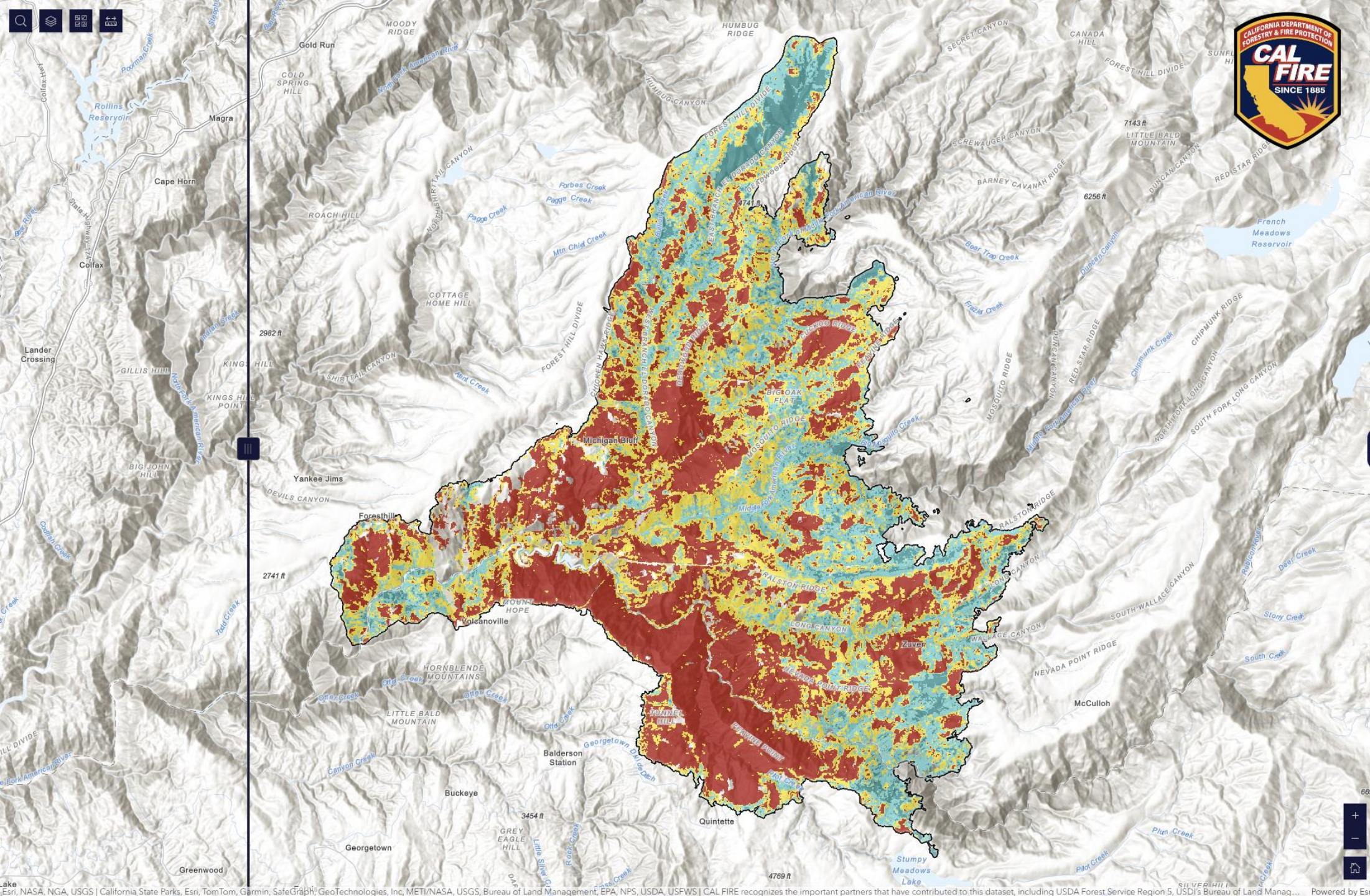
ArcGIS Web Map

Advanced

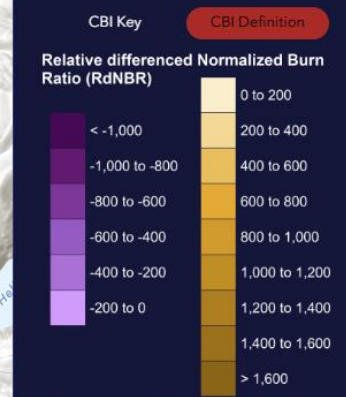
☐ Show print area

Print

☒ Turn On/Off Slider



The Composite Burn Index (CBI) is provided only for vegetation identified as Conifer or Hardwood Forest by the most recent FVEG dataset prior to the burn date. The relationship between remotely-sensed data and CBI is not yet well-established for other vegetation types.



- RdNBR Key
- RdNBR Definition
- Turn On/Off Composite Burn Index (CBI)
 - Turn On/Off Relative differenced Normalized Burn Ratio (RdNBR)

There is currently no added data.

+ Click to add data

Print template Results

Template

A3 Landscape

Title

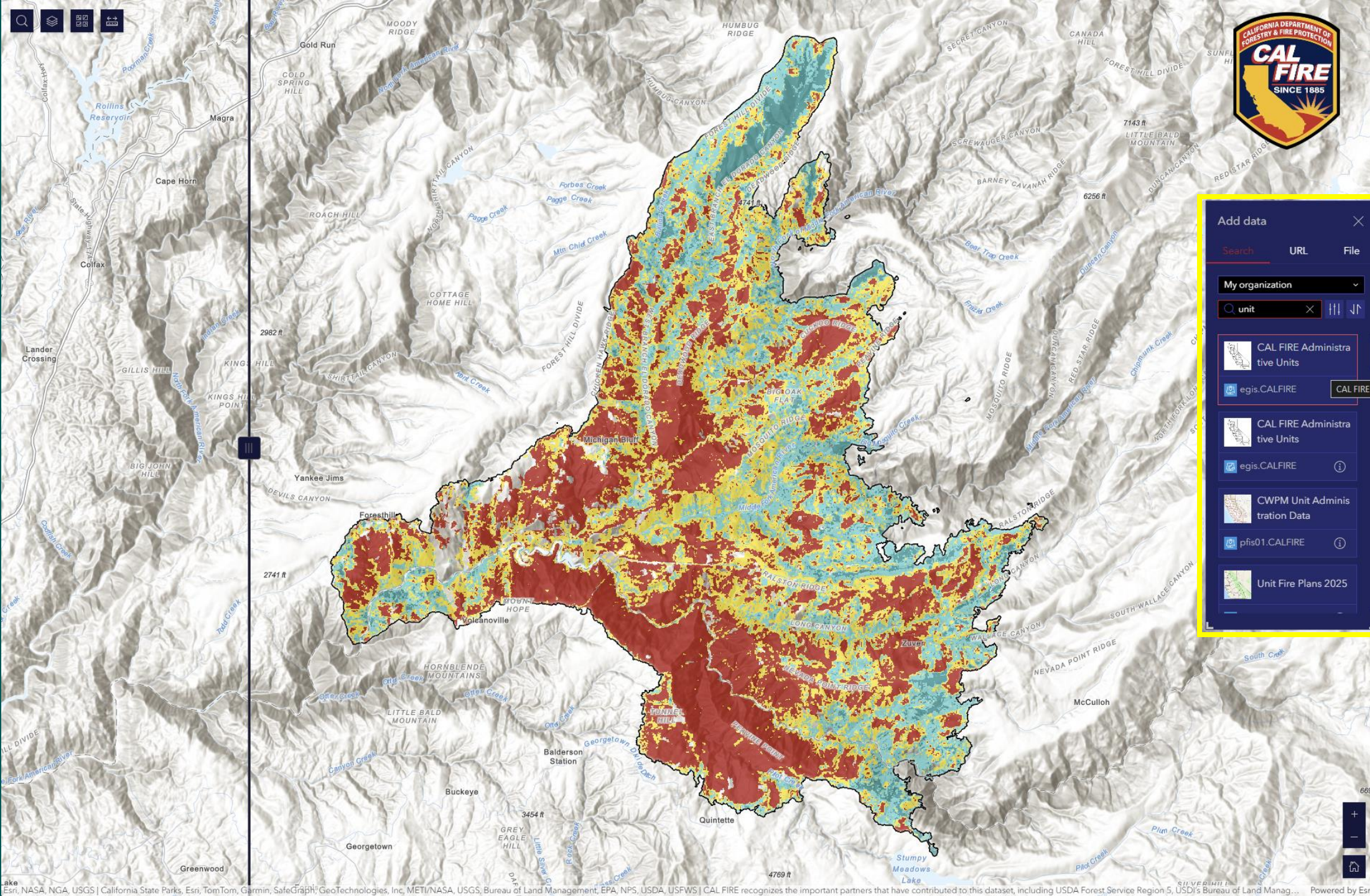
ArcGIS Web Map

Advanced

Show print area

Print

Turn On/Off Slider



0 Selected

The Composite Burn Index (CBI) is provided only for vegetation identified as Conifer or Hardwood Forest by the most recent FVEG dataset prior to the burn date. The relationship between remotely-sensed data and CBI is not yet well-established for other vegetation types.

CBI Key

CBI Definition

Relative differenced Normalized Burn Ratio (RdNBR)

< -1,000

-1,000 to -800

-800 to -600

-600 to -400

-400 to -200

-200 to 0

0 to 200

200 to 400

400 to 600

600 to 800

800 to 1,000

1,000 to 1,200

1,200 to 1,400

1,400 to 1,600

> 1,600

RdNBR Key

RdNBR Definition

Turn On/Off Composite Burn Index (CBI)

Turn On/Off Relative differenced Normalized Burn Ratio (RdNBR)

There is currently no added data.

+ Click to add data

Print template

Results

Template

A3 Landscape

Title

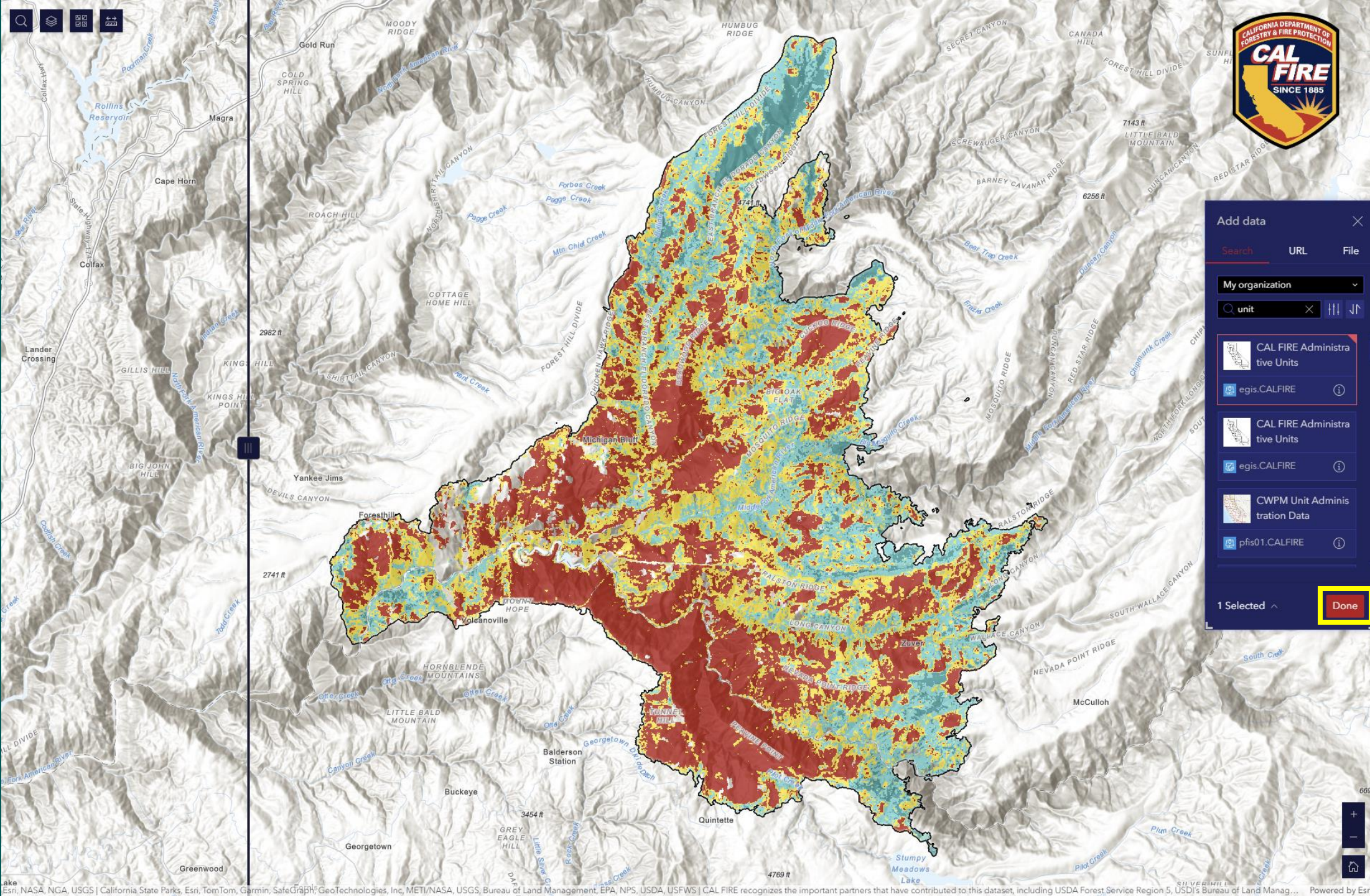
ArcGIS Web Map

Advanced

Show print area

Print

Turn On/Off Slider



0 Selected

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CBI Key

CBI Definition

Relative differenced Normalized Burn Ratio (RdNBR)

< -1,000	0 to 200
-1,000 to -800	200 to 400
-800 to -600	400 to 600
-600 to -400	600 to 800
-400 to -200	800 to 1,000
-200 to 0	1,000 to 1,200
	1,200 to 1,400
	1,400 to 1,600
	> 1,600

RdNBR Key

RdNBR Definition

Turn On/Off Composite Burn Index (CBI)

Turn On/Off Relative differenced Normalized Burn Ratio (RdNBR)

There is currently no added data.

+ Click to add data

Print template

Results

Template

A3 Landscape

Title

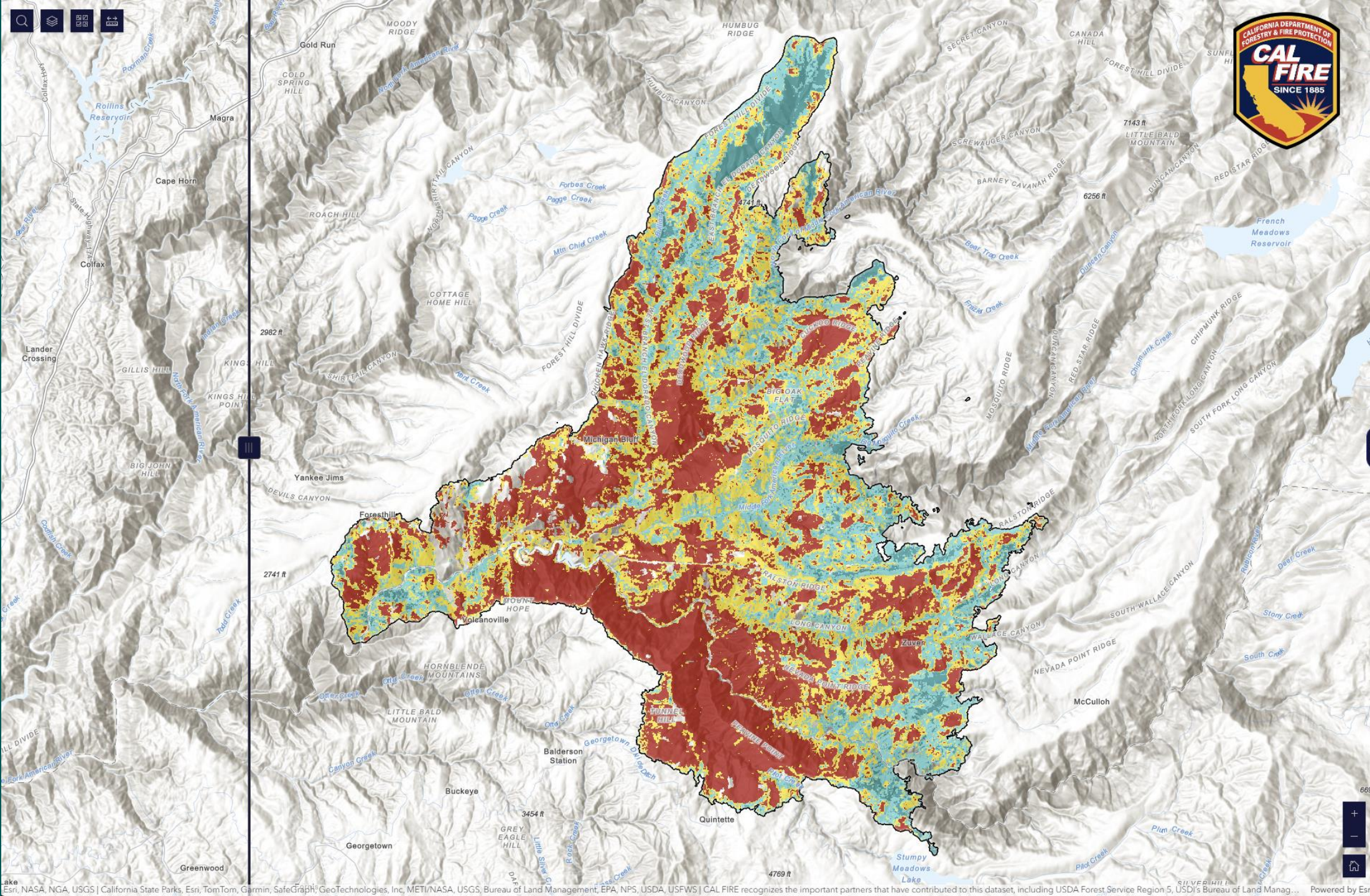
ArcGIS Web Map

Advanced

Show print area

Print

Turn On/Off Slider



▼ Cause of Fire includes

0 Selected

The Composite Burn Index (CBI) is provided only for vegetation identified as Conifer or Hardwood Forest by the most recent FVEG dataset prior to the burn date. The relationship between remotely-sensed data and CBI is not yet well-established for other vegetation types.

CBI Key

CBI Definition

Relative differenced Normalized Burn Ratio (RdNBR)

0 to 200

200 to 400

400 to 600

600 to 800

800 to 1,000

1,000 to 1,200

1,200 to 1,400

1,400 to 1,600

> 1,600

RdNBR Key

RdNBR Definition

Turn On/Off Composite Burn Index (CBI)

Turn On/Off Relative differenced Normalized Burn Ratio (RdNBR)

CAL FIRE Administrative...

+

Print template

Results

Template

A3 Landscape

Title

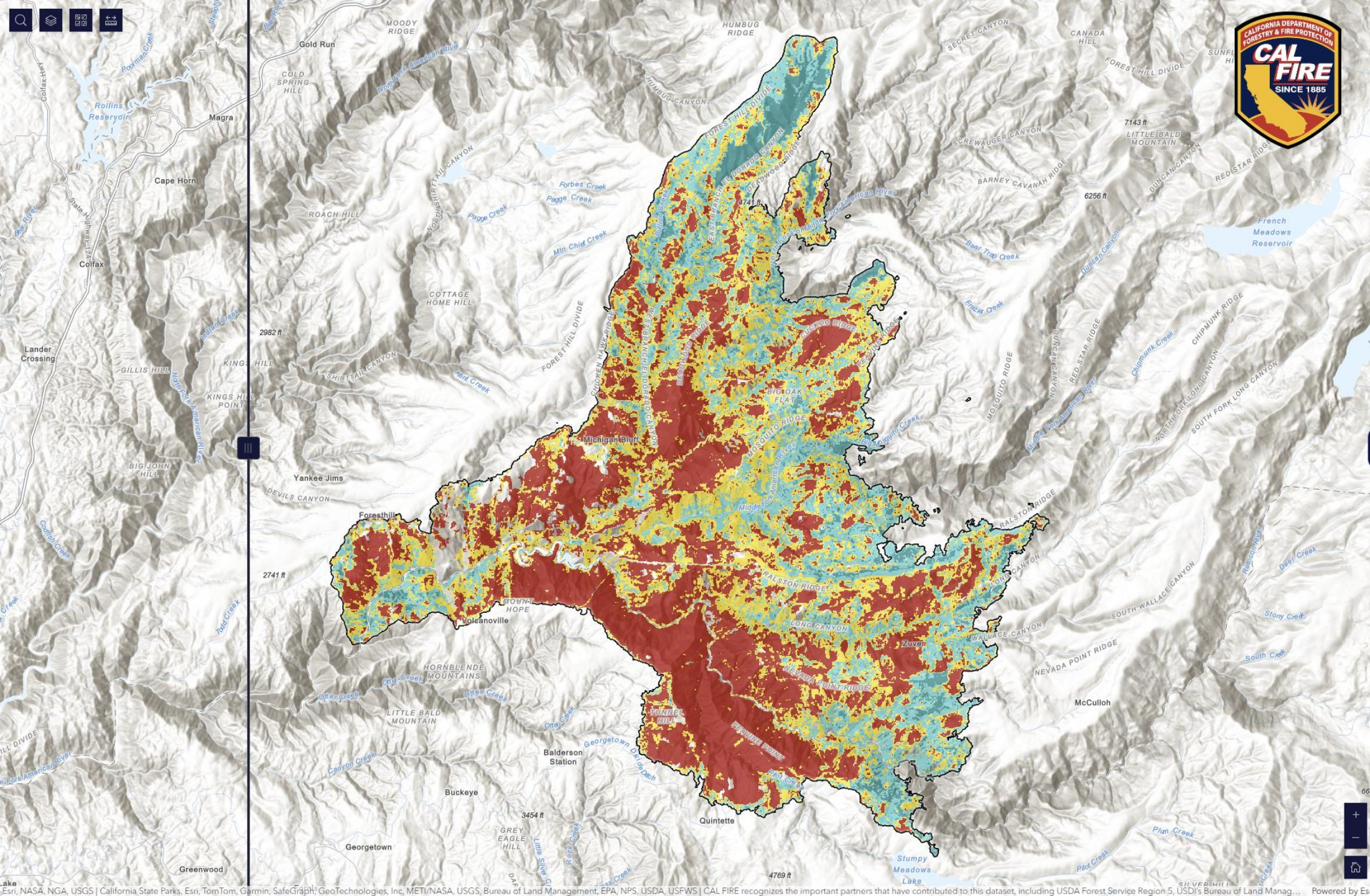
ArcGIS Web Map

Advanced

☐ Show print area

Print

Turn On/Off Slider



Cause of fire includes

0 Selected

The Composite Burn Index (CBI) is provided only for vegetation identified as Conifer or Hardwood Forest by the most recent FVEG dataset prior to the burn date. The relationship between remotely-sensed data and CBI is not yet well-established for other vegetation types.

CBI Key

CBI Definition

Relative differenced Normalized Burn Ratio (RdNBR)

< -1,000

-1,000 to -800

-800 to -600

-600 to -400

-400 to -200

-200 to 0

0 to 200

200 to 400

400 to 600

600 to 800

800 to 1,000

1,000 to 1,200

1,200 to 1,400

1,400 to 1,600

> 1,600

RdNBR Key

RdNBR Definition

Turn On/Off Composite Burn Index (CBI)

Turn On/Off Relative differenced Normalized Burn Ratio (RdNBR)

CAL FIRE Administrative...

Set filter

Zoom to

Pan to

Add to map

Print template

Template

A3 Landscape

Export

Title

ArcGIS Web Map

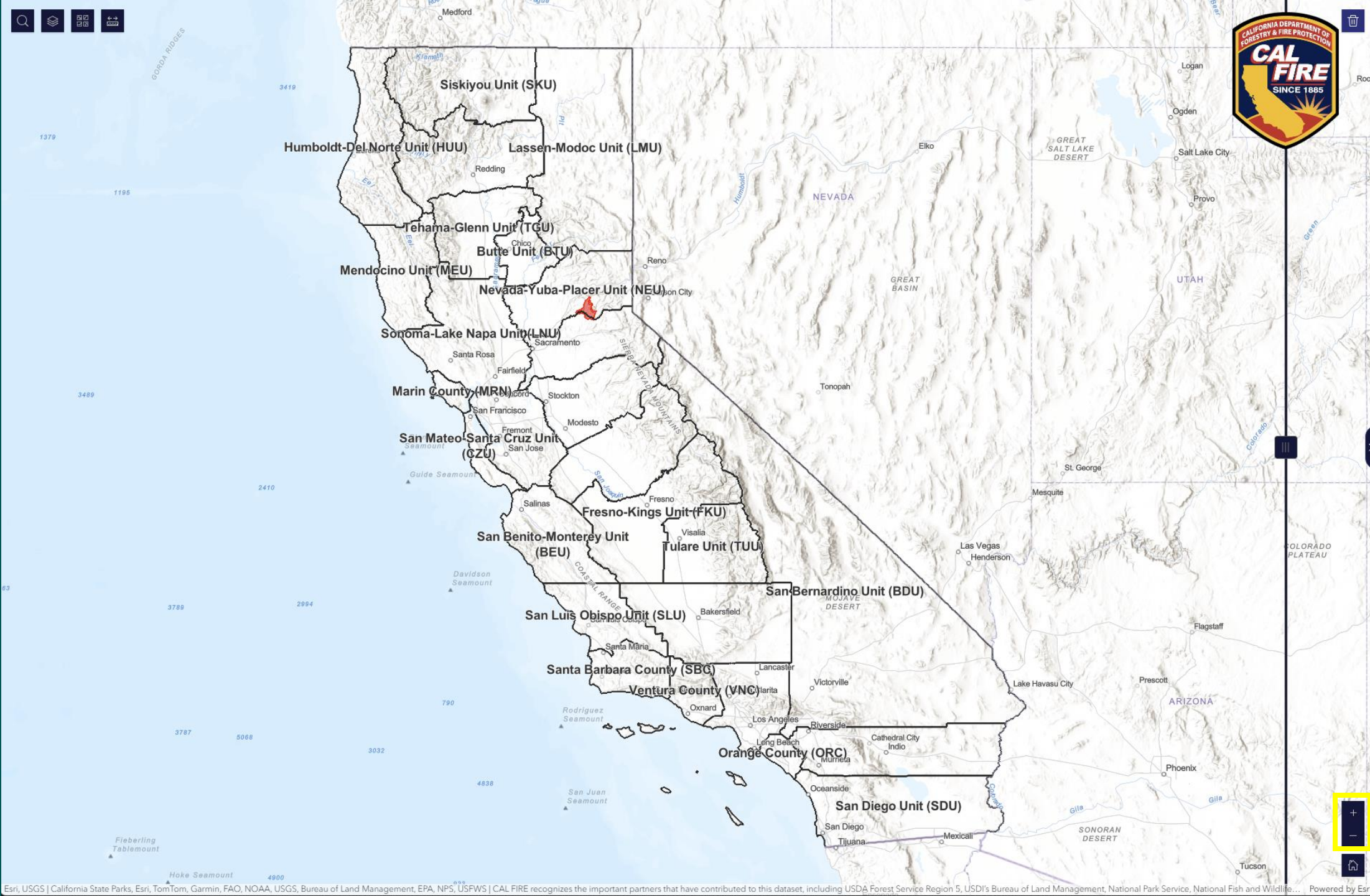
Advanced

Show print area

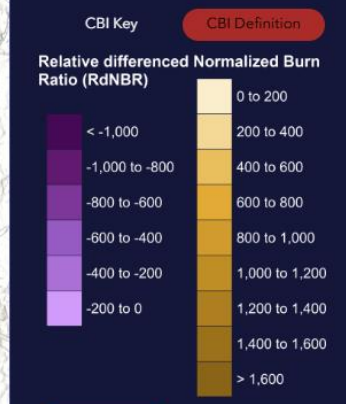
Print

Turn On/Off Slider

Powered by Esri



The Composite Burn Index (CBI) is provided only for vegetation identified as Conifer or Hardwood Forest by the most recent FVEG dataset prior to the burn date. The relationship between remotely-sensed data and CBI is not yet well-established for other vegetation types.



- CAL FIRE Administrative Units
- Turn On/Off Composite Burn Index (CBI)
- Turn On/Off Relative differenced Normalized Burn Ratio (RdNBR)

CAL FIRE Administrative... [Edit] [Layers] [Full Screen] [Close]

Print template Results

Template

A3 Landscape

Title

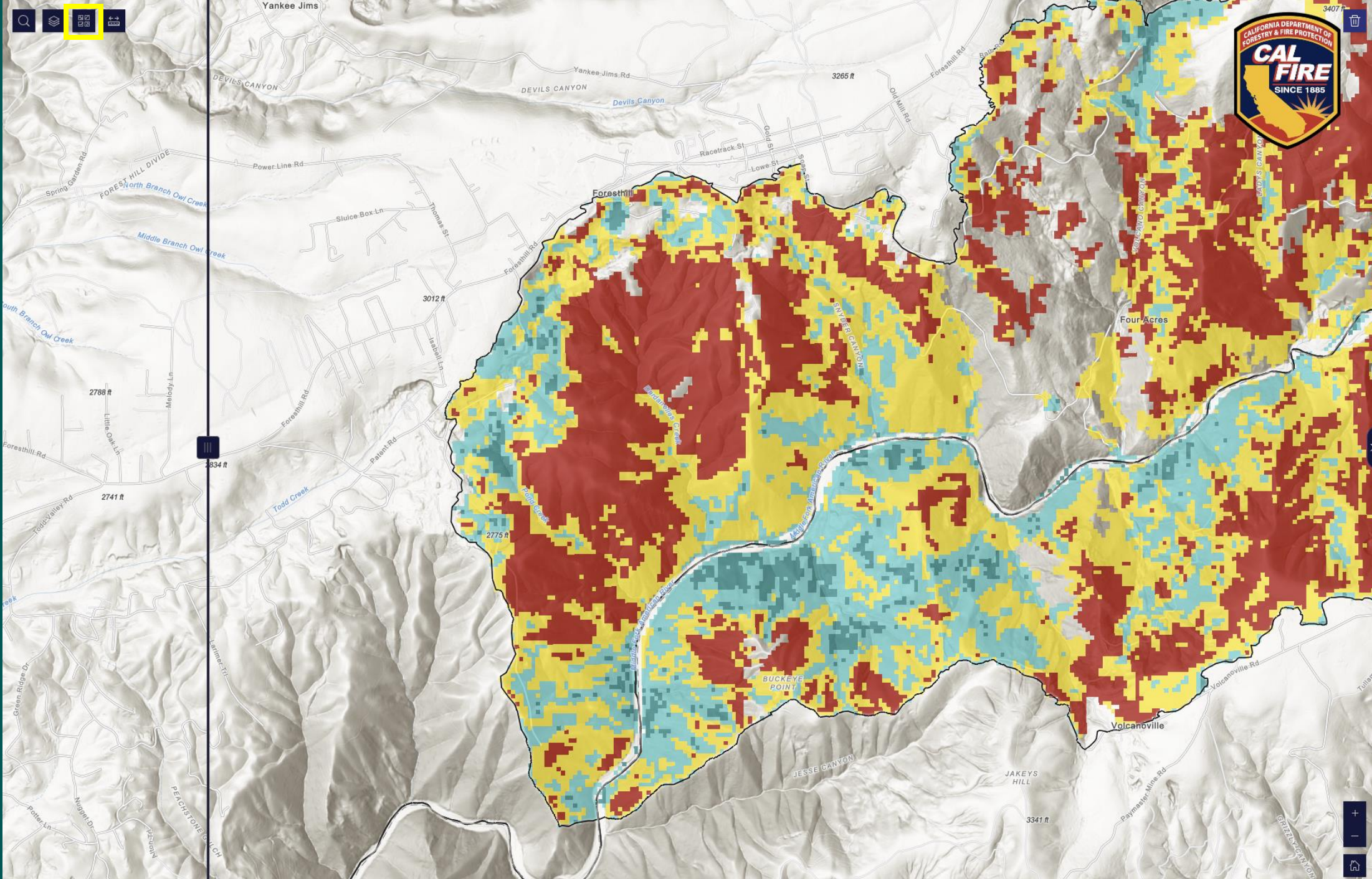
ArcGIS Web Map

Advanced

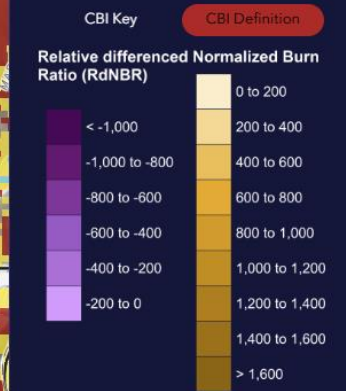
☐ Show print area

Print

☒ Turn On/Off Slider



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- RdNBR Key** **RdNBR Definition**
- CAL FIRE Administrative Units
 - Turn On/Off Composite Burn Index (CBI)
 - Turn On/Off Relative differenced Normalized Burn Ratio (RdNBR)

CAL FIRE Administrative...

Print template Results

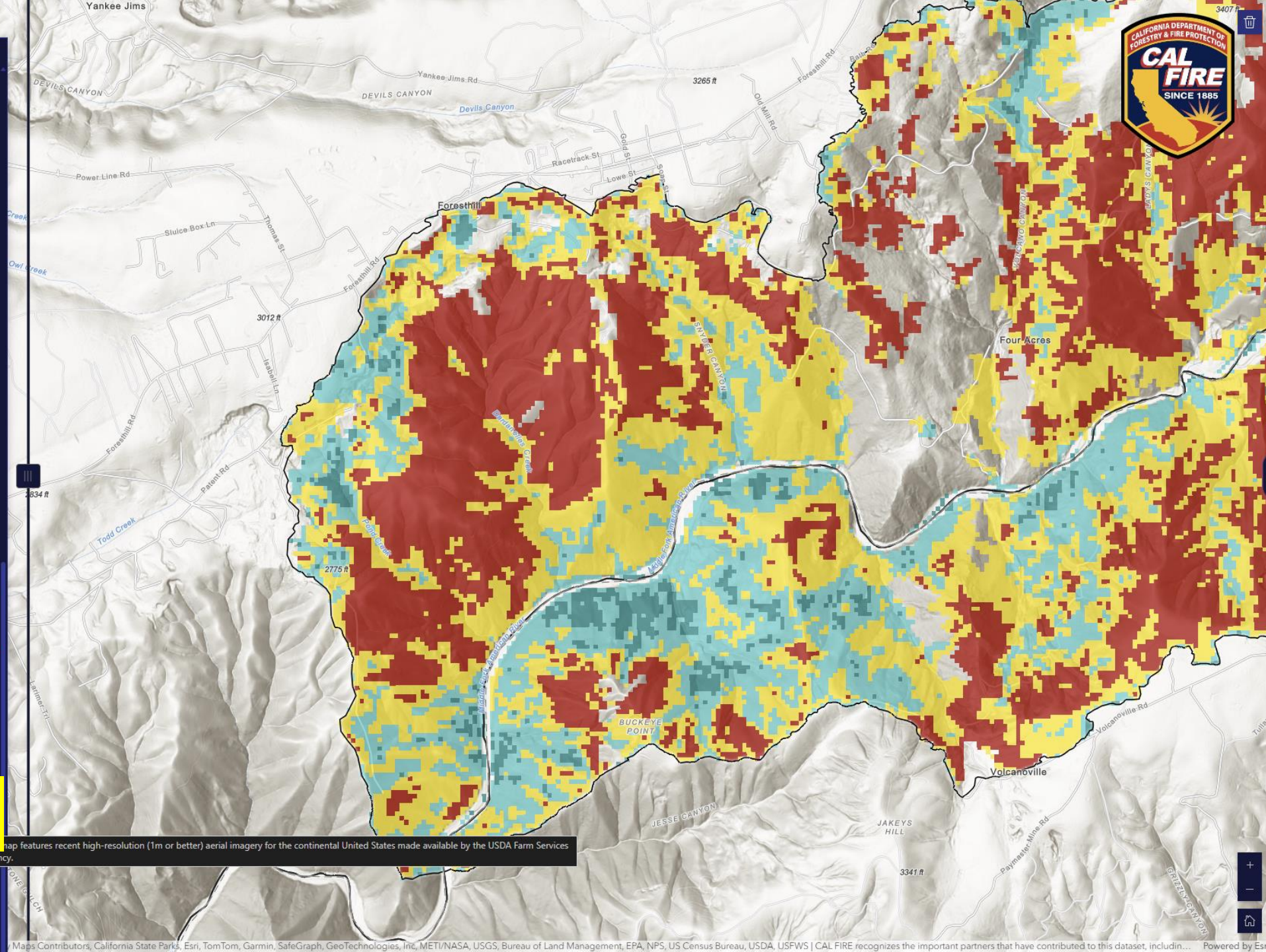
Template A3 Landscape

Title ArcGIS Web Map

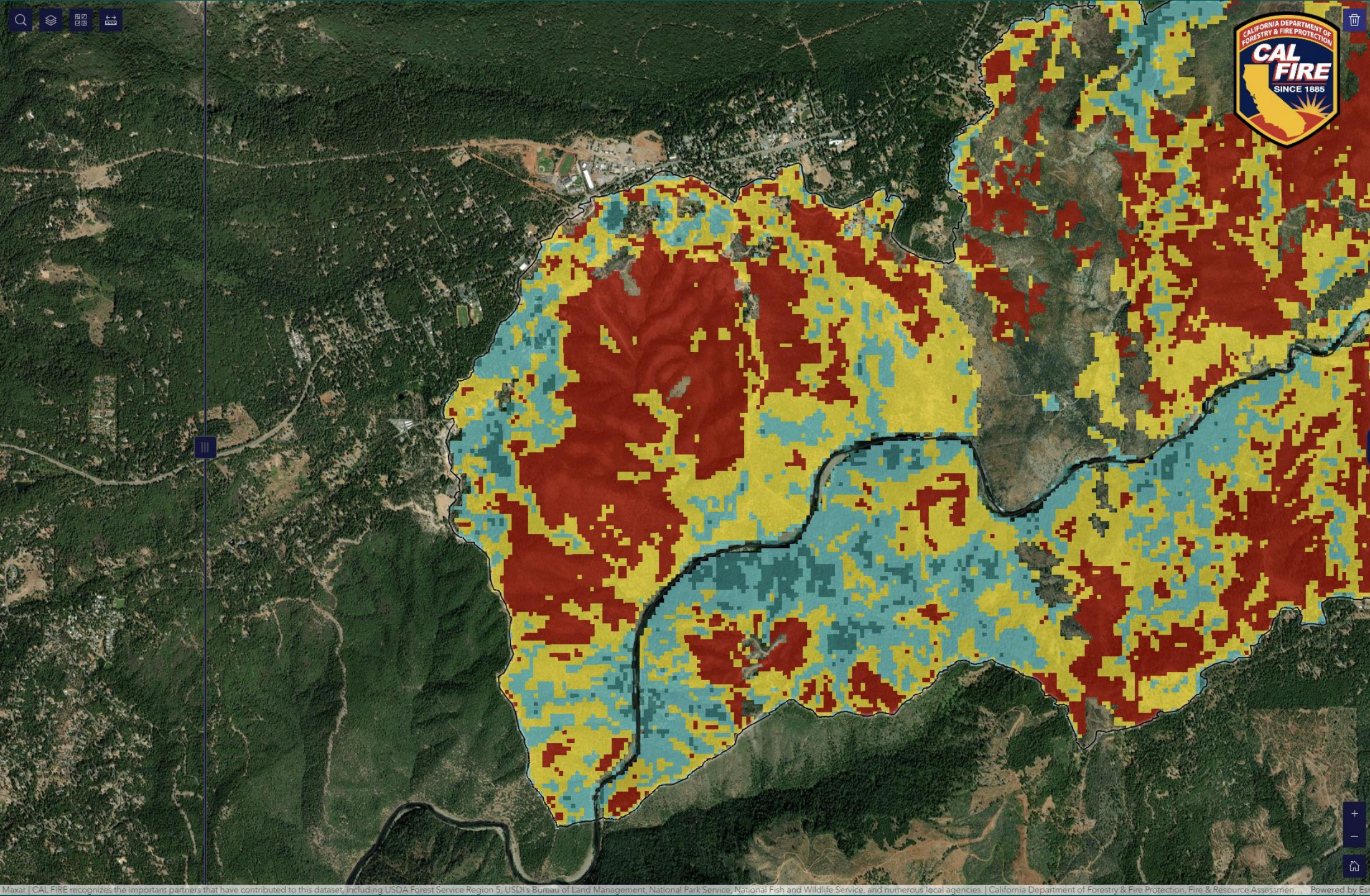
Advanced Show print area

Print

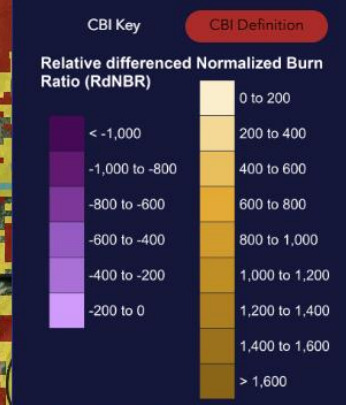
Turn On/Off Slider



Maps Contributors: California State Parks, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS | CAL FIRE recognizes the important partners that have contributed to this dataset, including... Powered by Esri



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RdNBR Key

RdNBR Definition

CAL FIRE Administrative Units

Turn On/Off Composite Burn Index (CBI)

Turn On/Off Relative differenced Normalized Burn Ratio (RdNBR)

CAL FIRE Administrative...

+

Print template

Results

Template

A3 Landscape

Title

ArcGIS Web Map

Advanced

Show print area

Print

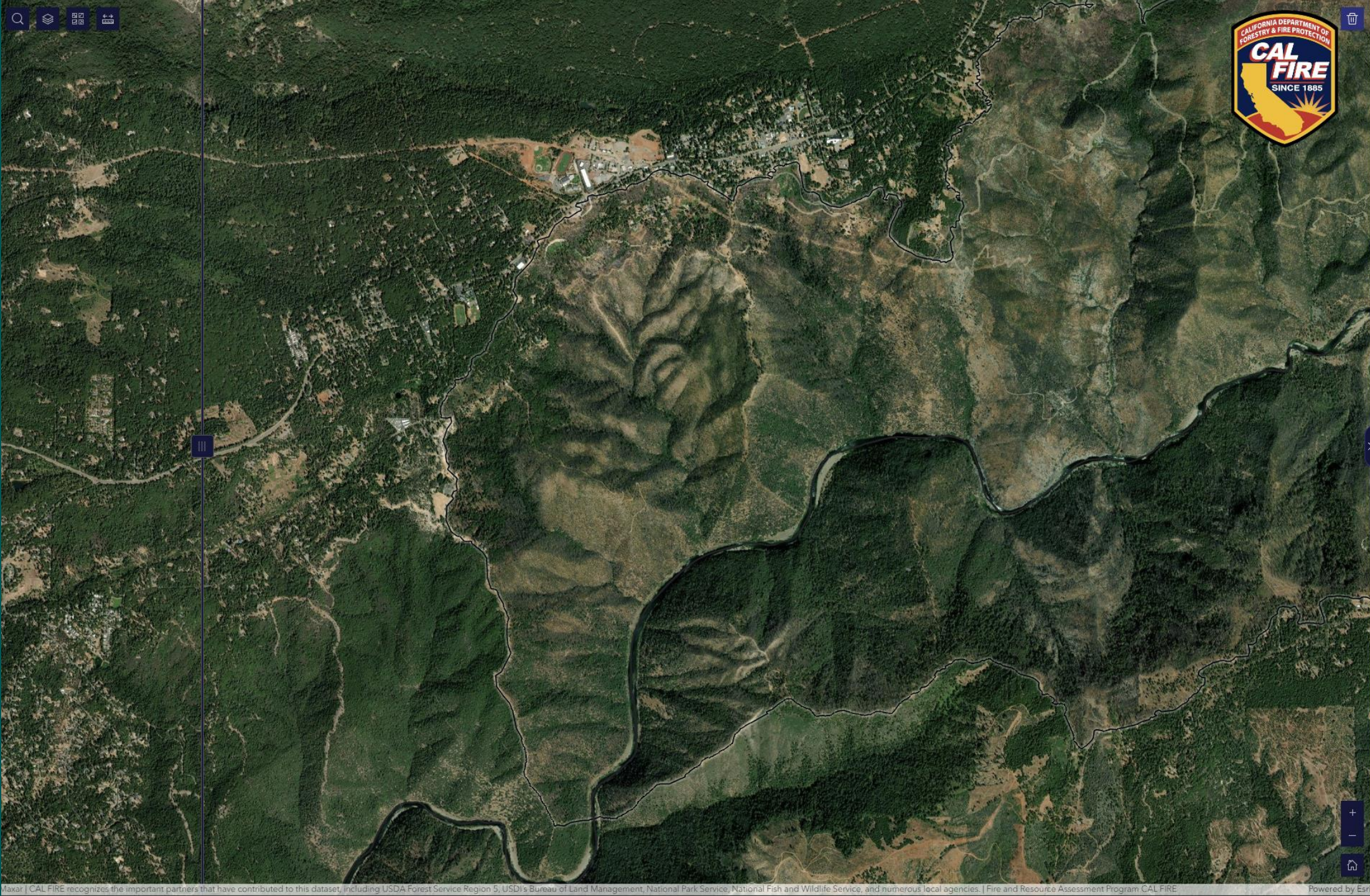
Turn On/Off Slider

+

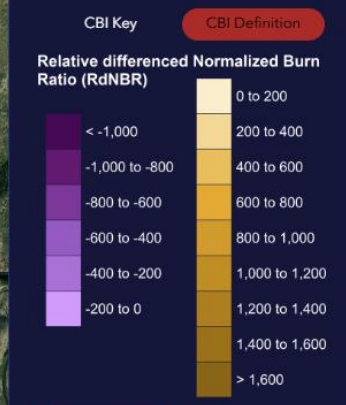
-

+

-



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RdNBR Key

RdNBR Definition

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Turn On/Off Relative differenced Normalized Burn Ratio (RdNBR)

CAL FIRE Administrative...

+

Print template

Results

Template

A3 Landscape

Title

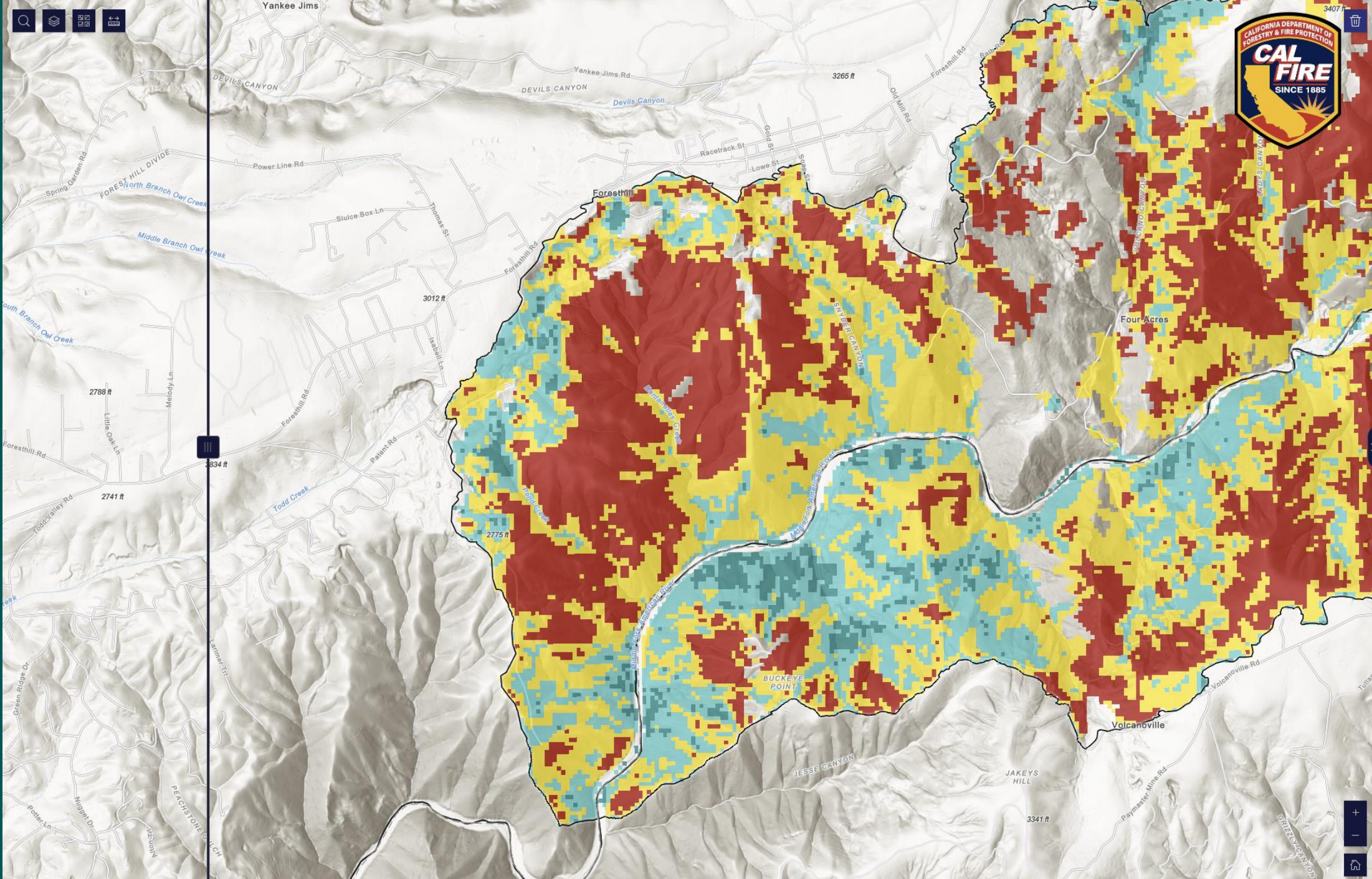
ArcGIS Web Map

Advanced

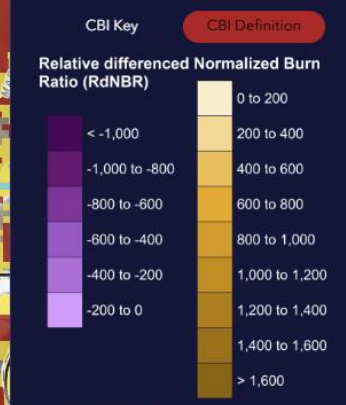
Show print area

Print

Turn On/Off Slider



The Composite Burn Index (CBI) is provided only for vegetation identified as Conifer or Hardwood Forest by the most recent FVEG dataset prior to the burn date. The relationship between remotely-sensed data and CBI is not yet well-established for other vegetation types.



- RdNBR Key** **RdNBR Definition**
- CAL FIRE Administrative Units
 - Turn On/Off Composite Burn Index (CBI)
 - Turn On/Off Relative differenced Normalized Burn Ratio (RdNBR)

CAL FIRE Administrative...

Print template Results

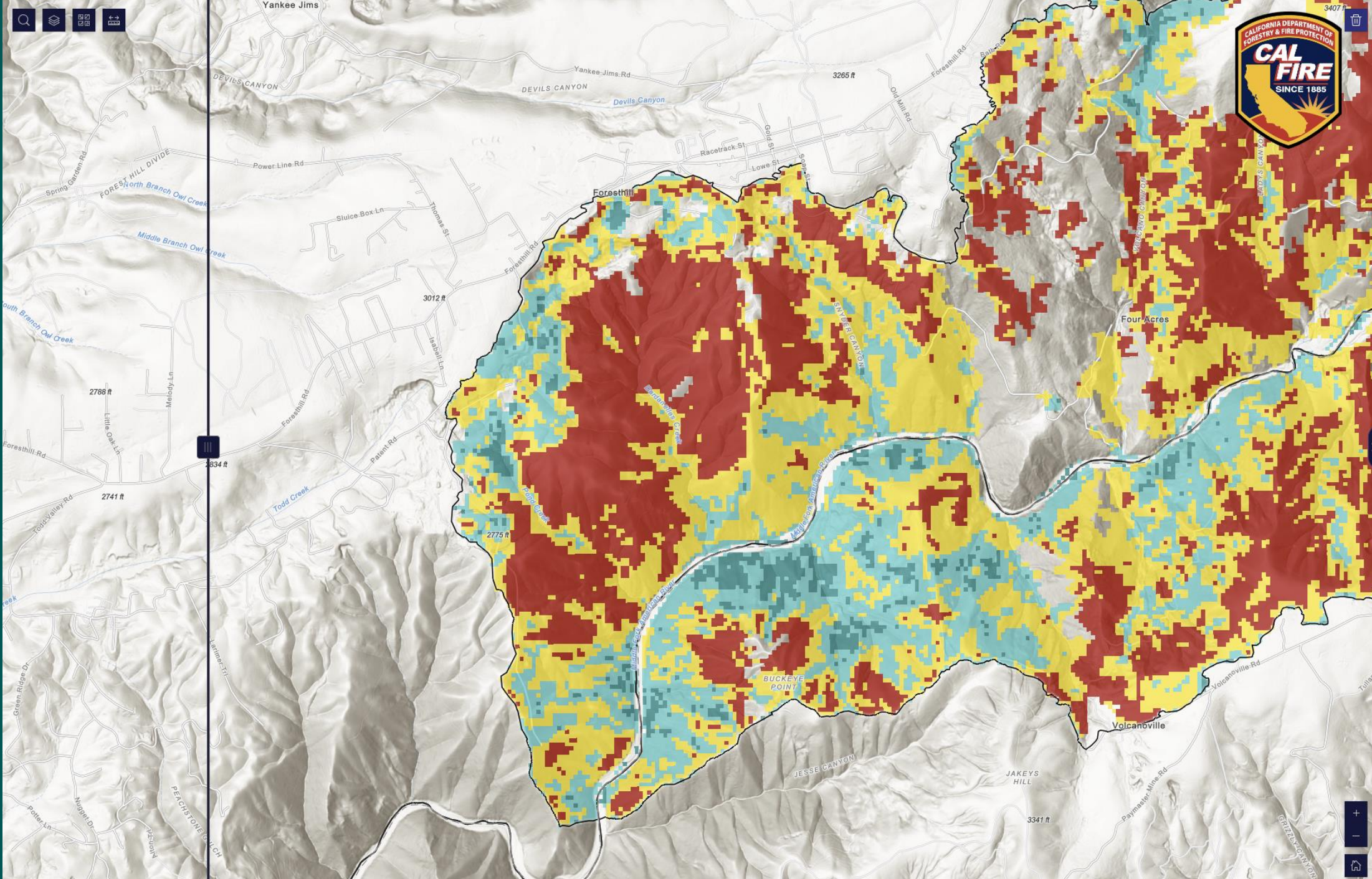
Template
A3 Landscape

Title
ArcGIS Web Map

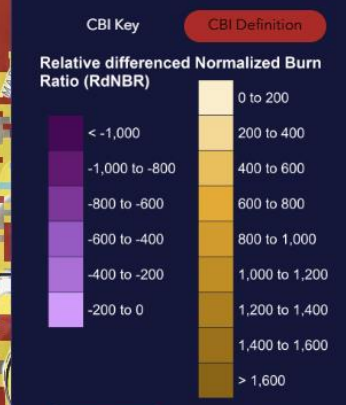
Advanced
☐ Show print area

Print

Turn On/Off Slider



The Composite Burn Index (CBI) is provided only for vegetation identified as Conifer or Hardwood Forest by the most recent FVEG dataset prior to the burn date. The relationship between remotely-sensed data and CBI is not yet well-established for other vegetation types.



- RdNBR Key** **RdNBR Definition**
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 - Turn On/Off Composite Burn Index (CBI)
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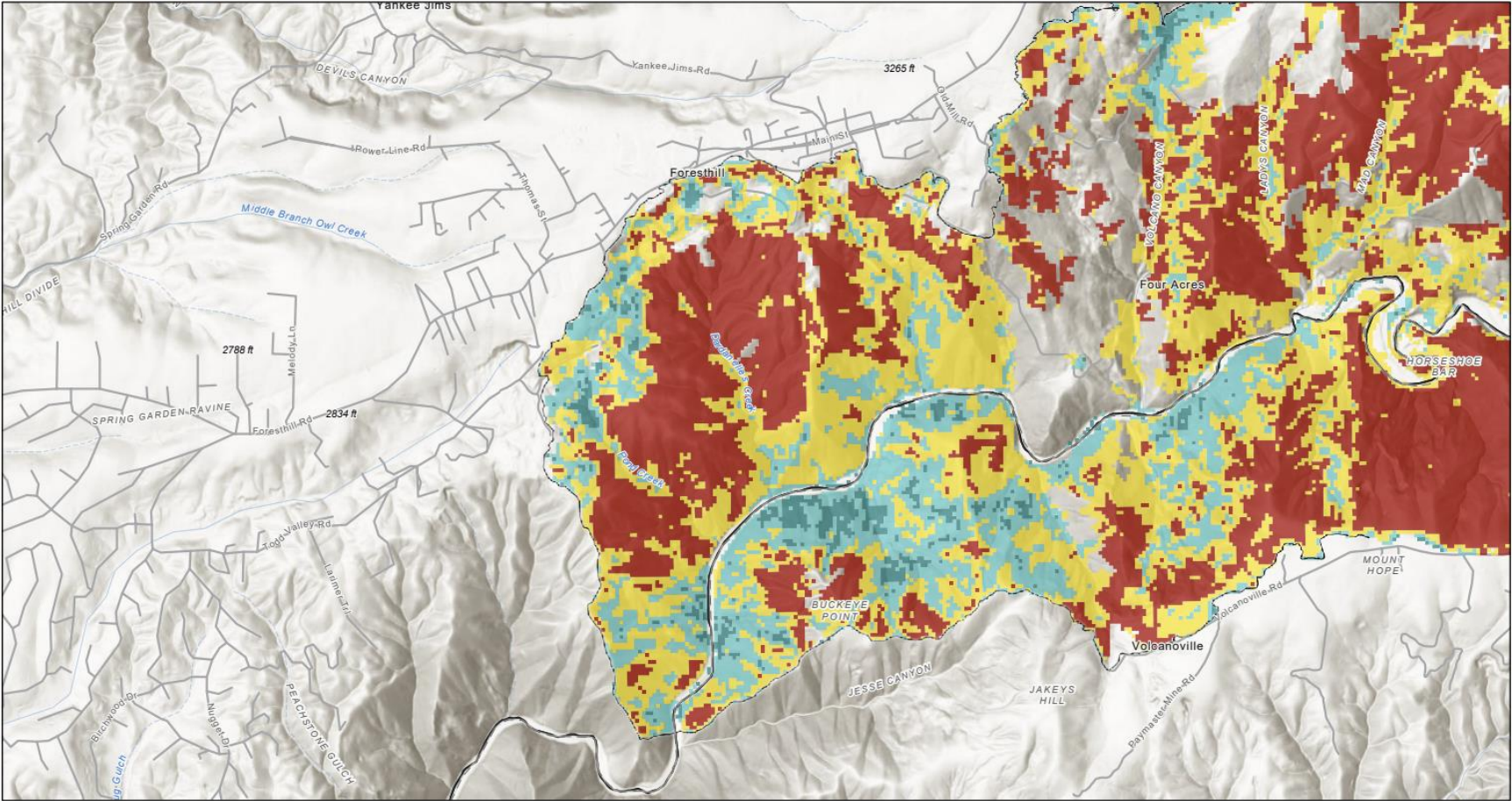
CAL FIRE Administrative...   

Print template **Results (1)**

ArcGIS Web Map 

Turn On/Off Slider 

ArcGIS Web Map



9/9/2025, 4:02:24 PM

- CAL FIRE Administrative Units

Moderate Severity

Turn On/Off Composite Burn Index (CBI)

High Severity

Unchanged

World_Hillshade

Low Severity

1:40,045

00.380.751.5 mi

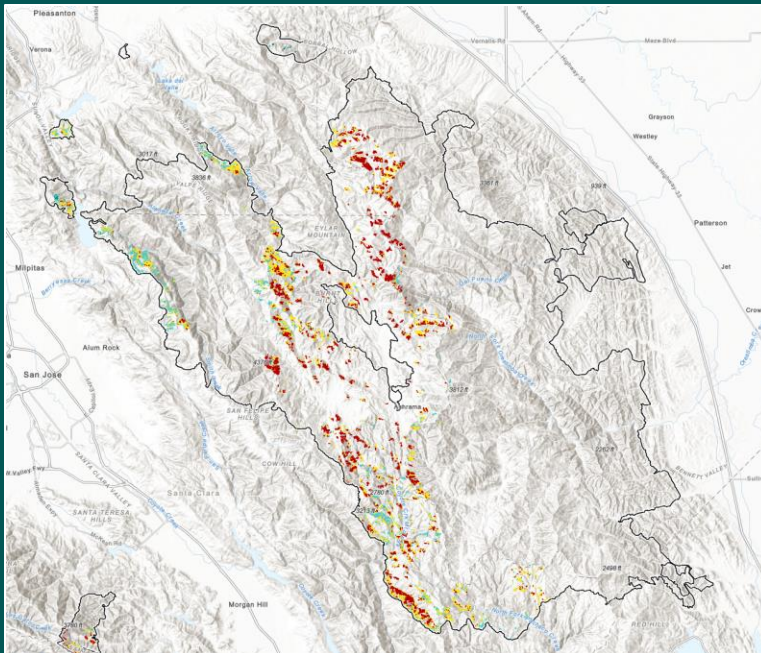
00.512 km

Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

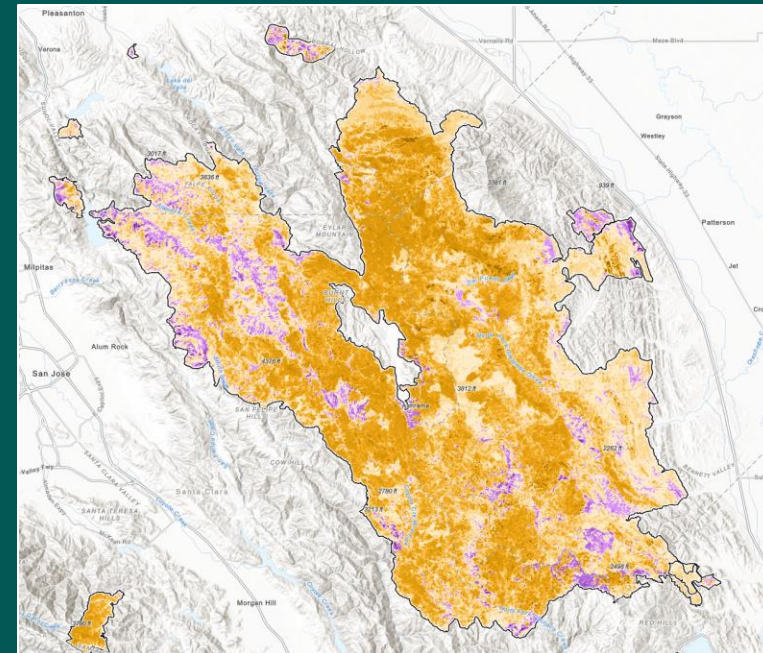
Data Gaps

- Non-federal land ownership
- Non-forested vegetation types

2020 SCU Composite Burn Index



2020 SCU RdNBR



Contributors

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- Taejin Park (NASA)
- Sean Parks (USFS)
- Kristen Shive (UC Berkeley, WFR Task Force)
- Joshua Picotte (USGS/MTBS)
- Eric Rowell and Lee Tarnay (CARB)
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Stakeholders (TBD)

- Cal Fire Intel
- Cal Fire Watershed Program
- CA Air Resources Board
- Academic scientists
- Resource managers