


Forestry Challenge Camp Hinckley



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“For most of history, man has had to fight nature to survive; in this century he is beginning to realize that, in order to survive, he must protect it.”

-- Jacques Yves Cousteau





01

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Camp Hinckley and
Problem

02

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Data

03

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Management Plan

04

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Cost

Camp Hinckley

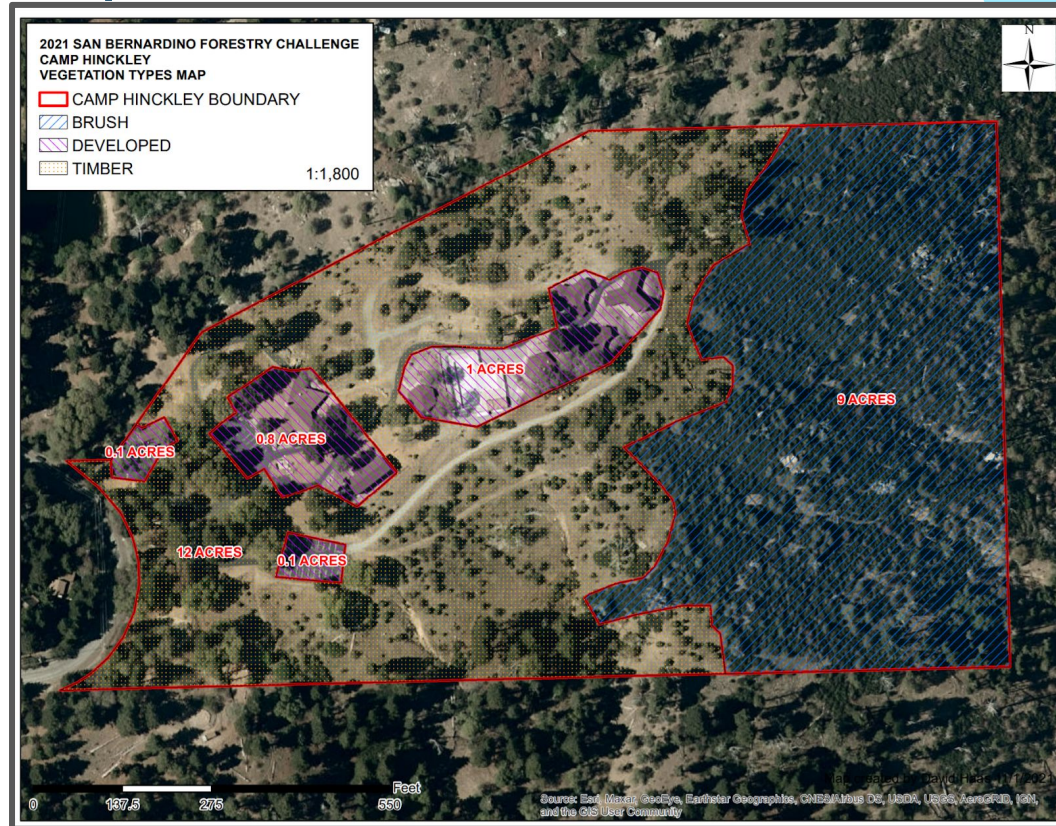


Background of Camp Hinckley

- Owned by the Church of Latter Day Saints (Mormons)
- Located at 6200 feet above sea-level in the San Bernardino Mountains
- 21.5 acres in total
 - 2 acres of developed land, 12 acres of forest, and 9 acres of brush
- Mixed conifer forest
 - Ponderosa Pine, Sugar Pine, Jeffrey Pine, Coulter Pine, White Fir, Incense Cedar, California Black Oak

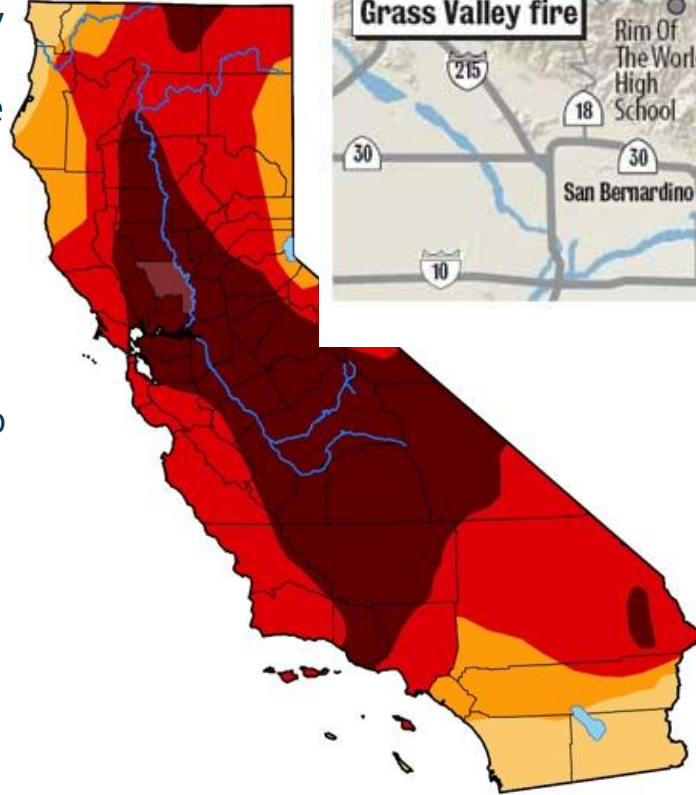


Location of Camp Hinckley

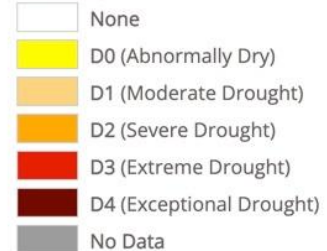


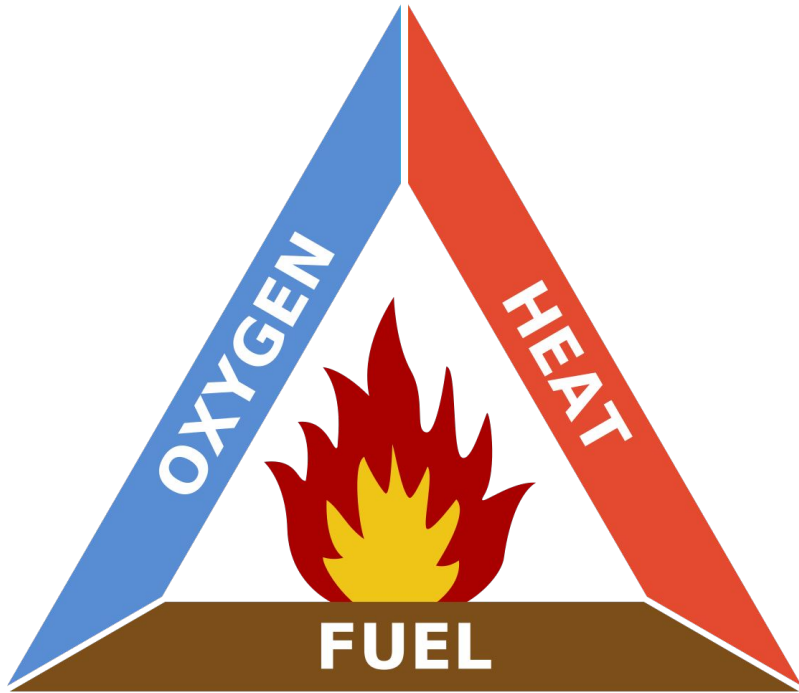
Slide Fire + California Drought

- Burned in the 2007, Slide Fire, destroying 12,759 acres of trees and a few buildings, resulting in 9 acres of brush
- Dead trees were removed after but there has been no further forest management since
- Camp Hinckley is in constant fire danger due to its location and the California drought
- Regenerating its forests and fuel reduction will serve as a line of defense to keep the community of Running Springs safe and establish a safe home for wildlife

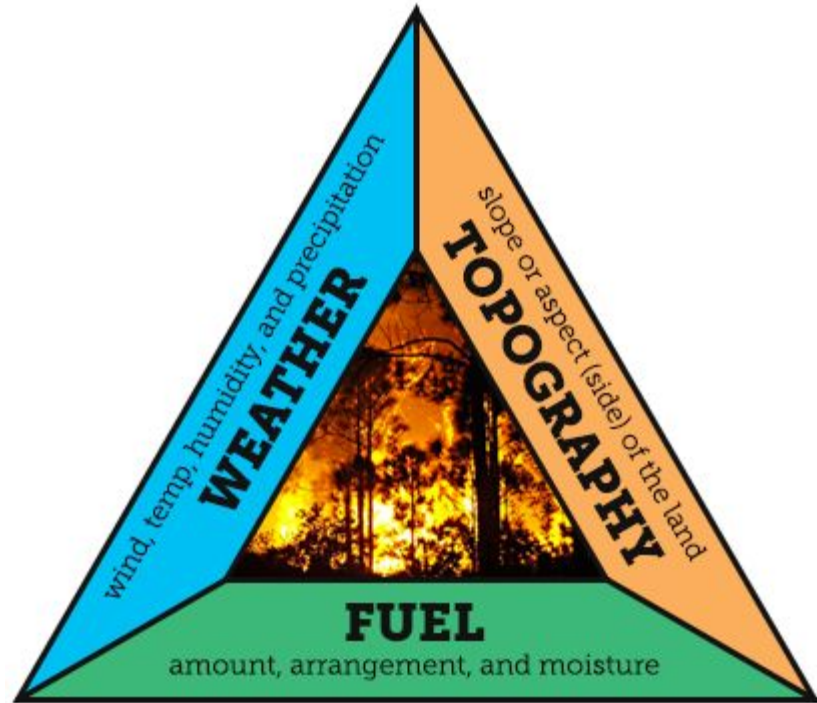


Intensity





Start



Fire Behavior Triangle

What is Brush? Its impact?



In a forest where fires rarely happen, fuel builds up: There's **surface fuel** (grass, logs, woody debris, brush); **ladder fuel** (shrubs, small trees, snags); and **tree crowns**.

① Surface fires spread quickly through brush and woody debris.

② Ladder fuels allow the fire to move up toward the forest canopy.

③ Tree crown fires are so intense, they're difficult to control.

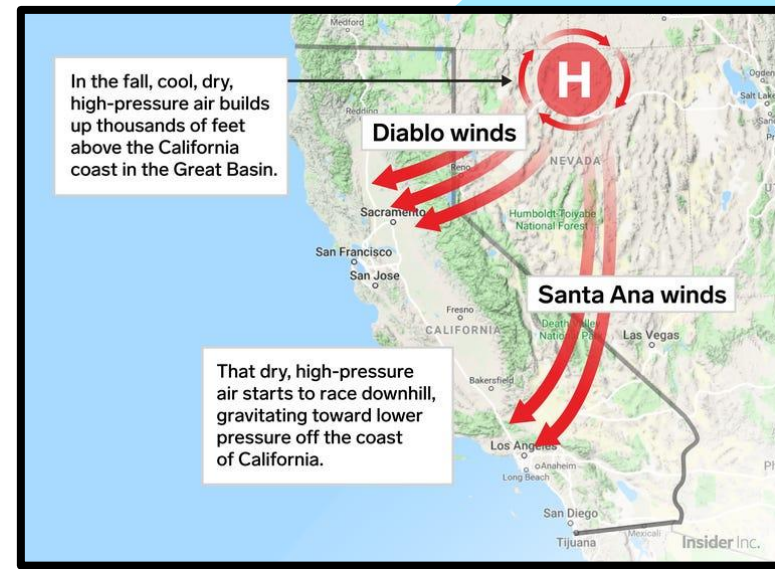
Goals

- Reduce brush which acts as ladder fuel, spreading fire up towards the tree canopy
- Revegetate area with trees to provide a more aesthetic and fire resistant property
- Have an active Forest Management Plan and apply for funding so that these tasks can be accomplished with minimal costs to landowner
- Provide a pathway for future maintenance



Why do we care?

- Camp Hinckley is currently at risk of fire
- Santa Ana winds will blow fire from camp to nearby community
- Create a fire resistant property that achieves landowner goals, creates a more sustainable environment, and benefits the community as a whole
- Within the San Bernardino National Forest
 - 71 threatened or endangered wildlife
 - Ex: Bald Eagles, Peregrine Falcons, Bighorn sheep, and a wide variety of endangered plants
- Global impact
 - Forest fires releases carbon dioxide stored in trees into the atmosphere
 - Proper management can prevent this and play a role in decreasing the carbon in the atmosphere

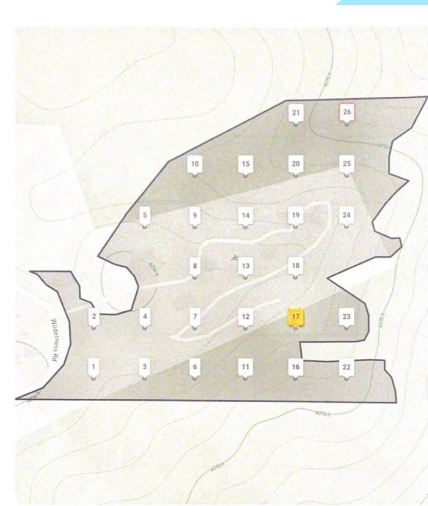


Data



What We Did

- Camp Hinckley was divided into 1/5 acre plots to collect data
- At each plot, the species and diameter of trees above 5.1" dbh (diameter at breast height) were collected using logger's tape
- Basal area was collected using an angle gauge to measure the "in" trees
- Percentage of canopy cover was collected using a densitometer
- Identified the risk factors
 - Amount of brush
 - Limbs on the trees (ladder fuel)
 - Ground vegetation (surface fuel)



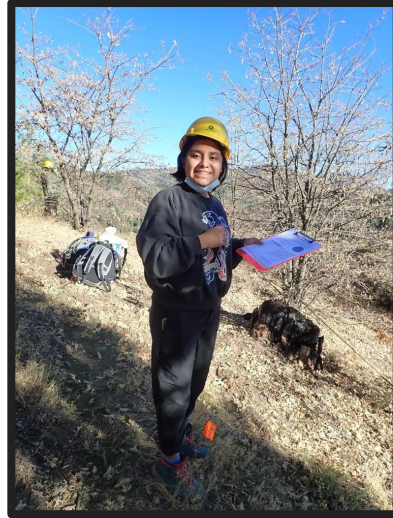
Logger's Tape



Angle Gauge

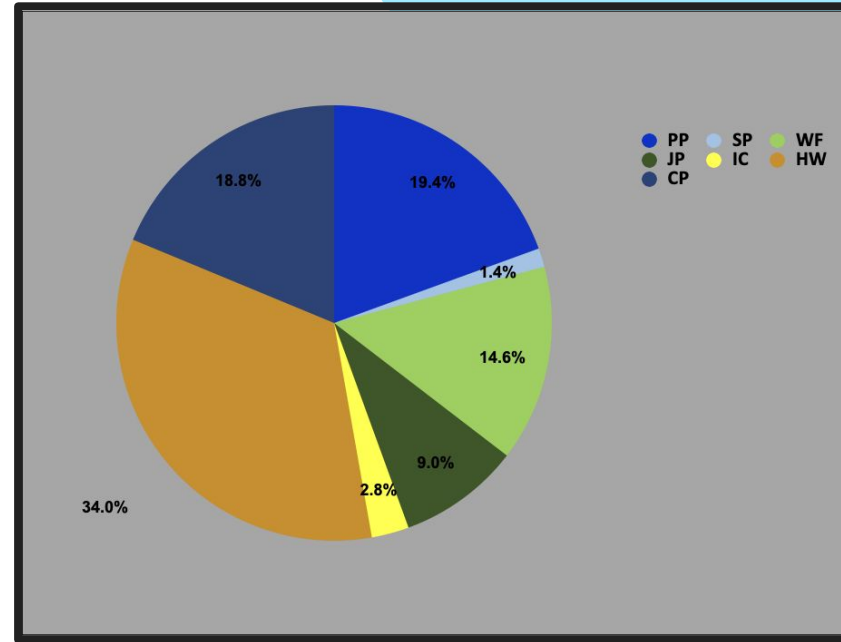


Densitometer



Our findings

- About 33 Trees per Acres (over 6" class)
- Average Canopy: 35%
- Over 50% of trees of limbs are not pruned
- More than 60% of dead/dying trees are not removed
- Nearly 70% of vegetation has not been removed
- 68% of plots have 25% or more brush cover
- Over 1/3 of the Camp is hardwood, not much diversity



Our Plan



Possibilities

- Ways to Remove the Brush
 - Mastication - \$2,000 per acre
 - Lop and Scatter - \$1,000 per acre
 - Hand cut and chip - \$1,500 per acre
 - Hand cut, pile, and burn - \$1,000 per acre
- Ways to Maintain the Forest
 - Apply herbicides - \$200 per acre
 - Use grazing animals - \$500 per acre
 - Conduct an understory broadcast burn - \$150 per acre

Remove Brush

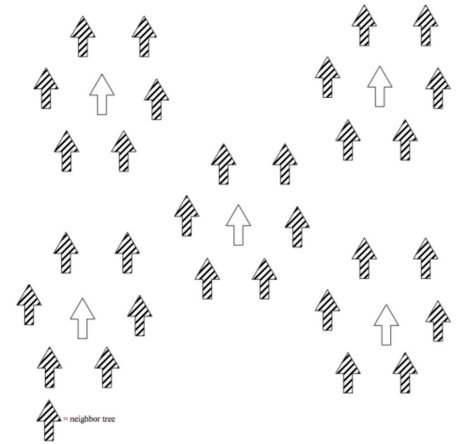
- Forester recommended to remove 80-85% of brush
- Do not remove all since they are important to soil and wildlife
- Remove brush in 9 acre area using hand cut, pile, and burn method
 - Crews pile branches and debris into piles that are burned in the wet season.
 - Must be done during wet season and during a time where smoke won't affect nearby community
 - It is a relatively cheap method (only \$1000/acre) and actually gets rid of the ladder fuel and loading fuel in the area.
 - Recommended course of action by forester in Q & A
- Remove brush in remaining 12 acre area using lop and scatter method
 - Ladder fuel is cut and distributed throughout the area
 - Less than 18" in order to allow it to decompose over time
 - Cheap compared to the other methods, only \$1000/acre
- Nonprofits such as the CCC may do some of this work for free but will depend on their availability



Planting Trees

- Plant 100 trees per acre since there are currently about 33 trees per acre and it is required to have at least 125 trees per acre
- Plant mixed conifers maintaining diversity on property but focus on Sugar Pine and Coulter Pine
 - Forester said in Q & A that pines are resistant to fire and currently, sugar and coulter pines are only 1.4% and 9% of all trees respectively.
- Plant in cluster pattern rather than straight rows to maintain “wild” feel of camp for campers

Plot design:



Maintaining the Land

- Prune the current, grown trees
- Conduct an understory broadcast burn in order to remove the debris left by the pruning
 - Removes tree limbs and extra dead/dying trees
 - Cheap method of maintenance (\$150/acre)
- Use grazing animals to eat unwanted vegetation
 - Provides room for growing trees and removes invasive plant species
 - \$500/acre
 - Once a year for five years
- Once again, nonprofits such as the CCC may do some of this work for free but it will depend on their availability



California Cooperative Forest Management Plan

- A “resume” for state and federal forest cost share programs and grants
- Plan for Camp Hinckley:
 - Forest Objectives: fuel treatment and reforestation
 - Wildlife:
 - Shrubs act as habitat and a place of protection for wildlife such as the California Whipsnake but more open spaces will benefit deers and bears
 - Recreation and Aesthetics:
 - Youth campground utilized year round by girls camps and religious groups
 - Income:
 - Rent and donations



Costs



Costs

- Hand cut, pile, and burn - \$1000 per acre, 9 acres
 - \$9,000 once
- Lop and scatter - \$1000 per acre, 12 acres
 - \$12,000 once
- Understory Broadcast Burns - \$150 per acre, 21 acres
 - \$3,150 once
- Planting
 - \$2 per seed (growing and planting)
 - 100 trees planted per acre - \$200 per acre, 21 acres
 - \$4,200 once
- Grazing Animals - \$500 per acre, 21 acres
 - \$10,500 each year for 5 years = \$52,500
- Workers - \$0 per acre
 - California Conservation Corps
 - Community volunteers
- Total: \$80,850

Sources of Funding

- CAL FIRE's Forest Health Grants Program
 - Provides funds to restoration and reforestation while protecting communities from fire risk
 - Increases fuel management and treatment of degraded areas
 - Lines up with Camp Hinckley's issues of brush, restoration, and protection of Running Springs
 - Gives a minimum of \$750,000
- $\$750,000 - \$80,850 = \$669,150$ left over
- CAL FIRE's California Forest Improvement Program (CFIP)
 - Focuses on improved management of forest lands
 - Gained after a Forest Management Plan and must be 20 - 500 acres, both of which Camp Hinckley has
 - Covers a majority of the costs if Camp Hinckley does not apply to the CAL FIRE grant

Timeline

Year 1

Survey land and apply for grants and ensure that all government regulations are met

Year 2

Remove brush and reforest land

Year 3 - ∞

Monitor land and perform necessary maintenance



Cost of doing nothing

- There will inevitably be another wildfire the same size or greater than the Slide Fire of 2007
- Entirety of Camp Hinckley and local Running Springs community may be destroyed
- Great destruction of local wildlife and ecosystem
- Forest → wasteland





It will be a
TREEmendous effort
but...

**ONLY
YOU
CAN PREVENT
WILDFIRES.**





"That's all Folks!"

References

- Ask a Forester
 - Sam - CAL FIRE
- CAL FIRE's California Forest Improvement Program
 - <https://www.fire.ca.gov/grants/california-forest-improvement-program-cfip/>
- CAL FIRE's Forest Health Grant Program
 - <https://www.fire.ca.gov/grants/forest-health-grants/>
- Forestry Challenge Focus Topic Packet
- Forestry Challenge Presentation