

Defensible Space Master Gardeners October 18, 2007

Curriculum Objectives

- Identify information sources for local codes and regulations for defensible space
- Describe planning elements that reduce community wildfire risks
- Describe goals and tradeoffs relating to defensible space
- Describe techniques that can be used to reduce vegetation/fuels in Zone 2, and risks of removing too much vegetation
- Describe compliance procedures and considerations for hiring contractors

First Steps

- Determine applicable local codes
- Reconcile requirements from different stakeholders:
 - Homeowners
 - Local fire marshal
 - Multiple Species Conservation Program
 - Insurance, HOA and others

Consequences of Ignoring Defensible Space



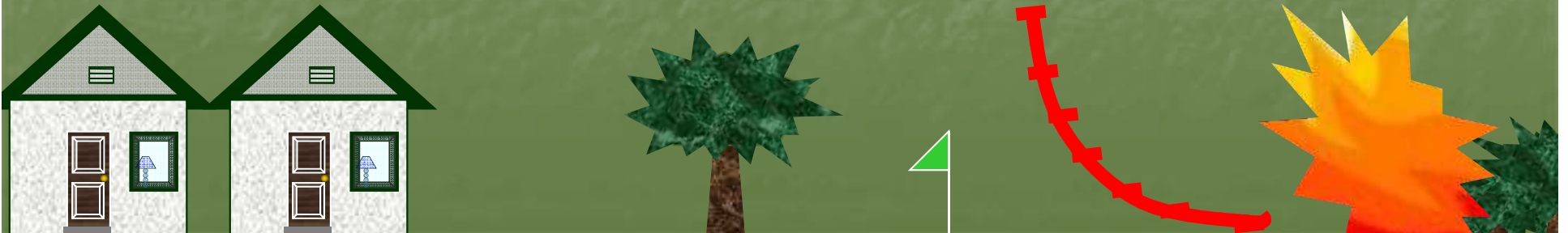
Before wildfire



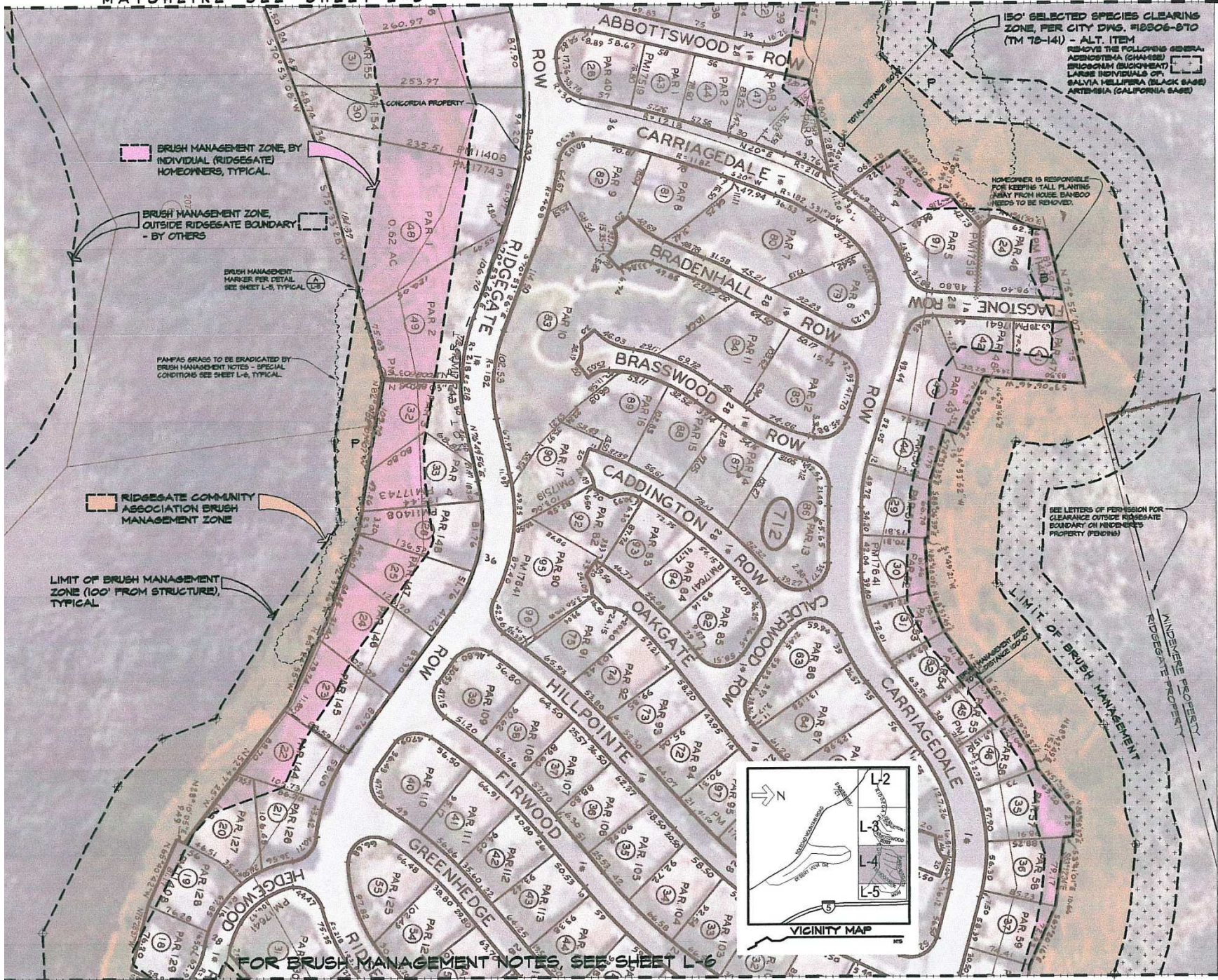
After wildfire

Large-scale Community Planning

- Buffers
 - Irrigated Green Belts
 - Roads
 - Golf course
- Access
- Set-backs



MATCHLINE SEE SHEET L-3



MATCHLINE SEE SHEET L-6

SHEET No.

L-4

OF 6



BRUSH MANAGEMENT

JOB NO: 0460 DRAWN BY: ASJ /
DATE: AUGUST 02, 2004 CHECKED BY: DWR
REVISIONS



GRAPHIC SCALE
20' 0' 40' 80'
SCALE: 1"=40'

MANAGEMENT
STATE
COMMUNITY ASSOCIATION



DAVID REED
LANDSCAPE
ARCHITECTS

DAVID REED LANDSCAPE ARCHITECTS

Golf course built between homes and wildlands would provide better protection



Image from Google Earth

Large-scale Community Planning

■ Access

- Two ways in, two ways out
- Adequate width for two emergency vehicles
- Adequate vegetation reduction adjacent to streets and roads



Inappropriate planting too close to road!

Fire Access

Roadways are wide enough (minimum of 24 feet) to accommodate multiple fire engines.



Width =



Site Location

- Canyon rim?
- In the middle of development?

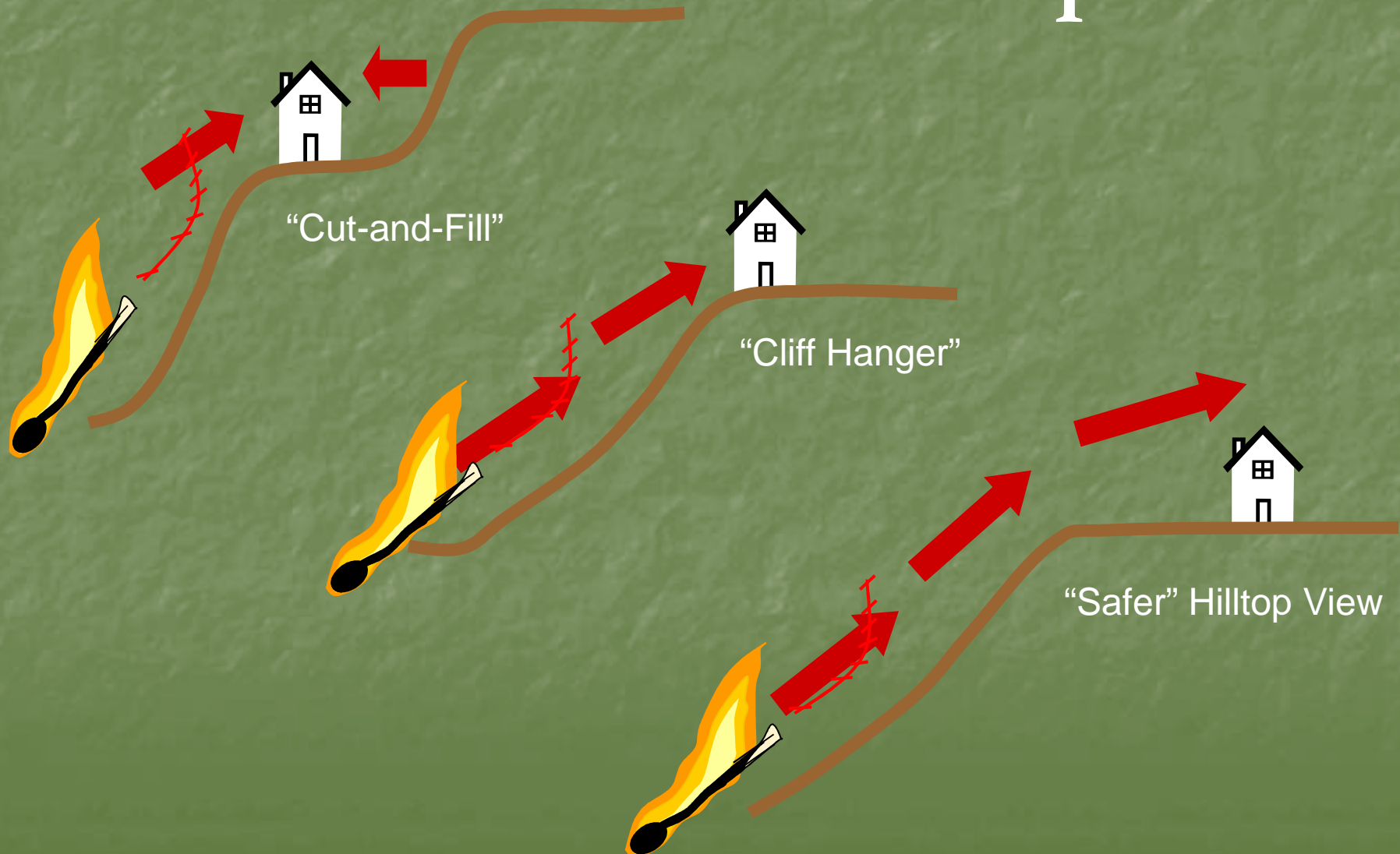
Embers can still reach homes away from the edge of a sub-division!





Once a fire resistant home begins burning, any structure closer than 16' is subject to the intense radiant heat given off by the burning home

Structure Position on Slopes



15' for single story structures

30' for two story structures

Setbacks



- Help your home protect itself! Set-back from top of slope, makes a difference!
- Set-backs also allow mitigation to be contained within property boundary and not on public land!

Defensible/Survivable Space

- Goals:
 - Reduce flame length and keep those flames from touching structure
 - Reduce radiant heat that the structure is exposed to
 - Allow emergency personnel room to maneuver, if present
 - Reduce adverse effects on native habitats
 - (Start with the house, and move out!)

Fifteen Reasons Why People Don't...

1. I didn't know there was a wildfire threat.
2. It's not going to happen to me.
3. Fate determines whether my house survives.
4. It's not my responsibility
5. If it was really important, my insurance agency would give me a break.
6. So what, I've got insurance.
7. It's wrong to cut trees.
8. It won't look good.

Fifteen Reasons Why People Don't...

- 9. I don't like working outdoors.
- 10. I don't have the time or money.
- 11. I don't know what to do.
- 12. I don't have an easy way to get rid of brush.
- 13. It's against the law to remove vegetation.
- 14. I don't own the property.
- 15. It won't make a difference.

Other _____

Review of Fire Basics

- Fire needs three things to burn, and more importantly propagate
 1. **Fuel:** Vegetation, wood decks, houses, gazebos, etc.
 2. **Oxygen:** Fire will burn better in fuels where air can circulate; i.e. dead leaves still on the tree will burn better than leaves on the ground
 3. **Heat:** fuels can ignite through one, or through a combination, of three ways:

Physics of Flammable Vegetation

- House ignites by radiation from plants burning next to combustible materials
- House ignites by conduction when embers are generated by brush or landscaping, and land on combustible materials
- Roofs, attics, eaves, windowsills, siding, decks, patio furniture are combustible materials

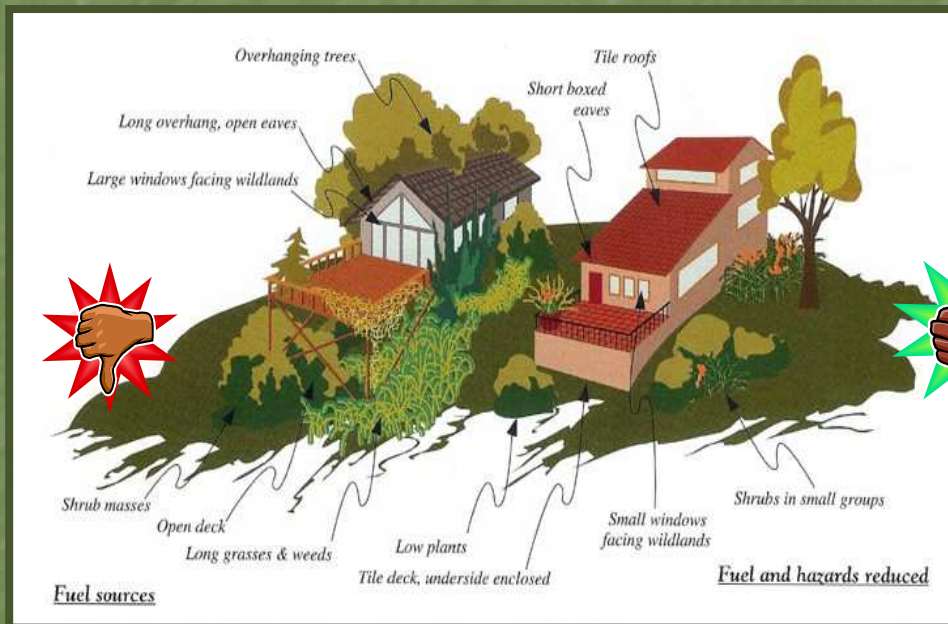
What do you value in landscaping?

- Privacy
- Place to socialize
- Place to garden
- Wildlife habitat
- Reduce risks of house ignition by wildfire
- Low water and energy bills
- What else?

Multiple objectives/trade-offs

- Reduce risk of property ignition
- Reduce risk of embers generated by landscaping
- Reduce loss of habitat and backyard wildlife
- Reduce erosion, stormwater runoff, water quality degradation, and slope failure
- Minimize energy use (shade trees)
- Minimize water use (irrigation)
- Minimize costs to homeowner and community

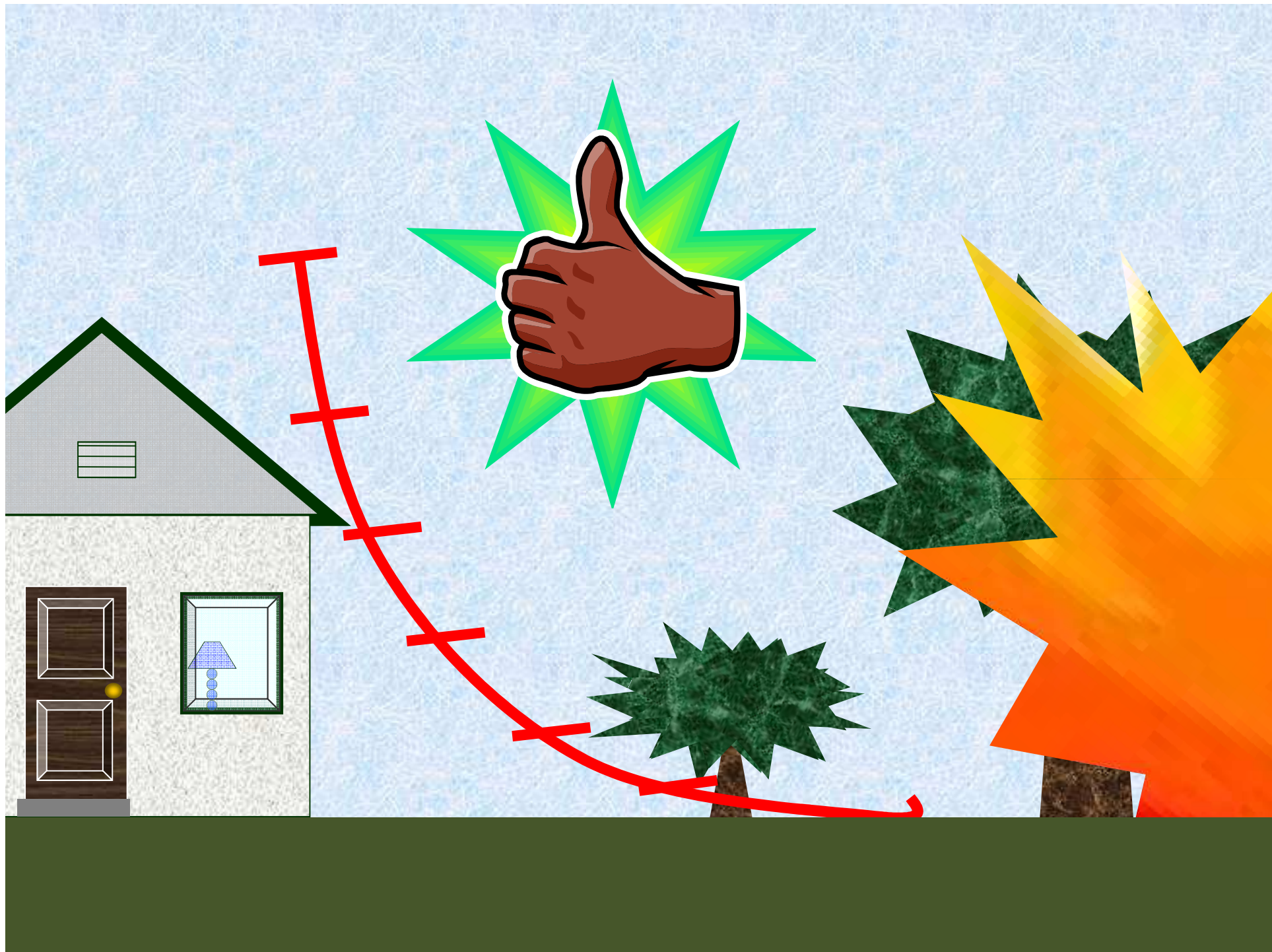
Systems Approach for Defensible Space



- ✓ House design and materials
- ✓ Built landscape
- ✓ Planting arrangement
- ✓ Fire resistive plants
- ✓ Irrigation
- ✓ Pruning
- ✓ Habitat protection
- ✓ Erosion control
- ✓ Water conservation

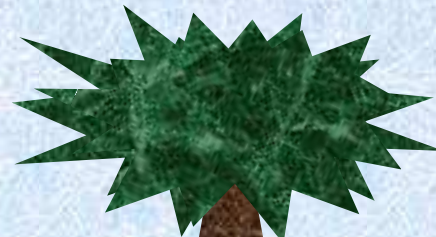
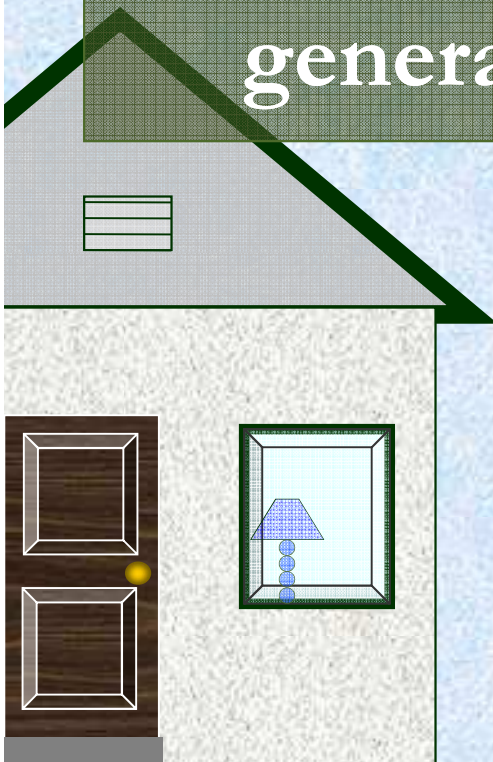
Radiant Heat





Defensible/Survivable Space

- Requirements differ by jurisdiction –
Check with local fire marshal –
generally agreed at 100 feet



Defensible Space Zones

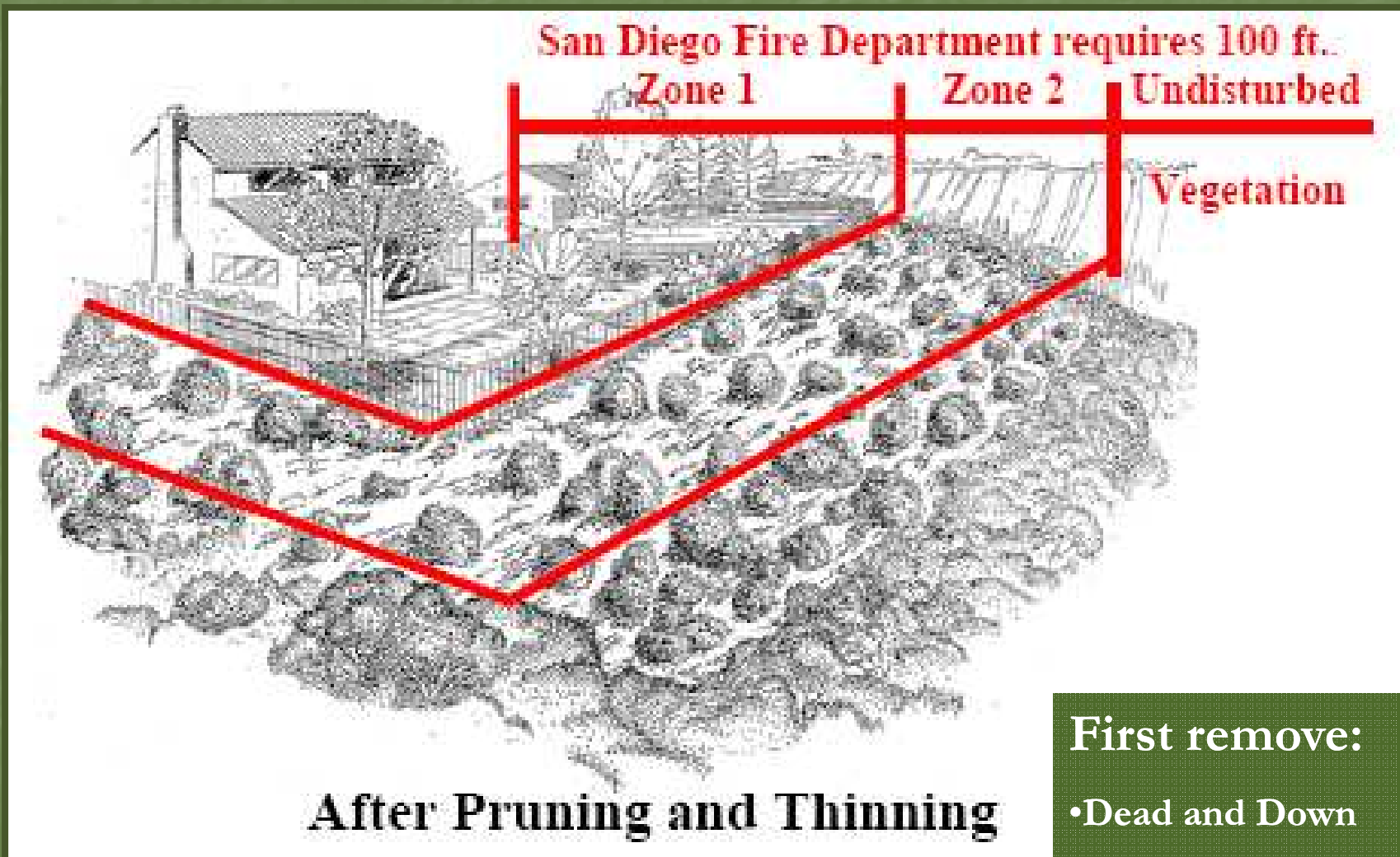
- Objectives are to reduce radiant heat
 - Vertical spacing to remove “ladder fuels” that allow ground fire to burn into shrub or tree canopies
 - Horizontal spacing to reduce spread of fire from one plant to the next
- Zone 1: 30 to 50 feet from structure
 - “Lean, Clean and Green”
 - Covered in November 1 class
- Zone 2: 100 feet from structure
 - More if fire official permits, due to steep slopes

Defensible/Survivable Space



Before Brush Management

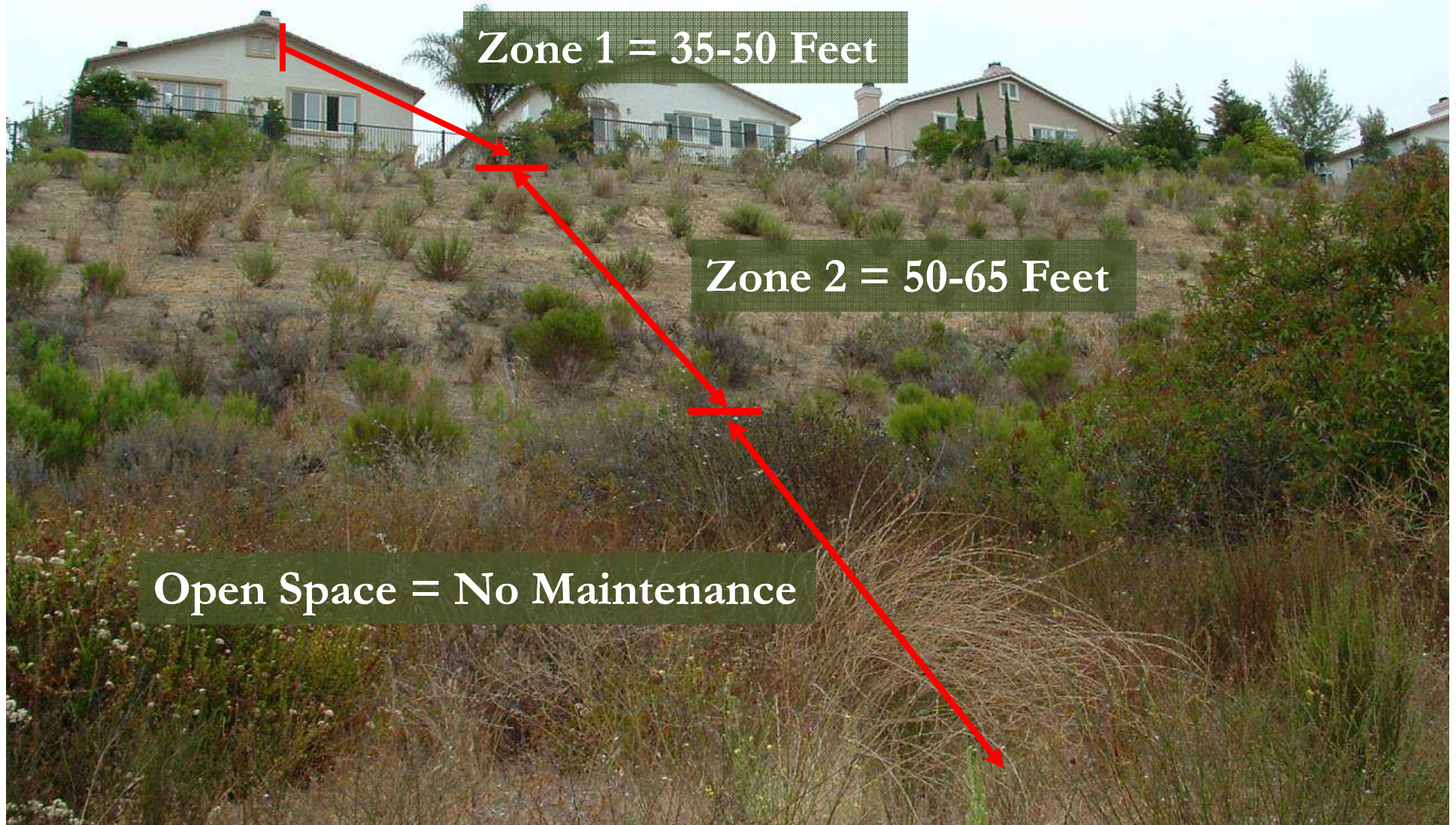
Defensible/Survivable Space



First remove:

- Dead and Down
- Highly flammable species

Defensible Space Zones

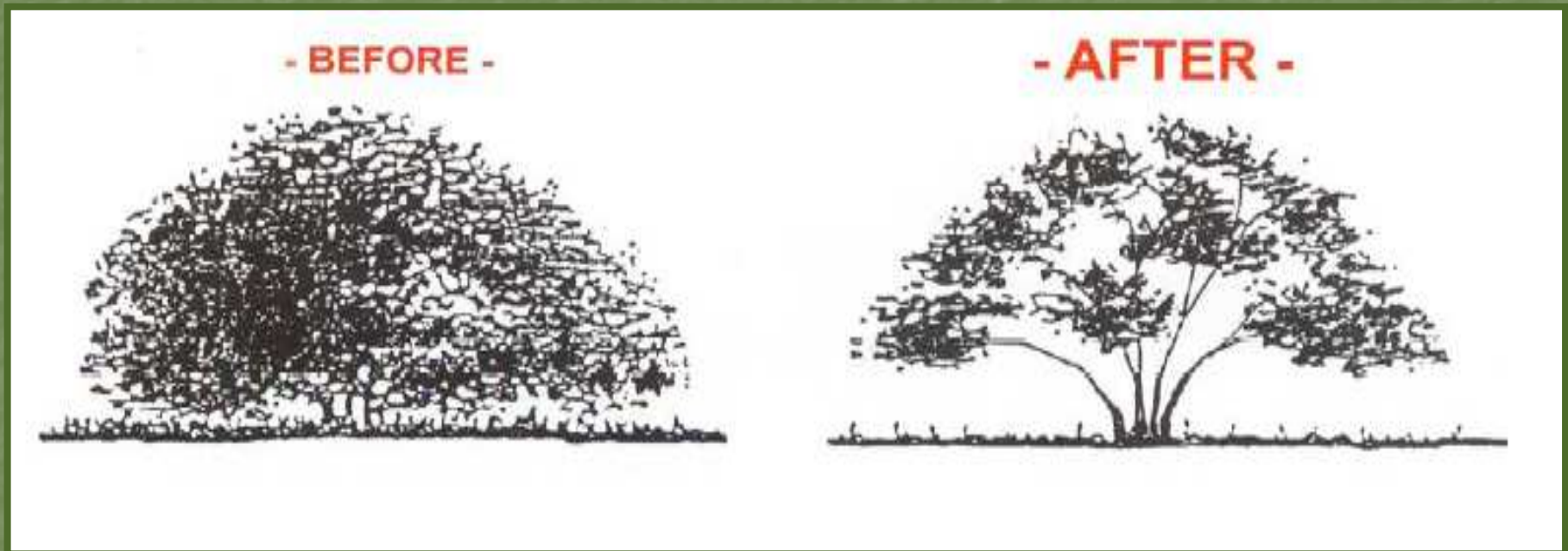


Zone 2: Chaparral

- Remove dead and dying vegetation
- Prune lower limbs of shrubs to reduce vertical ladder fuels
- Reduce vegetation cover to 50%
 - Half of ground has living plant canopy
- Cut stumps to 6" or 18"
 - Depends on local code
- Retain roots (for erosion control)

Defensible/Survivable Space

- Is a well-maintained landscape, **NOT** cleared to mineral soil



>50% of soil should have living plant canopy



Example of pruned shrubs, Talmadge FireSafe Council, Fall 2007



Example of pruned shrubs, Talmadge FireSafe Council, Fall 2007

Zone 2: Brush Reduction

Before brush reduction



After brush reduction



Zone 2: Forest

- Remove dead and dying trees
- Prune limbs of mature trees to reduce ladder fuels
 - 10 feet up from the ground
 - Or 1/3 of live-crown height
- Prune limbs to keep 10 feet from chimney
- Prune limbs hanging over roof and gutters

Zone 2: Grassland

- Most are non-native, invasive weeds and grasses
 - Ignite easily
 - Fire spreads quickly
- Use equipment responsibly
 - Spark arresters on mowers, weed-whackers
 - Exhaust system and motors in good order
 - Lawnmower blades can spark fires on rocks
- Fire can start from vehicle exhaust pipes

Zone 0 (“House Ignition Zone”)

- Within 5 or 10 feet of structure
- Eliminate radiation that can ignite foundation elements
- No mulch, bark, or pine needles
- Use stones, decomposed granite
- Prune heavily to eliminate places for embers to land and ignite plants
- Remove lawn furniture, woodpiles, and trash

Brush Reduction Options

- Mechanical/physical
 - Crews
 - Chipping
 - Grazing (goats)
 - Bulldozers (NO!)
- Herbicides
- Prescribed fire



Comparisons of Brush Reduction Methods

- Crews
- Chipping
- Grazing
(goats)

- Cost
- Effectiveness
 - Amount removed
 - Selectivity
 - Regrowth
 - Predictability
- Availability of equipment and expertise
- Aesthetic appeal
- Habitat quality
- Air and water pollution

Comparisons of Brush Reduction Methods

- Herbicides
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Costs of improper or excessive clearance

- Erosion
- Slope instability
- Invasive weeds
- Increased flashy fuels
- Increased annual maintenance costs
- Future water availability and price
- Habitat destruction
- Alienation from the natural environment



Other Considerations When Altering Landscape

- Protected species
 - Federal, state regulations can restrict clearing in potential habitat
 - Contact US Fish and Wildlife Service and California Department of Fish and Game prior to projects in potential habitat
- 1997 Memorandum of Agreement with wildlife and fire agencies



Timing affects habitat

For example, in nesting areas of Coastal California Gnatcatcher, brush management cannot occur during nesting season February 15 – August 15



Recurring Costs

- Pruning and maintenance
- Irrigation
- Annual weed management
- Revegetation of bare slopes to horticultural or native plants
- For ignition-resistant structures
 - Risks from radiation is negligible beyond 100 feet
 - Benefits low, costs very high



Private Property Responsibilities

- Homeowners
- Property owners
- Landscape contractors
- Developers
- Community organizations
 - FireSafe Councils
 - Homeowners' associations
 - Canyon Friends' groups

Regulatory Authorities

- Fire protection districts
- California Department of Forestry and Fire Protection
- US Fish and Wildlife Service and Calif. Department of Fish and Game
- Regional Water Quality Board
- Public land managers (Forest Service, Refuges, BLM)



Advice About Inspections

- Notices sent by county in the spring
- Ask local code citation
- Ask how recommended vegetation removal will affect erosion and weeds
- CALFIRE emphasizes vegetation close to structure
- Some fire protection district inspections focus only on fuel reduction
- “Be your own advocate”

Advice About Hiring Contractors

- Include language from local codes in contract
- Ask landscape architect, gardener or biologist to review contractor's bid
- Remove no roots, and nothing below 18" (or 6" depending on code)
- Chip materials and leave on site
- OR organize "chipping day" and share chipper with neighbors

Difficult, Unresolved Situations

- Don't be surprised if you don't have answers when the public asks about.....
- Non-conforming existing structures
 - Wood siding, decks, roofs
- 100 feet extends onto neighbor's property
- More than 100 feet demanded
 - Insurance companies
 - Subdivision plans
- More.....

More Unresolved Situations

- Prescribed fire
- Targeted goat grazing
- Coastal zone regulations
- Limited resources and time of local agency personnel
 - Open space managers
 - Fire marshals
- Conflicts in values/tradeoffs

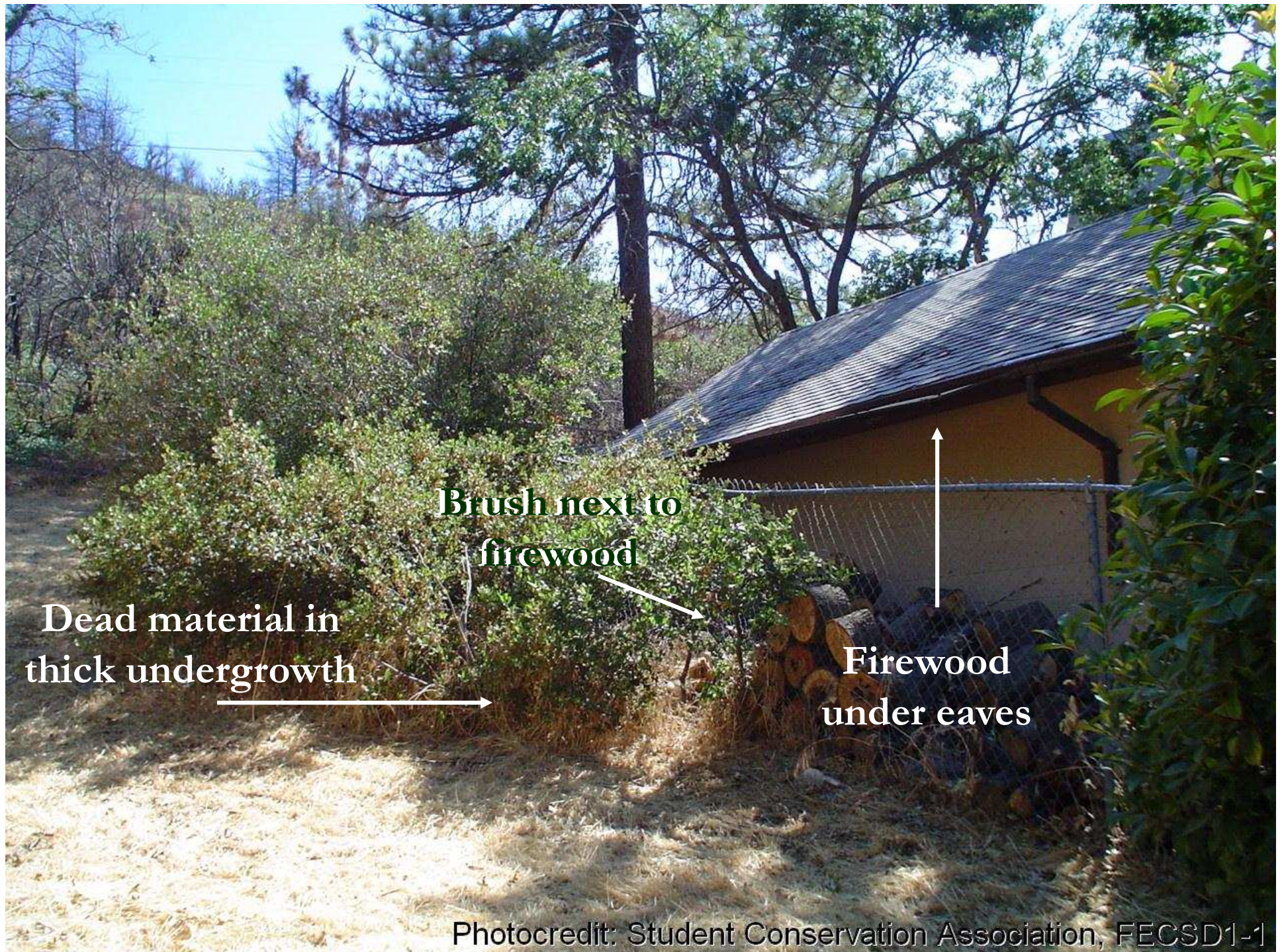
Quick Quiz

- Look at the conditions in and around these 3 houses
- What actions are needed to reduce property risks?





Photocredit: Student Conservation Association, FECSD1-1



Brush next to
firewood

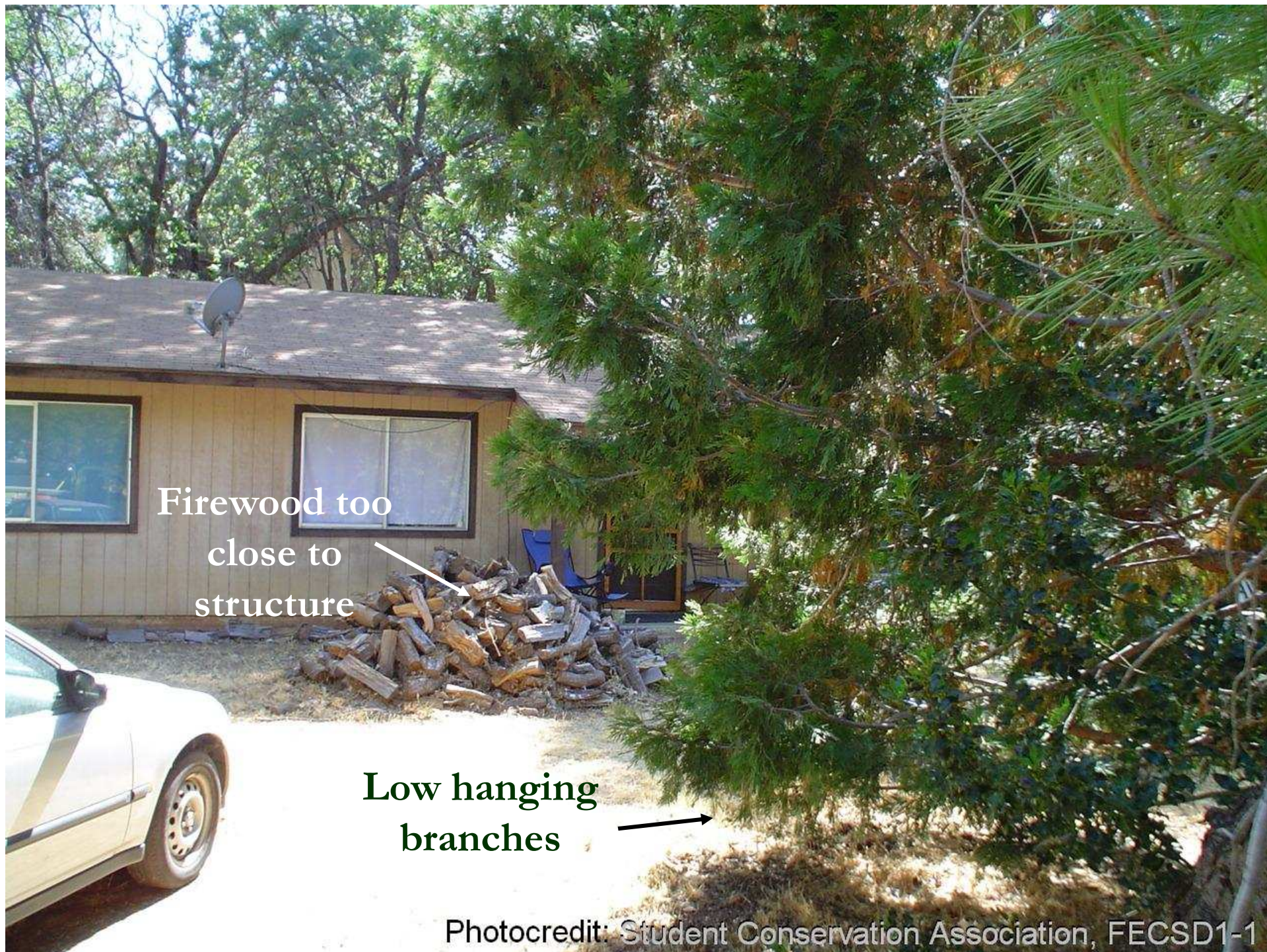
Dead material in
thick undergrowth

Firewood
under eaves

Photocredit: Student Conservation Association, FECSD1-1



Photocredit: Student Conservation Association, FECSD1-1



Firewood too
close to
structure

Low hanging
branches

Photocredit: Student Conservation Association, FECSD1-1



Photocredit: Student Conservation Association, FECSD1-1

WORK IN PROGRESS

Firewood too close to
house and propane
tank!

Ladder up to trim
overhanging
branches and
clear pine needles
from gutters

Nice clear
yard

Cut brush
waiting to be
chipped

Photocredit: Student Conservation Association, FECSD1-1

Defensible/Survivable Space

- Goals:
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Create sustainable, fire-safe environments for our homes by starting from the house out rather than from the wildland in.



- Community design
- Building design
- Landscape design
- Personal responsibility



Reminder: Home Design Features

- ✓ Class “A”, non-combustible roof assembly with edge protection
- ✓ Constructed of ignition-resistant materials
- ✓ Protected eaves
- ✓ Dual pane or tempered glass windows
- ✓ Fire-resistive landscape (well-maintained)

Why care?

**Alienation from
nature costs
lives and
property...**



increases the risks to our
families and the firefighters
we expect to help us...





... and threatens the
protection
and preservation of
nature for present and
future generations.

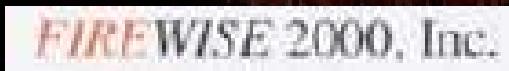




Living with Wildfire:

Reducing Property Risks, Habitat Losses, and Costs

Special thanks to:



**Business and
Ecology Consulting**