Hazardous Wildland Fuels Treatment – Projects & Performance

(Colorado Wildland Fire Conference - April 19, 2017)

Panelists:

Steve Douglas – Mitigation Specialist, Mountain Park Environmental Center & President, Beulah Fire Protection and Ambulance District

Keith Worley – Forester/Arborist/ Mitigation Specialist, *Forestree Development, LLC*

Dennis Page – Fire Management Officer, Pike-San Isabel Nat. Forest, San Carlos District

Please hold your questions until the end of the panel presentation. Thank you.

Fire

Fire is a natural component of the ecosystem.

Many plant species depend on it to regenerate.

Without fire, forests become overgrown, unhealthy and overloaded with dead/dry material ... increasing the potential for catastrophic fires.

Man has suppressed fire for last 100+ years, but those efforts have been less effective in recent years.

Hazardous fuels mitigation is one means to reverse that trend.

THREE GOALS OF WILDLAND FIRE MITIGATION ARE TO MANAGE WILDLAND ***FUELS*** SUCH THAT:

1. Fires burning on the ground do not spread to the treetops (crowns);

2. Fires burning in the crown drop out of it before reaching structures and critical roads; and

3. Fires that start in structures do not easily spread to the wildland, and visa versa.

CREEPING SURFACE FIRE INSEAD OF RAGING CROWN FIRE … PRODUCTIVE

The overall goal of mitigation is to modify wildland fire behavior and enhance future suppression efforts by returning the environment to a HEALTHY FOREST condition ... even if we are only able to treat a portion of the forest environment.

Terminology

- Firebreak – a strip of land in which all vegetation is removed down to bare mineral soil, e.g. a road or “dozer” line 20+ feet wide, or “hand line” which may only be a few feet wide.
- Fuelbreak – a strip of land of varying width in which fuel density is reduced to improve fire control opportunities and forest health, e.g. shaded fuel breaks and defensible spaces.

NOTE: A ***shaded fuelbreak*** may include firebreaks and defensible spaces.

How can Shaded Fuel Breaks and Healthy Forests be Alike?

- Plant density reduced and crown spacing increased, with a mosaic of woods and clearings.
- Ladder fuel and surface fuel accumulations minimized.
- Diversified vegetation, both in terms of species and age.
- Occasional standing dead habitat trees.

Thinning … Where to Start?

THINNING – HARD DECISIONS MADE EASIER

- **Focus on what you want to <u>save</u>** ... then decide what needs to go to accomplish that
- The first priority is usually saving homes and critical infrastructure
- Next priorities involve saving healthy, well developed plants ... with a diversity of both age and species
- These decisions are similar whether we are creating defensible space or a Shaded Fuelbreak.
- Woven though all of these decisions must be the **protection of our firefighters**.

EXAMPLE:

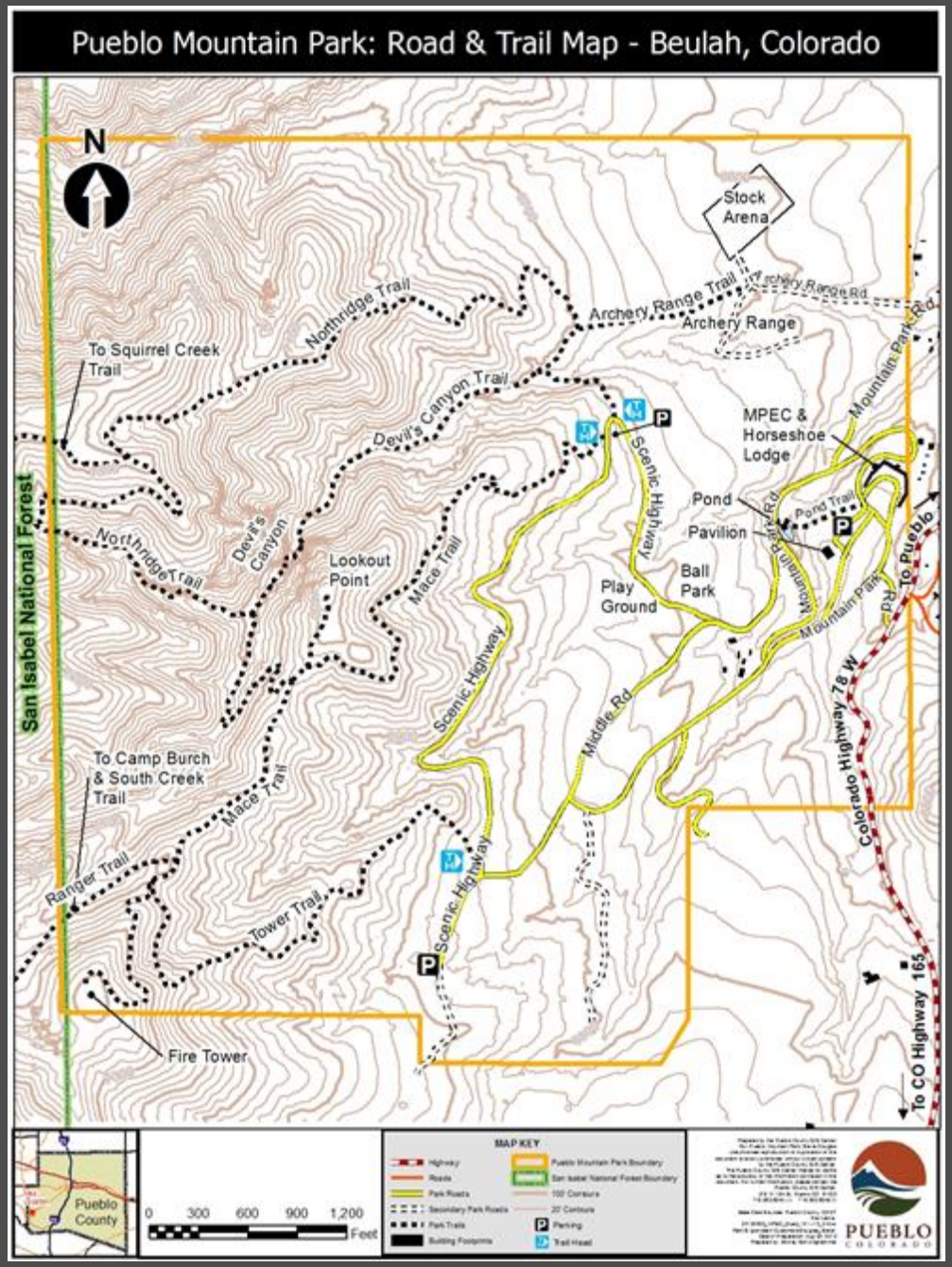
The Pueblo Mountain Park **HEALTHY FOREST/SHADED FUEL BREAK PROJECT**, located in Southwestern Pueblo County - Beulah, Colorado

PLANS & GUIDELINES – GENERAL TO SPECIFIC
(Team approach essential throughout)

- Pueblo County ***Natural Hazards Mitigation Plan*** *(2017 update)*
- Southwest Pueblo County ***Community Wildfire Protection Plan*** *(2006, with Park "Appendix D" in 2012)*
- Pueblo Mountain Park – ***Forest Stewardship Plan*** by John Grieve, Colorado State Forest Service *(2002)*
- ***Fuelbreak Guidelines for Forested Subdivisions & Communities*** by Frank C. Dennis, Colorado State Forest Service
- Pueblo Mountain Park – ***Shaded Fuel Break Plan*** *(2010)*
- Pueblo Mountain Park – ***Prescribed Fire & Pile Burn Plans*** (under development)

Forest Stewardship Plan - Contents

- Geography ... location, terrain & climate
- Use ... historic & present
- Social & economic considerations
- Infrastructure
- Soils
- Forest inventory ... management units
- Wildfire hazards & risks
- Recommendations



PUEBLO MOUNTAIN PARK:

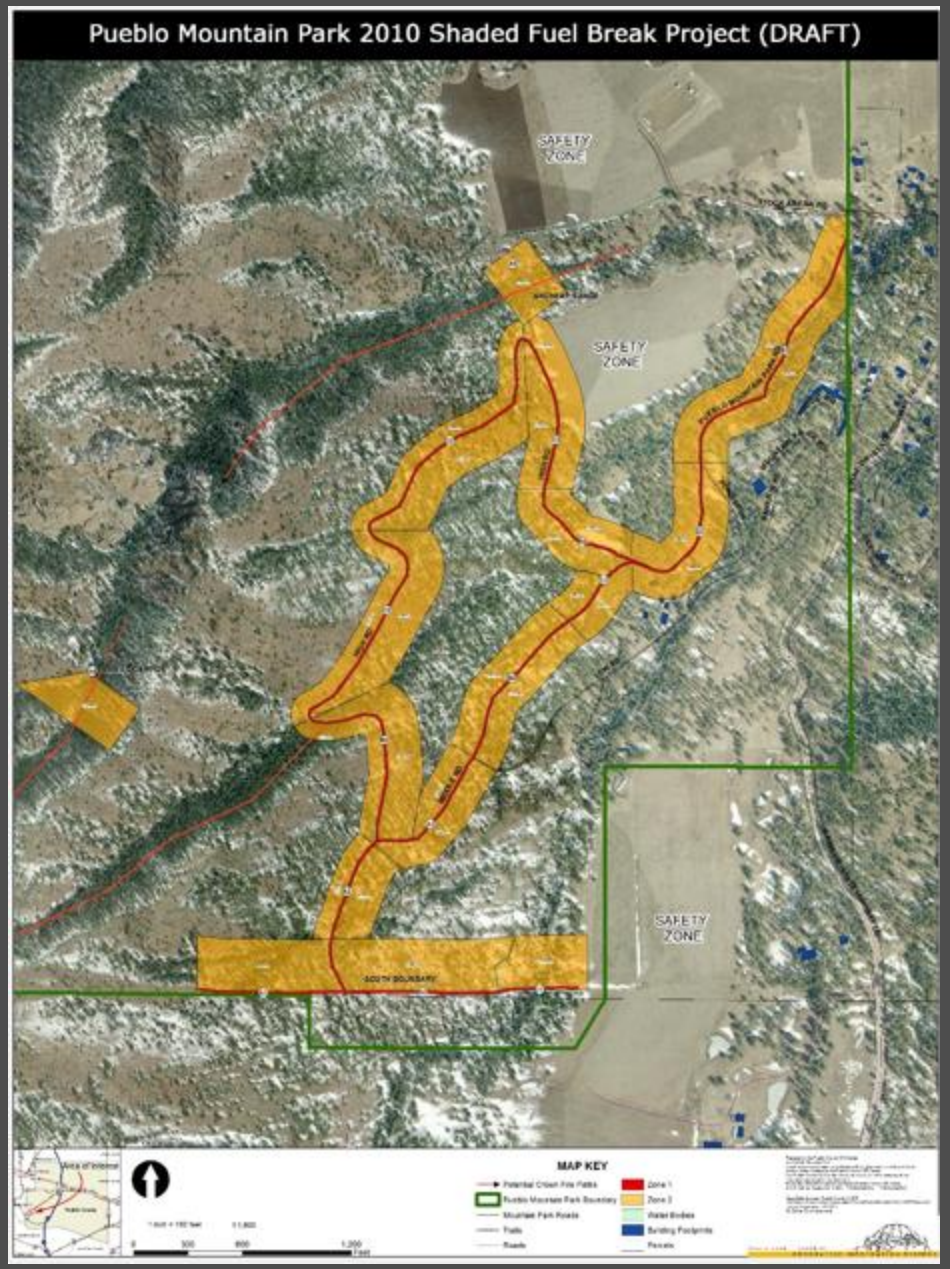
- 611 acres in the forested south end of the Beulah Valley, in the wildland-urban interface
- Bounded on the west by the San Isabel National Forest
- Owned by the city of Pueblo since 1921
- 3.0 miles of road and 4.9 miles of trail
- 30 established picnic sites
- 41 structures on the National Register of Historic Places, built in the 1930's as a WPA/CCC project
- Managed for Pueblo by the Mountain Park Environmental Center (MPEC) since July 1, 2008

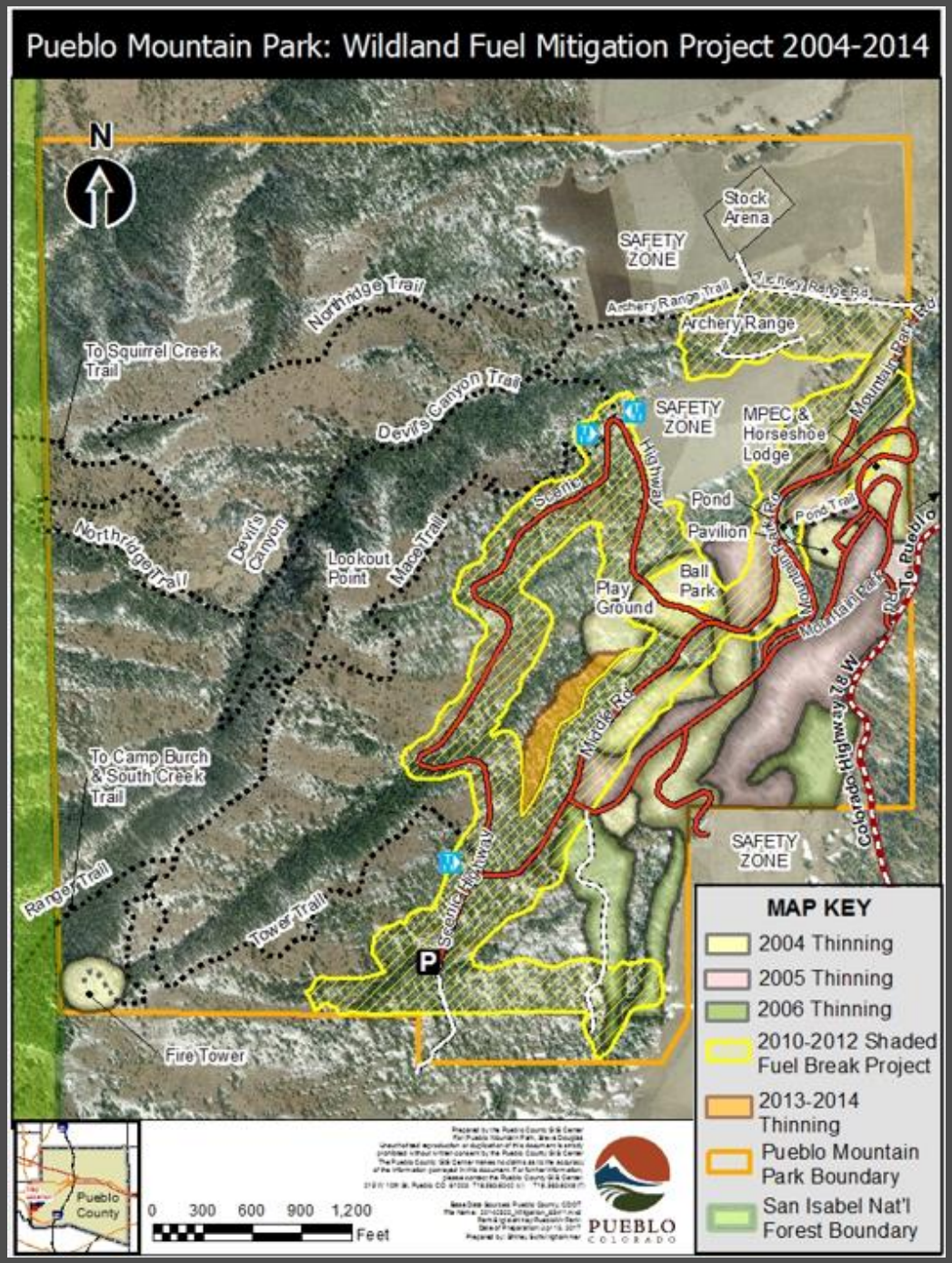
SHADED FUEL BREAK PLACEMENT

- Identify what is to be protected
  - Structures
  - Critical infrastructure (power lines, radio towers, etc.)
  - Watershed
  - Firefighters
- Identify sites where heavy fuel loading and topography could lead to intense wildland fire activity
- Identify sites with increased potential for human-caused fires
  - Roads & trails
  - Structures, campgrounds & picnic areas
- Identify starting point(s)
  - Existing roads
  - Natural anchor points (rocky areas, water bodies)

Pueblo Mountain Park - Shaded Fuel Break Project Goals

- ✓ Thin vegetation to a shaded fuel break standard, which is much like a healthy forest standard
- ✓ Create strategically located fuel breaks on key roadways, park boundaries and across hazardous fuel alignments to protect the watershed
- ✓ Thin hazardous fuels in areas frequented by the public – along roads and through picnic areas
- ✓ Establish **escape routes** for fire fighters
- ✓ Link escape routes to potential wildland firefighter **safety zones**
- ✓ Provide examples of healthy forest restoration
- ✓ Provide public Information & education





Hazardous Fuels Reduction 2002 – Present:

- **2002**, 300+ Ponderosa Pines with Mountain Pine Beetle removed
- **2004-2006**, various thinning projects
- **2010-2012**, 101 acre Shaded Fuel Break project
- Total area treated 2002-present = **182 acres**
- Ongoing tree thinning and regrowth (Gamble Oak) maintenance in treated areas

SHADED FUEL BREAK PROJECT
Initial Results:

- Project duration = 2 years
- 101 acres thinned
- 400 cords of firewood harvested
- 20,000 cubic yards of slash generated
- 2,556 5th Grade Students and others educated
- Total Cost = $190,000
  - $50,000 from grant funds (DOC *SWIFT* Crew contract)
  - $140,000 in soft/in-kind match, including 5,746 hours worked
- Rework of area continues
  - Additional thinning
  - Maintenance of regrowth, especially Gamble Oak

WHAT WAS DONE WITH THE MATERIAL?

- LOGS
  - Firewood
    - Two biomass boilers heat the Horseshoe Lodge at Pueblo Mountain Park … beneficially using 30-40 cords of wood/year)
    - Excess firewood was sold to the general public
  - Erosion and traffic control
- SLASH
  - 70% gathered and placed in 500+ small piles, which were safely burned under winter/spring snow conditions; and
  - 25% was chipped, with the chips mostly broadcast.
  - NOTE: A small portion of the slash was broadcast, but that was kept to a minimum because the surface fuel load was already high. In future, we hope to broadcast the majority of the slash and burn it in prescribed fires.

PARTING THOUGHTS:

- ✓ Much has been done in the past 15 years to reduce hazardous fuels in the Pueblo Mountain Park and to return about 30% (182 acres) of it to a **healthy forest** condition.
- ✓ Labor intensive treatment of another 20% of the Park is realistic, but the remaining 50% will likely not be treated ... other than by naturally occurring wildland fire. (**Support your local fire department!**)
- ✓ **Maintenance** of treated acres is essential for forest health.
- ✓ **Prescribed fire** is a tool that needs serious consideration for ongoing maintenance of treated acres.
- ✓ Exporting **lessons learned** in the Park to areas outside it is essential to forest health, watershed conservation and public safety.
- ✓ Continuity of this effort is essential and the Mountain Park Environmental Center's emphasis on **public education** (especially of **our youth**) is key to that path forward.

Partnering for Private Land Fuel Treatments

Keith Worley, Forester, Arborist, Wildfire Mitigation Specialist, and Land Development Consultant

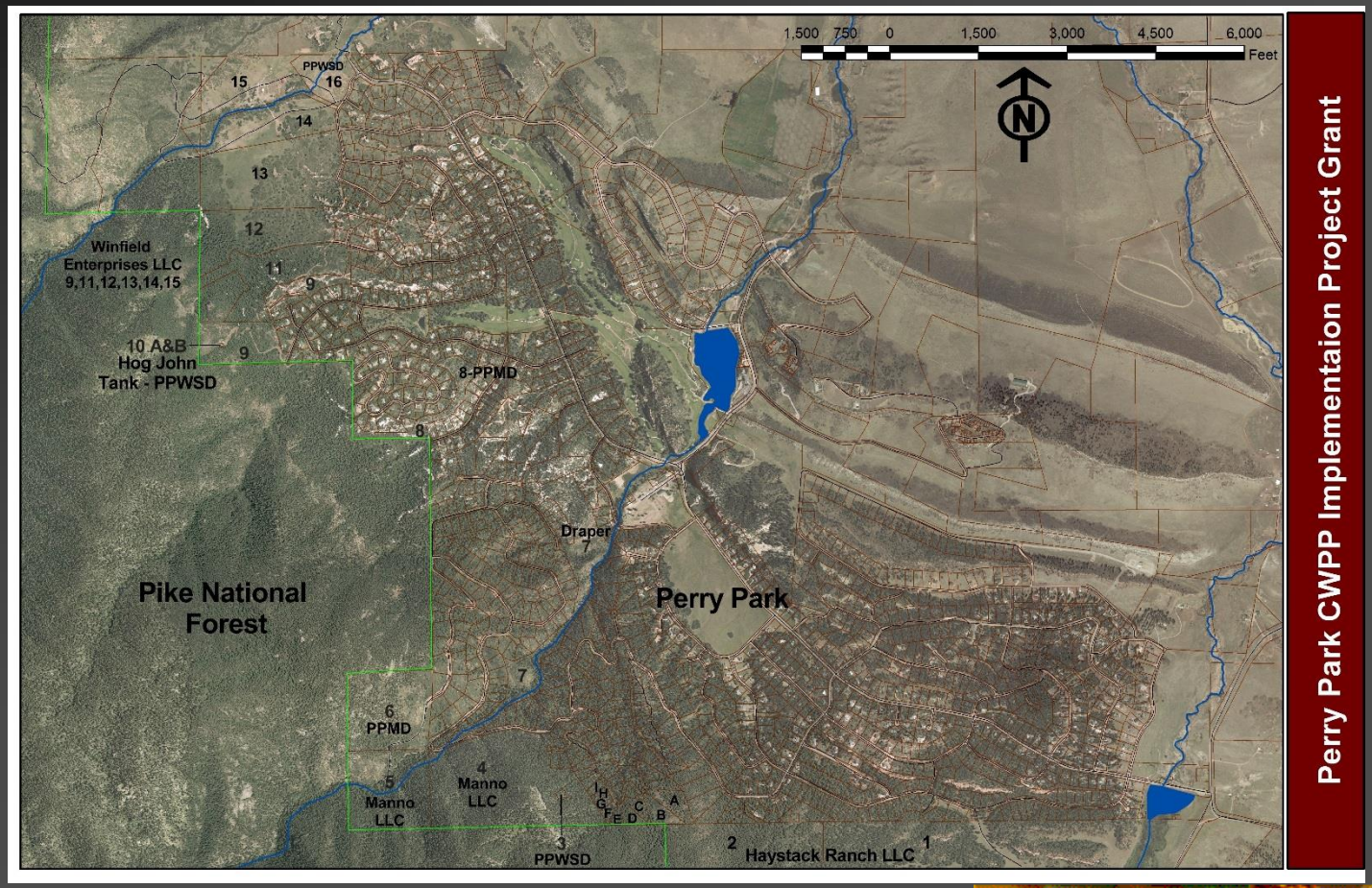
My objectives for fuel treatments:

- Shaded fuel breaks should:
  - Be an extension of residential D-space to create a “Home Ignition Zone”.
  - Provide a safe working/decision space for firefighters.
  - Improve effectiveness of other firefighting resources, such as:
    - Aerial use of water or slurry;
    - Use of fire to fight fire (blacklining, burning out, backfiring, etc.).

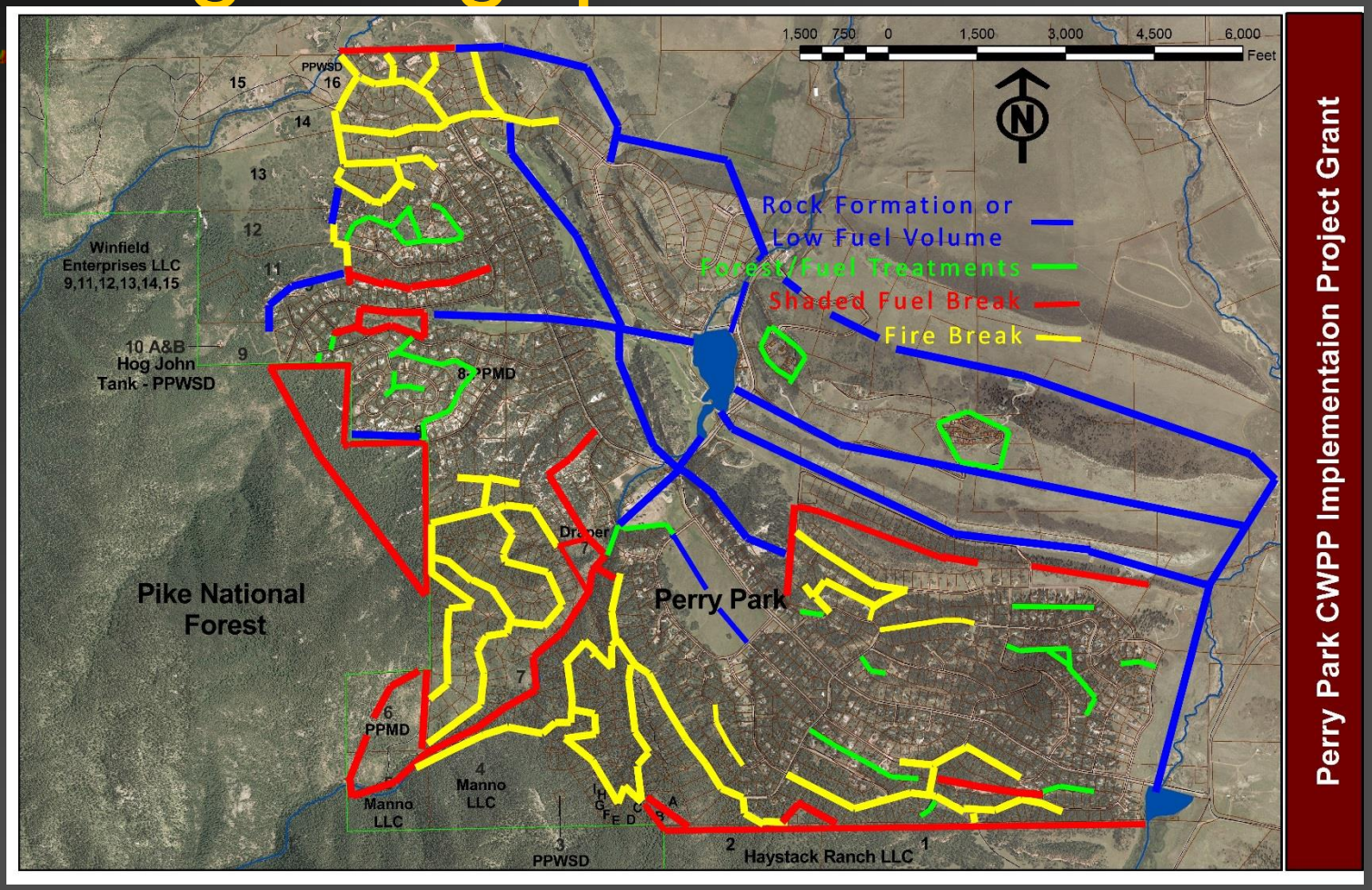
Home Ignition Zone

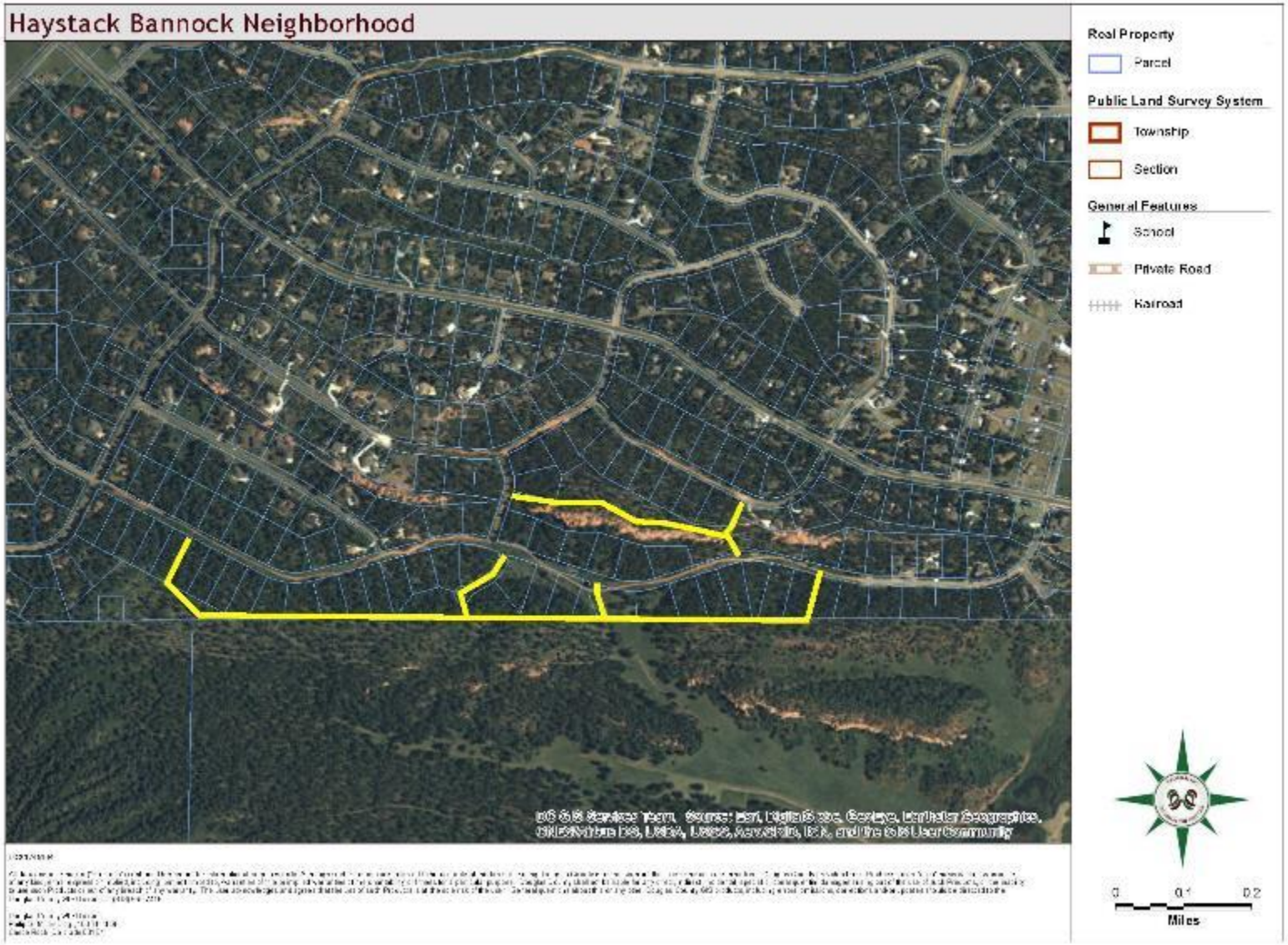
Good outcomes? Or, bad?

Perry Park Ranch



Finding the gaps in our defenses?




Haystack Bannock Neighborhood
Real Property
Parcel
Public Land Survey System
Township
Section
General Features
School
Private Road
Railroad
0
0.1
0.2
Miles

Shaded Fuel Breaks

SFB as an extension of the HIZ

Aerial View of Haystack SFB

Aerial View to West

Before and After

Mitigation by man and machine

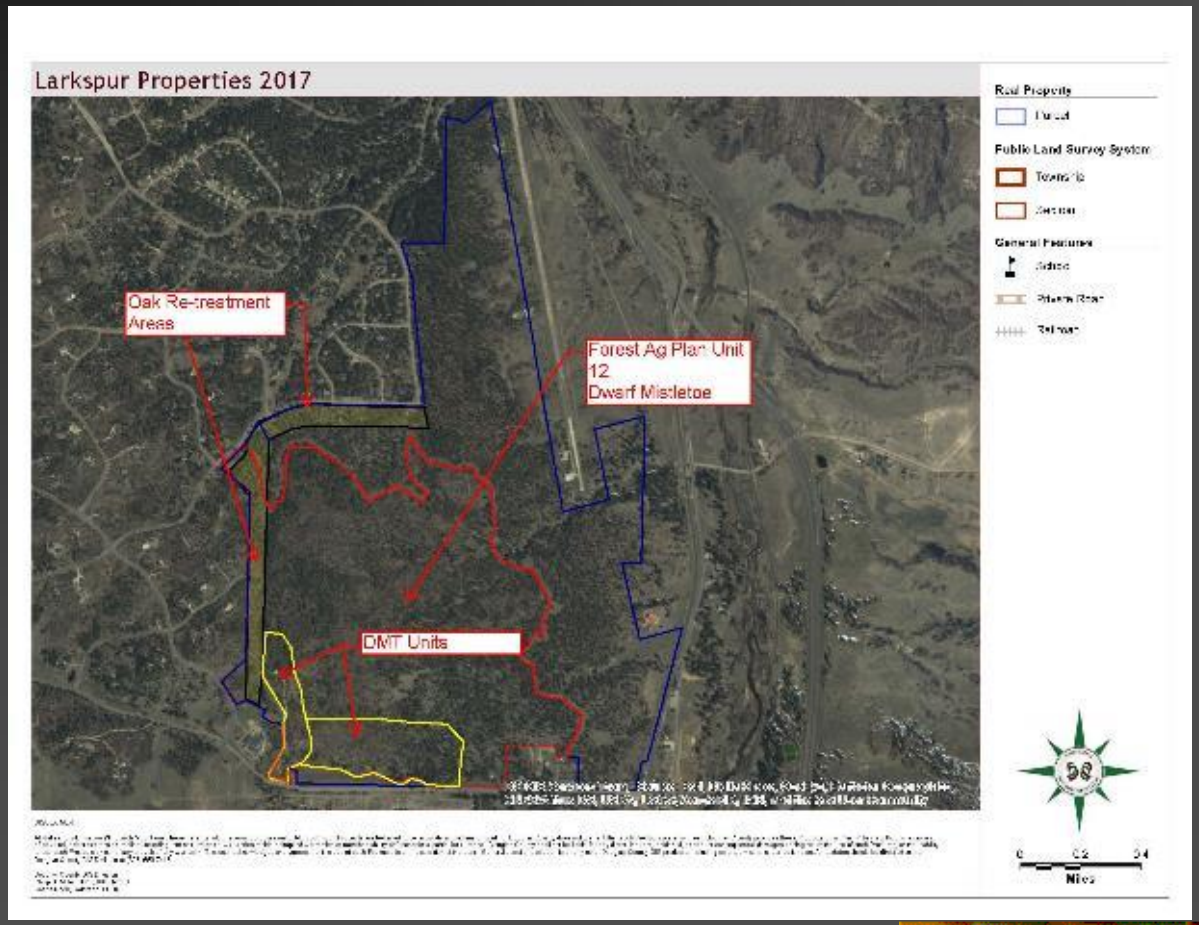
Mastication in the back yard

Saw crews on steep slopes

Mastication used to treat slash


Bobcat

Private property projects



Handy Tools

Before

After mechanical treatment following CSU 6.311 guidelines.

Brush SFB

Latest weapon: Tracked Chippers


08/19/2009

Mechanical Fire in back yards

Demo Site

First entry with masticator

Add Daffodils and Deer

Maintenance

- Plan ahead.
- Who will do maintenance?
- How?
- Maintenance cycle:
  - Every 3-5 years for Gambel oak.
  - Mechanize as much as possible.

Pine/Oak SFB mowed every 3 years.


T300
Bobcat
Brushcat

Effectiveness of Shaded Fuel Breaks

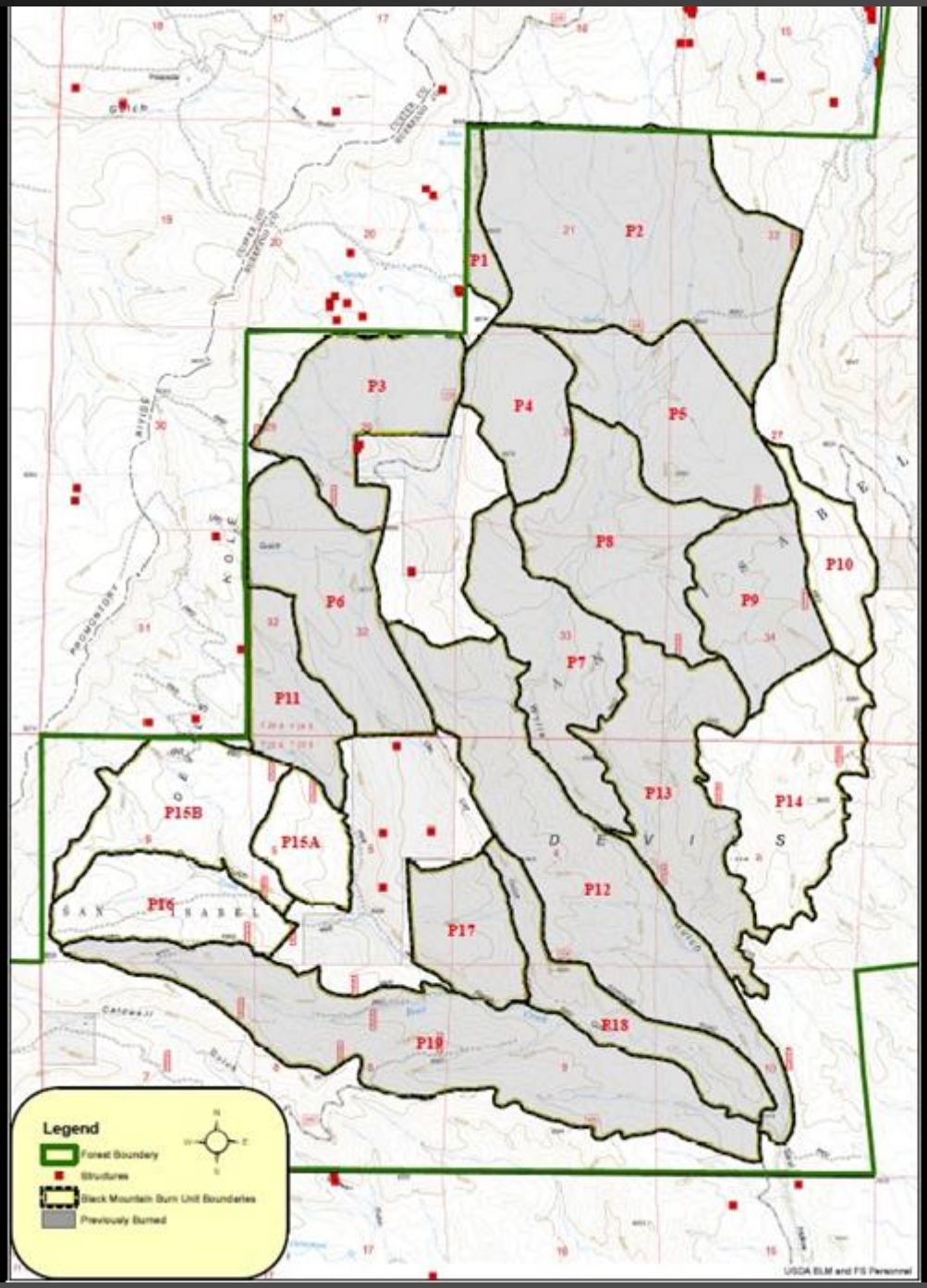
Metrics are based upon what the intent of how the shaded fuel break was initially designed

- Modify potential fire behavior
  - Reduce potential CFA (reduces spotting)
  - May increase ROS (incr. wind, temp., change to grass)
- Provide ingress/egress for firefighters and public
- Allows for rapid line completion thru burnout
- 3 R's (Rivers, Roads, Ridges)

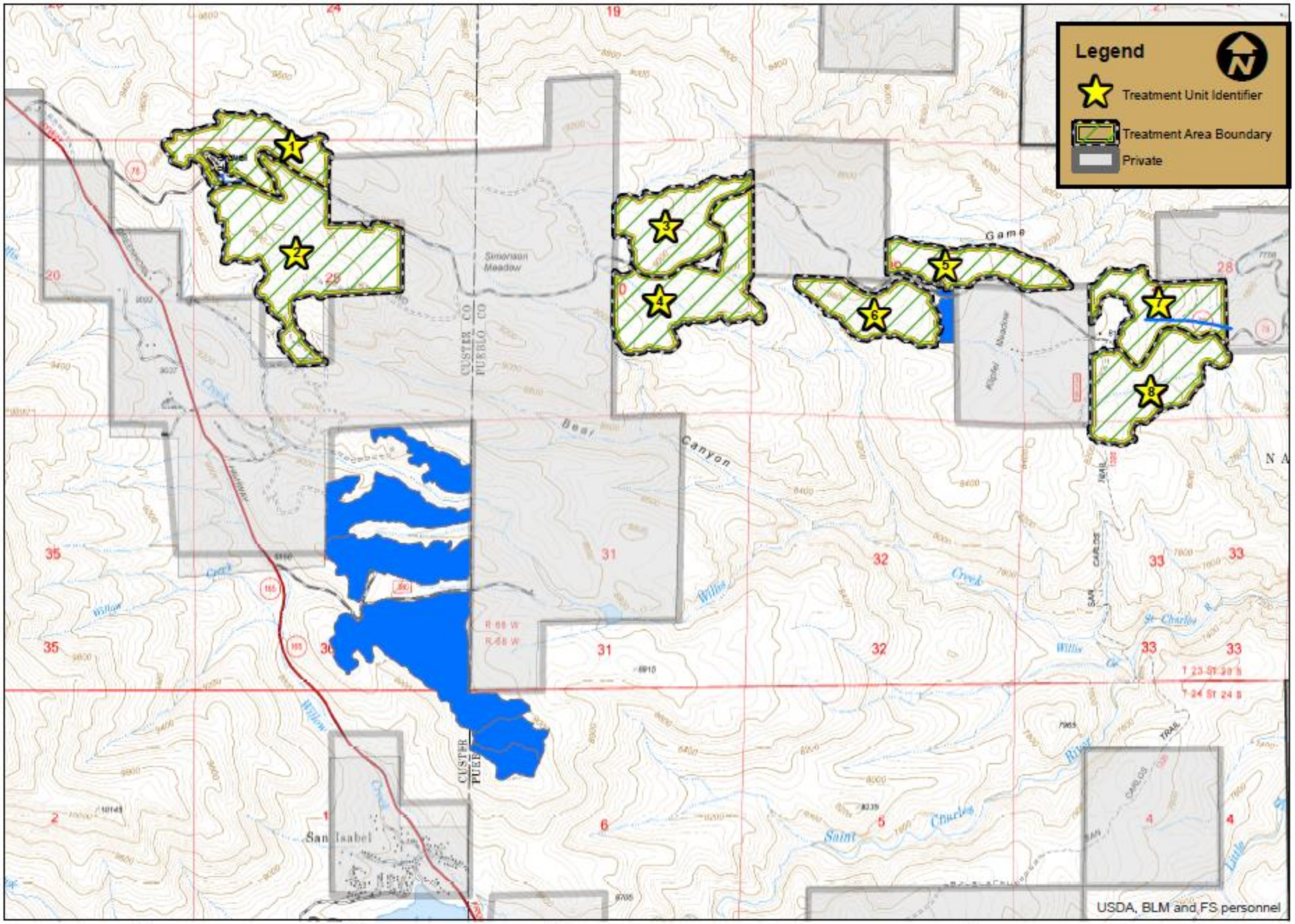
Factors in success

- Design (spacing, pruning, surface fuels)
- What are you protecting (i.e., values)
- Maintenance
- How are they used (stand alone vs. proactive)
- Details are important
  - Pruning
  - Leave tree type
  - Residual spacing


So Why Even
Bother?


P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
P12
P13
P14
P15A
P15B
P16
P17
P18
P19
Legend
Forest Boundary
Structures
Black Mountain Burn Unit Boundaries
Previously Burned
USDA BLM and FS Personnel

FY16 San Carlos Hand Cut / Pile - Units 1-8

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Factors in success

- Design (spacing, pruning, surface fuels) and expected weather
- Maintenance (with fire or mechanical)
- How are they used (stand alone vs. proactive)
  - **Both is best**
- Plan on the fire spotting over fuel break (retardant, crews)