Fall Signatories Meeting

November 1, 2019
Albuquerque, NM

RIO GRANDE WATER FUND

A Wildfire and Water Source Protection Project

Objectives

- Learn about the current status of the Mexican Spotted Owl Injunction
- Hear about how Effective storytelling, and action, requires patience and time
- Understand the USFS framework for mapping and evaluating riparian and aquatic systems
- Review 2019 Rio Grande Water Fund Accomplishments
- Hear stories about on-the-ground projects
- Network

Mexican Spotted Owl

September 12, 2019: US District Court

- Issued injunction on USFS "Timber Management Actions" due to risk of irreparable harm to Mexican Spotted Owls from inadequate population monitoring.
- Until the conclusion of a formal consultation between the USFS and the USFWS and the issuance of a new Biological Opinion.

Mexican Spotted Owl

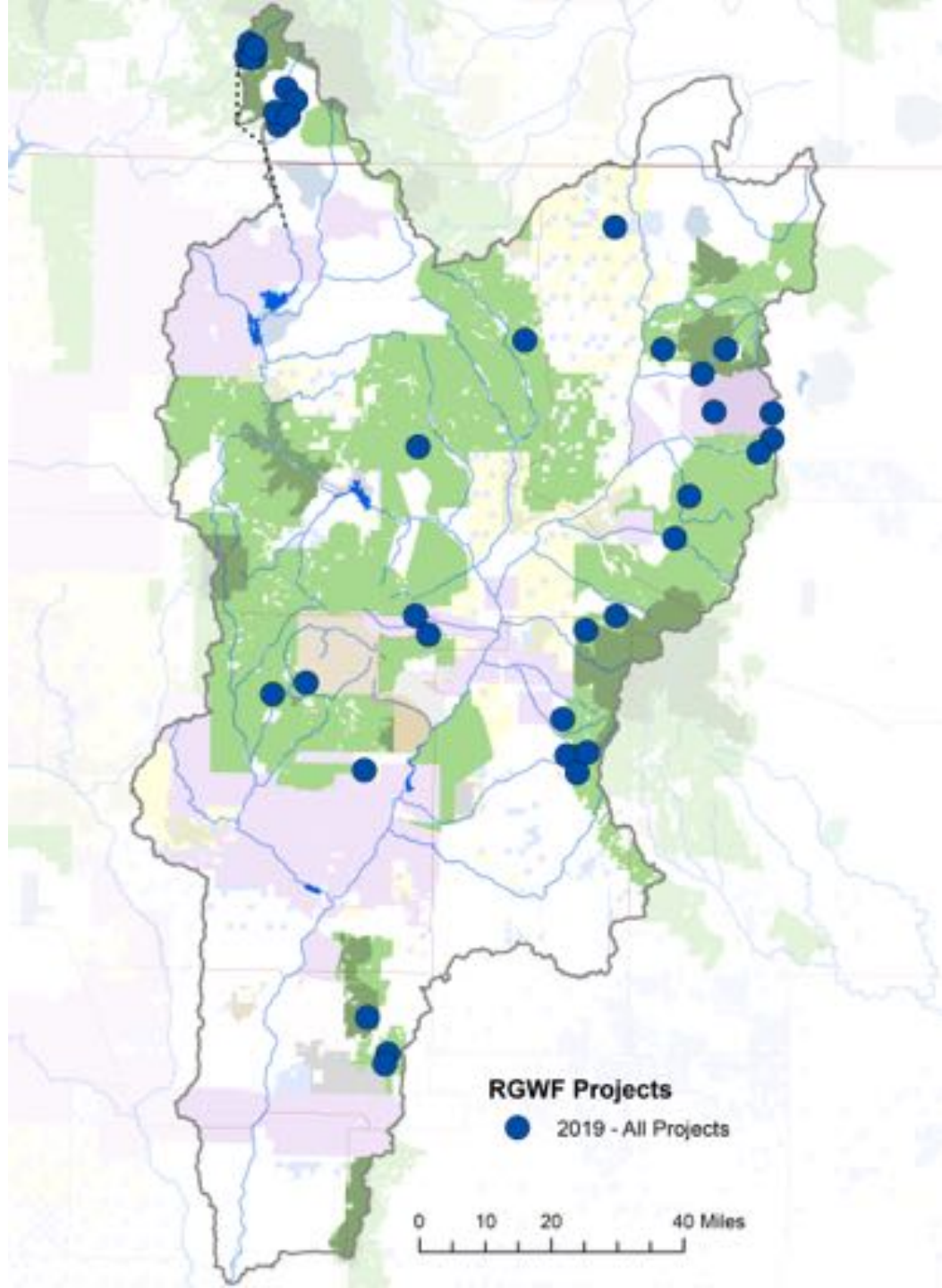
September 30, 2019 Modification

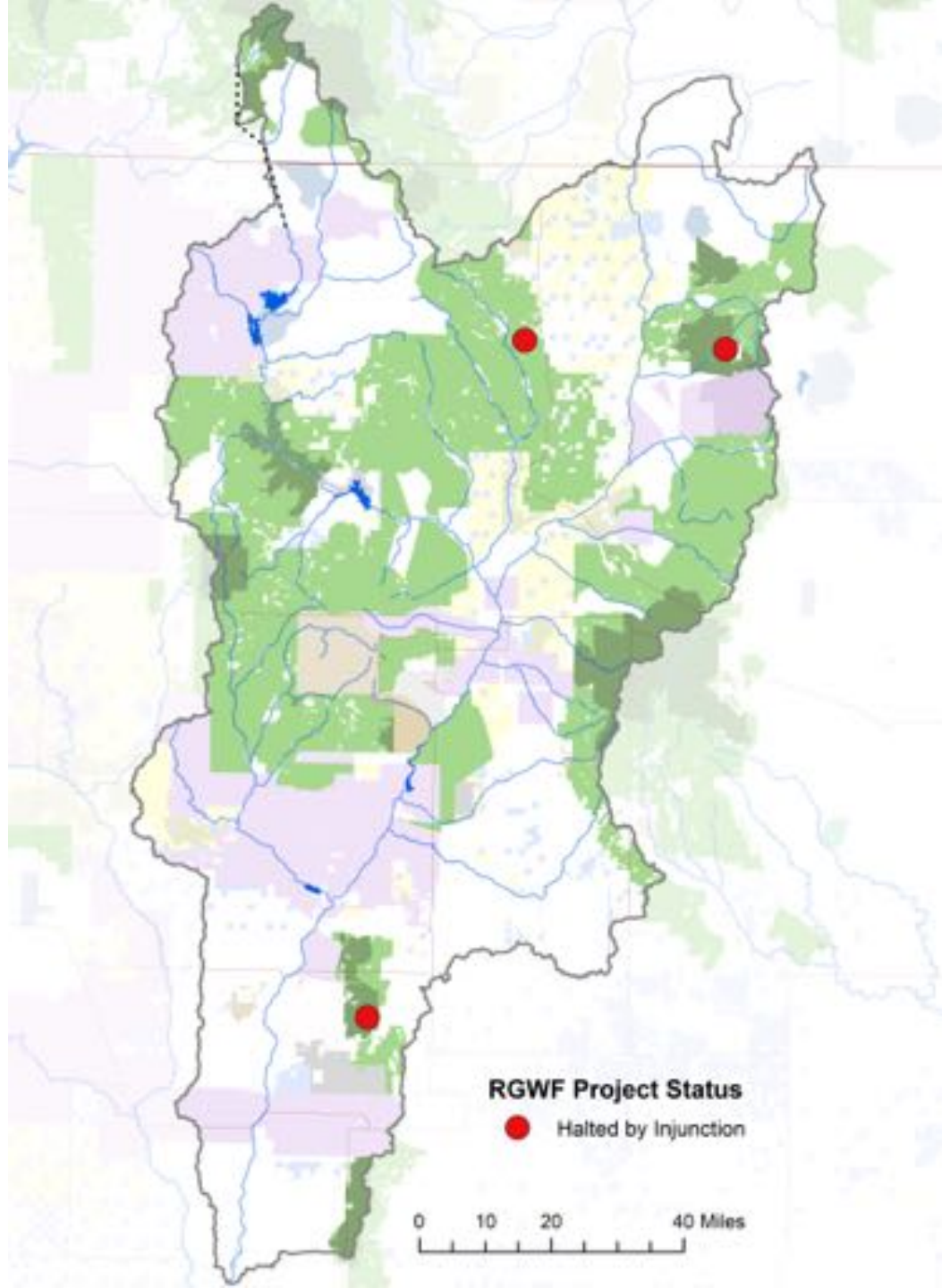
- Court Issues Modification to Order: Allowing Cutting and collection of personal fuel wood.

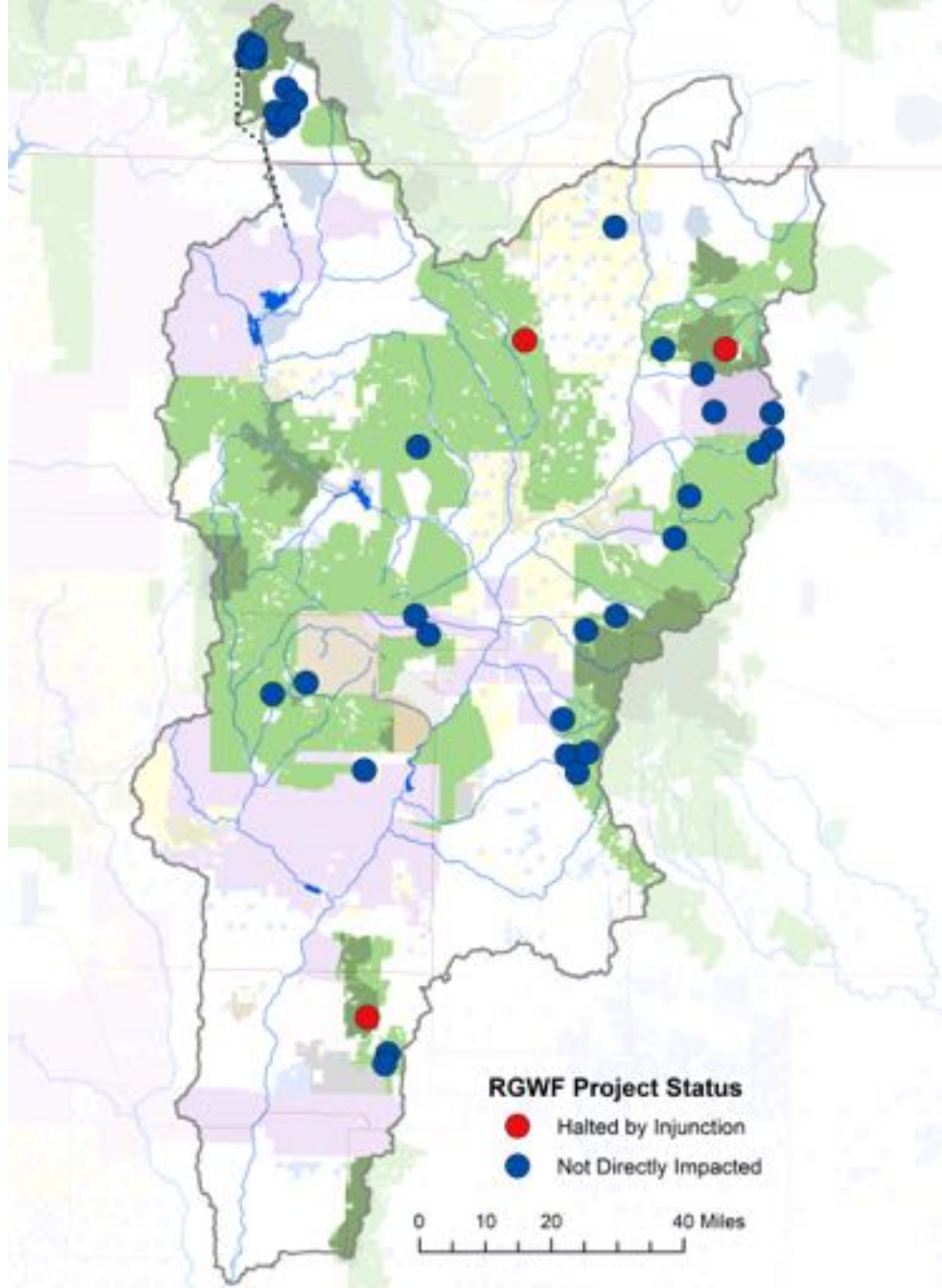
Mexican Spotted Owl

October 21, 2109: Joint Stipulation Filed

- Allowing Projects outside of MSO Protected Activity Centers, Critical Habitat or Recovery Habitat
- Allowing prescribed burning projects
- Commercial firewood gathering and most personal use harvesting


RGWF Projects
2019 - All Projects
0
10
20
40 Miles


RGWF Project Status
Halted by Injunction
0
10
20
40 Miles


RGWF Project Status
Halted by Injunction
Not Directly Impacted
0
10
20
40 Miles

Rio Grande Water Fund Vision

Support, develop, and maintain healthy forests and watersheds which provide reliable supply of high-quality water to the Rio Grande and other benefits to New Mexico.

Woodland into moonscape from LCF, Medio/Sanchez mesas

Healthy Forests are essential for Mexican Spotted Owls

Healthy Forests Can Generate Economic Development and Job Creation

Proactive Management

Accelerate four strategies to meet the challenge and scale of severe wildfire:

RGWF PRINCIPLES *Necessary to Achieve our Vision*

- Collaboration

RGWF PRINCIPLES *Necessary to Achieve our Vision*

- Collaboration
- Community engagement

RGWF PRINCIPLES *Necessary to Achieve our Vision*

- Collaboration
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- Protect wildlife habitat

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- Support local economies

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- Protect wildlife habitat
- Support local economies
- Science shapes actions

RGWF PRINCIPLES *Necessary to Achieve our Vision*

- Collaboration
- Community engagement
- Protect wildlife habitat
- Support local economies
- Science shapes actions
- Multiple partners in multiple jurisdictions

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Weathering the News Cycle

Laura Paskus

Southwest drought desiccates fish before farmers

■ Agencies let Rio Grande and Pecos rivers dry up despite minimum-flow agreements

Cracked soil puckers around the edges of hot, shallow pools. Dead carp and buffalo fish lie strewn across the river channel. Some are picked apart by birds, some are dragged away by coyotes, others just decompose. And each day, as the dry New Mexico wind shaves away at the pools, the smell of rotting fish grows stronger.

It doesn't sound like ideal habitat for the Rio Grande's endangered silvery minnow, but it'll have to do for now.

Since early June, U.S. Fish and Wildlife Service employees have been working on the "Rio Grande highway" near Socorro, N.M., a seven-mile stretch of dried-up river. Salvage crews net minnows from the isolated pools, truck them upstream, then release survivors into the Rio Grande at Albuquerque. There is irony in their toil: Only 100 yards away, water for downstream irrigators flows out of the river through a conveyance channel. It wasn't supposed to happen this

diverted into the river from the San Juan and Chama rivers. The state, the city of Albuquerque, farmers and even the Bureau itself continue to claim that the federal government does not control those waters.

water, agreements or not.

This year, not only did th violate the minimum flow req ments, it didn't have enough in the conservation pool to ke river from drying. In June, a river had already dried near the City of Albuquerque lease agency 30,000 acre-feet of wat it plans to send downstream t minnow. It's a temporary fix servationists say won't help th now in the long run.

"Because it's so dry, it's ev tionable that if the water were (from upstream reservoirs) it make it the 100 to 200 miles d stream," says Kara Gillon, a w lawyer for Defenders of Wildli

The Santa Fe-based Fores Guardians, which has filed sui

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USFS Riparian-Aquatic IMA

Judith Dyess and Jack Triepke

USDA Forest Service,
Southwestern Region

Outline

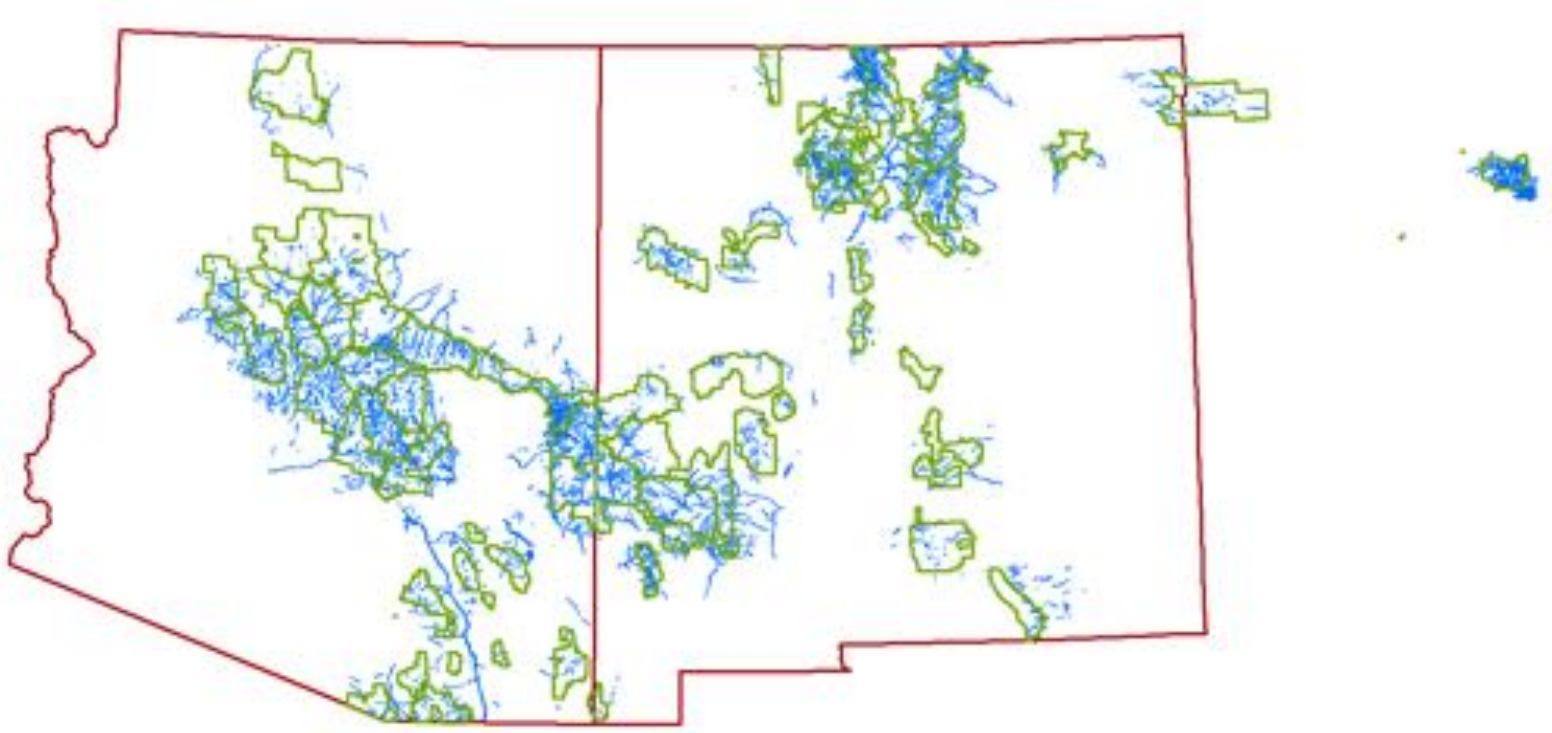
- IMA overview
- RMAP framework
- Mid-level existing veg mapping + aquatic-riparian inventory
- NMED-NHNM mapping collaboration (NM Rip Map)
- Desired conditions
- Analysis example
- Open Range Consulting – Earth Sense Technology

IMA overview

- Assessment and environmental analysis
  - Riparian-Aquatic Ecosystem Strategy (desired conditions)
  - Ecosystem Analysis Framework (project)
- Information sources
  - RMAP framework
  - Riparian Existing Veg mapping (REV)
  - Aquatic-Riparian Inventory (ARI)
  - Open Range Consulting (ORC)

INDICATORS	RIPARIAN EXISTING VEG MAPPING (REV)	ORC MAPPING	AQUATIC-RIPARIAN INVENTORY (ARI)	FIELD INVENTORY/ SURVEY (e.g., NMRAM,
Seral state proportion	√			
Woody regeneration	√	√*		
Riparian distribution, abundance	√	√*		
Plant functional group diversity		√*		
Stream sediment balance			√	
Stream cover of vegetation			√	√
Stream bank features, stability			√	√
Stream incision			√	√
Stream channel type			√	√
Stream sinuosity			√	√
Stream substrate			√ ?	√
Channel form, embeddedness			√ ?	√
Native species				√
Invasive species diversity				√
Macroinvertebrate diversity				√
* - Includes temporal analysis				

RMAP Framework



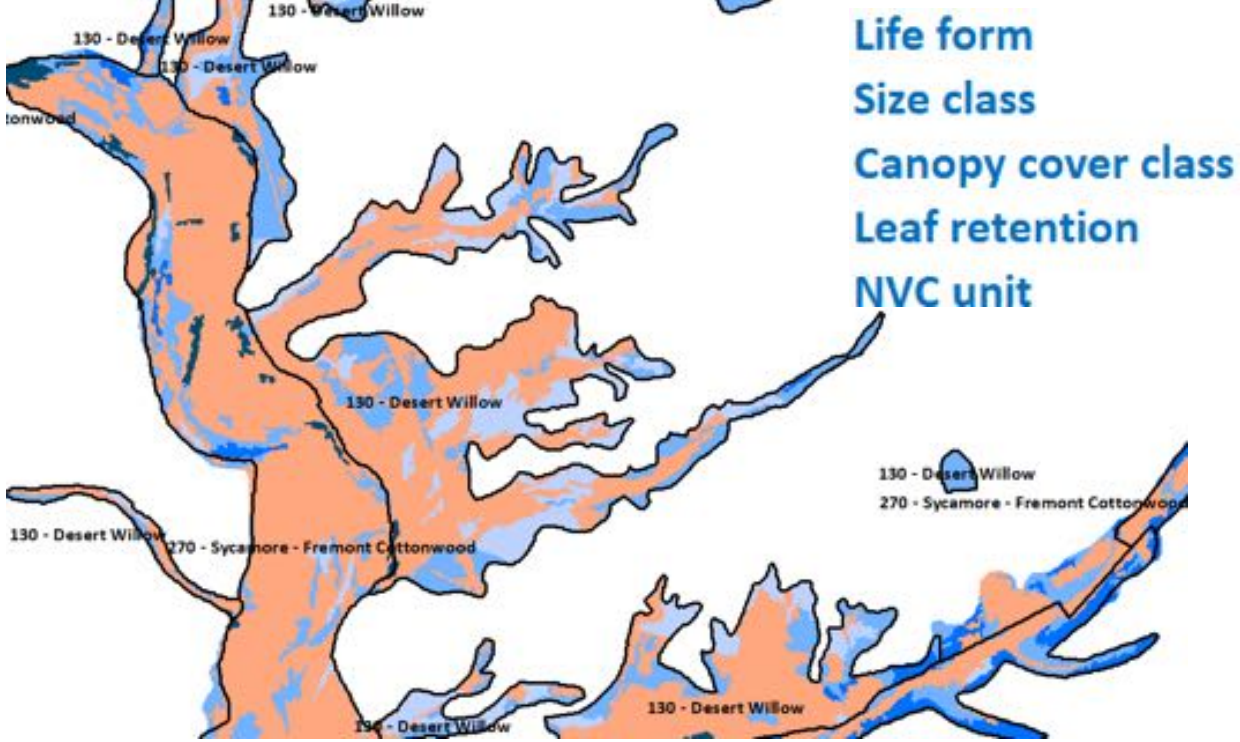
Ecological Response Unit	ERU Code
Herbaceous (wetland)	190
Desert Willow Group (DWG)	
Desert Willow	130
Oak / Desert Willow	250
Little Walnut / Desert Willow	360
Cottonwood Group (CWG)	
Cottonwood / Hackberry	160
Fremont Cottonwood – Oak	170
Fremont Cottonwood / Shrub	180
Narrowleaf Cottonwood / Shrub	230
Rio Grande Cottonwood / Shrub	260
Sycamore - Fremont Cottonwood	270
Elm - Eastern Cottonwood	310
Eastern Cottonwood / Shrub	320
Cottonwood-Evergreen Tree Group (CEG)	
Fremont Cottonwood – Conifer	150
Narrowleaf Cottonwood – Spruce	240
Montane-Conifer Willow Group (MCWG)	
Arizona Alder – Willow	110
Upper Montane Conifer / Willow	280
Willow - Thinleaf Alder	290
Walnut-Evergreen Tree Group (WEG)	
Little Walnut - Chinkapin Oak	210
Arizona Walnut	300
Ponderosa Pine / Willow	350
Little Walnut - Ponderosa Pine	370

REV Mapping

+

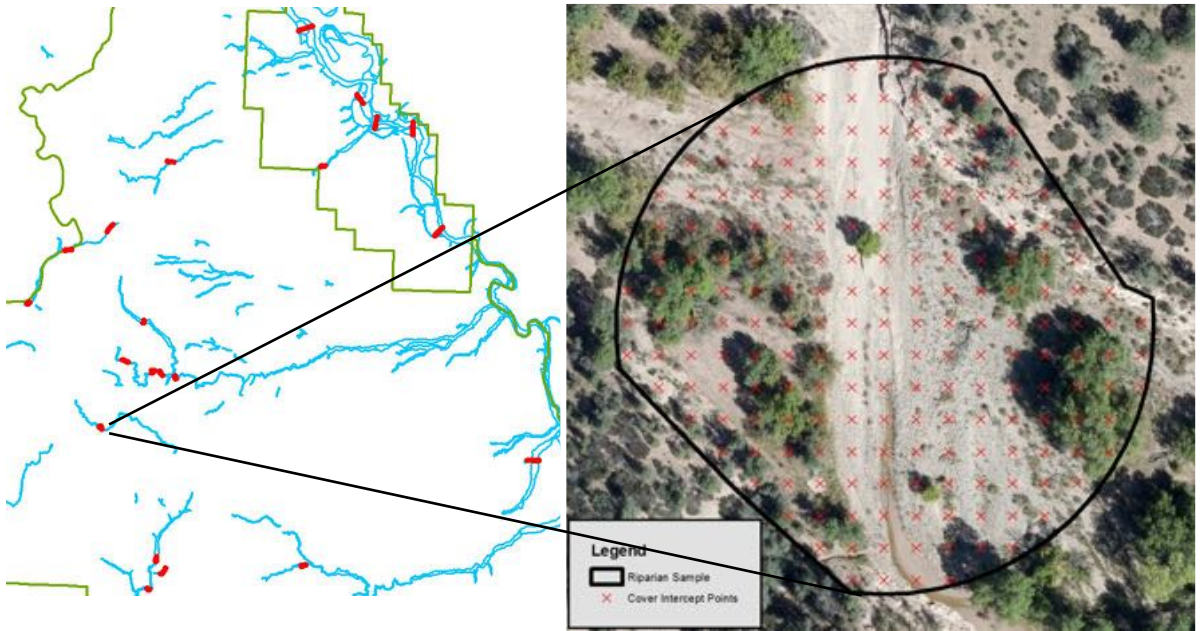
Aquatic-Riparian Inventory (ARI)

REV



Life form
Size class
Canopy cover class
Leaf retention
NVC unit

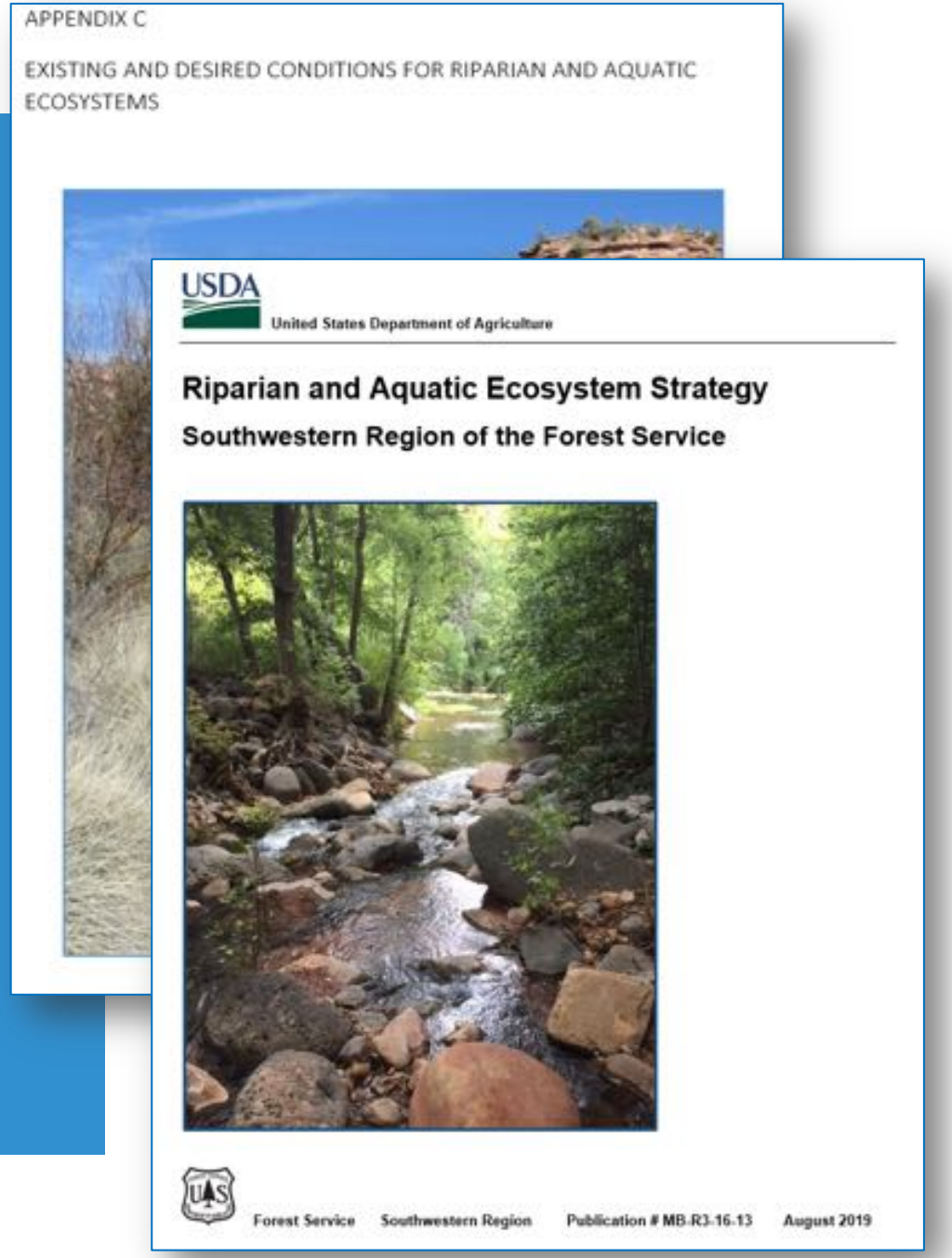
ARI



Cover values
Bank features
Stream features

Riparian-Aquatic Ecosystem Strategy –

Desired Conditions



RIPARIAN

- Fire regime
- Flood regime
- Riparian corridor connectivity
- Ecological status / functional group diversity
- Exotic woody species cover
- Seral state diversity
- Ground cover / bare ground
- Coarse woody debris (forested ERUs)
- Carbon stocks

AQUATIC

- Diversions density
- Floodplain hydrologic connectivity and channel dynamics
- Stream sediment balance
- Stream bank cover
- Habitat diversity, instream (pool runs), substrate
- Road crossings
- Channel elevation stability, incision
- Stream cover of vegetation, overhanging
- Stream changes, flow and temperature

Analysis Example – Santa Fe FireShed

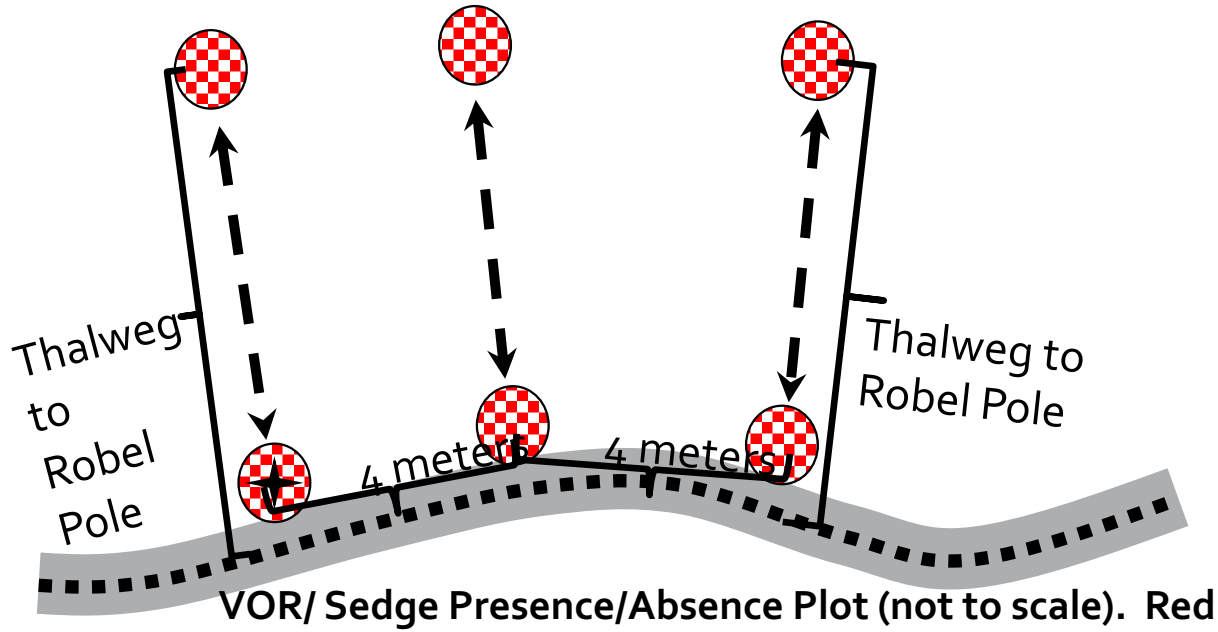
	CURRENT TREND FROM REFERENCE CONDITION	DEPARTURE FROM REFERENCE CONDITION	
• Flood regime	stable	high (reduced flood frequency)	
• Fire regime	stable	low (similar fire frequency, severity)	
• Seral state diversity		low to high (depending on type)	av
• Woody regeneration		moderate to high (depending on type)	av
• Coarse woody debris		low to high (depending on type)	st
• Exotic woody vegetation	low (overall amount is low)		av
• Rip. corridor connectivity	low (riparian habitat generally connected)	stable	
• Carbon balance		low to high (increased C depending on type)	away

New Mexico Meadow Jumping Mouse federal listing.

- Triggered by federal listing of the New Mexico meadow jumping mouse as endangered in June 2014.
- 102 miles, approximately 11000 acres of riparian habitat.
- Critical Habitat (CH) on Apache-Sitgreaves, Santa Fe and Lincoln National Forests.
- Primary Constituent Elements (PCEs) presented in the federal listing to support mouse habitat for food, cover, water and habitat connectivity.
- Based largely on soil moisture, presence on riparian vegetation and visual obstruction using a Robel pole

New Mexico Meadow Jumping Mouse federal listing.

- To ensure PCEs are being maintained an assessment and annual evaluation were developed collaboratively.
- 102 miles were assessed for the presence of PCEs in 2015.
- The annual evaluation is conducted on a subset of assessment locations which are randomly selected.



VOR/ Sedge Presence/Absence Plot (not to scale). Red and white checkerboard = Robel pole location. Star = data collection point (every 100 meters).

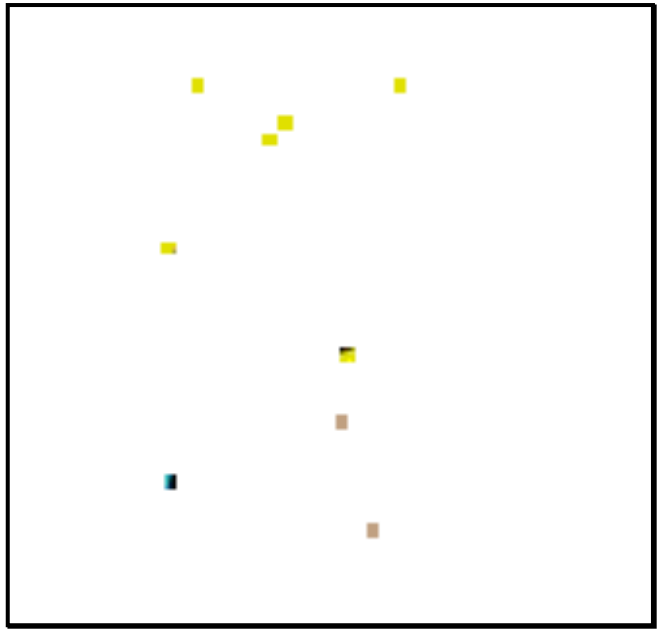
Open Range Consulting- Earth Sense Technology

- RMAP units containing CH include four: 110 Arizona Alder-Willow, 190 Herbaceous Wetland, 230 Narrowleaf Cottonwood-Shrub, 290 Willow-Thinleaf Alder.
- The “mouse” work however, does not address riparian condition or function.
- Needed information regarding condition and trend of riparian vegetation in CH to better inform management decisions.
- ORC EST- Ability to quantify riparian conditions by integrating remote sensing with ground sampling

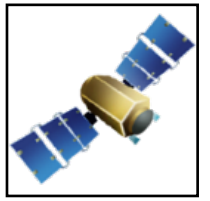
Conceptual EST

Open Range Consulting- Earth Sense Technology

Existing Data Sets



EST
Nested Imagery Approach



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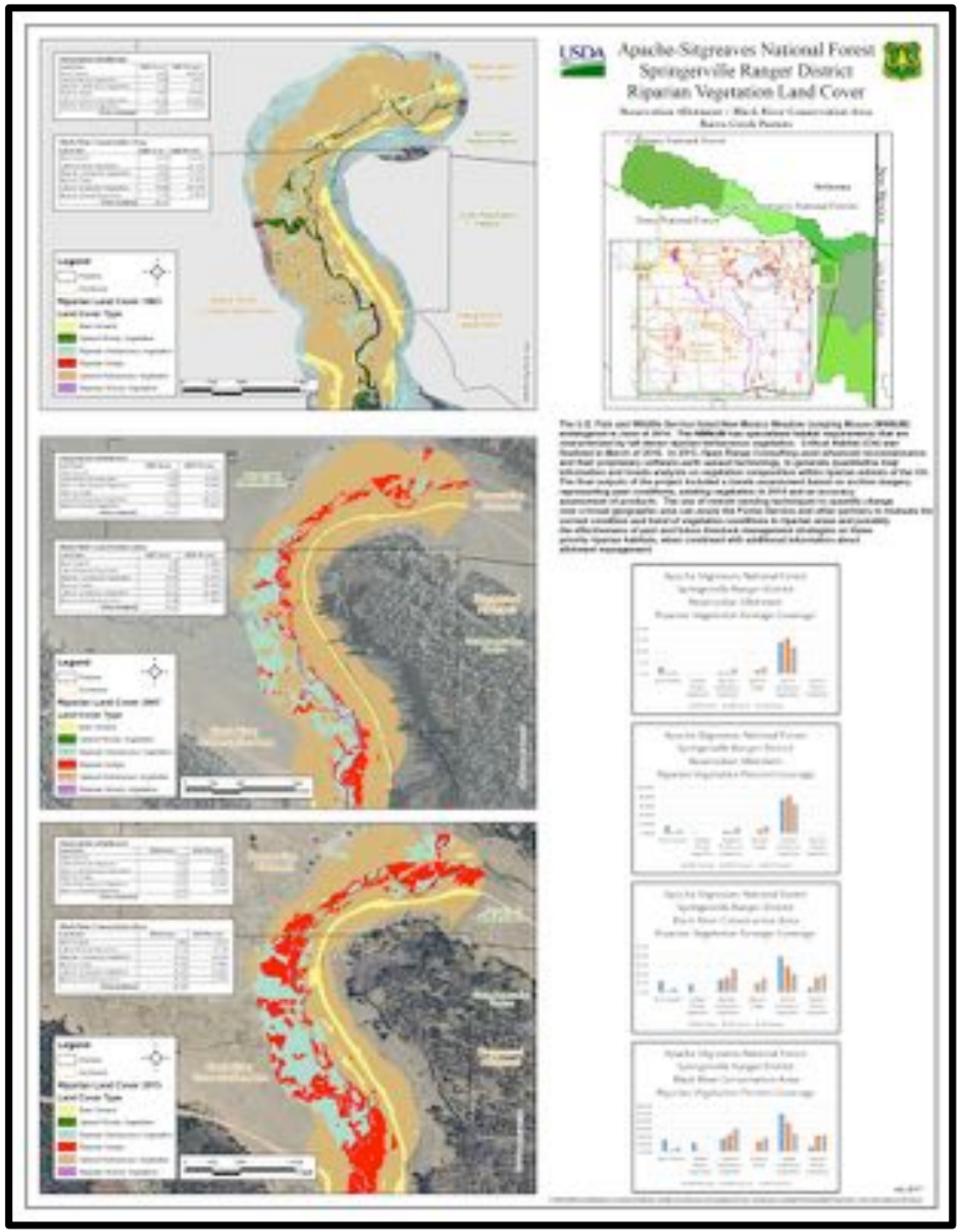
Condition & Trend Monitoring



Open Range Consulting- Earth Sense Technology

- Provides tabular data.
- Provides geographic based data.
- This can be analyzed focusing on sub features however, such as pastures or particular sections of a reach.
- Provides for better understanding of the entire riparian corridor with associated management.

Open Range Consulting- Earth Sense Technology

Thank you to the many who have assisted with this presentation

The many collaborators and sponsors:
University of Arizona,
New Mexico State University,
Open Range Consulting
Fish & Wildlife Service

Many USFS personnel including Jennifer Ruyle, Wendy Jo Haskins, Candace Bogart, GTAC staff, Bart Matthews, Bobbi Barrera, Don Vandendriesche, others

2019 "By the Numbers"

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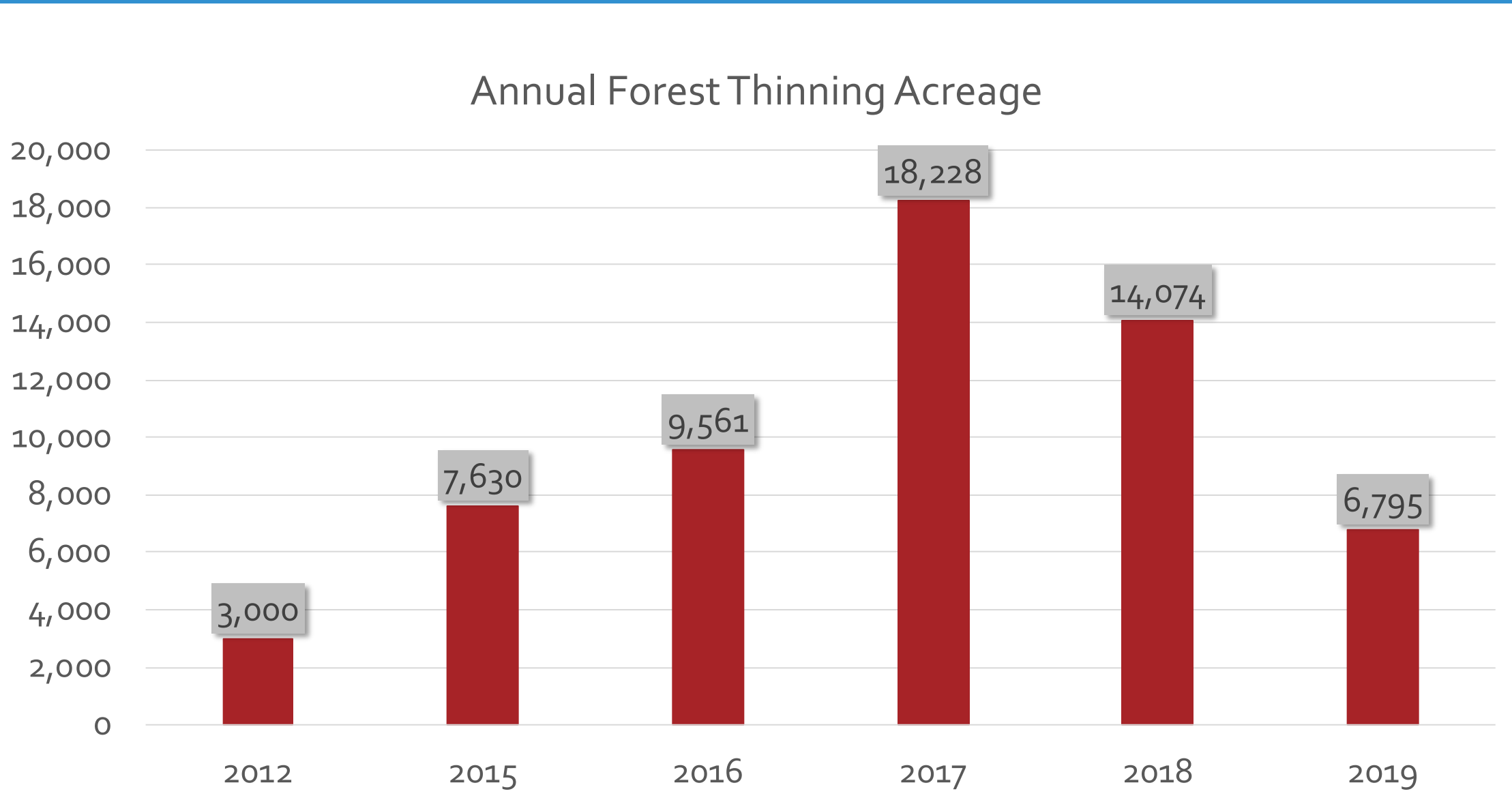
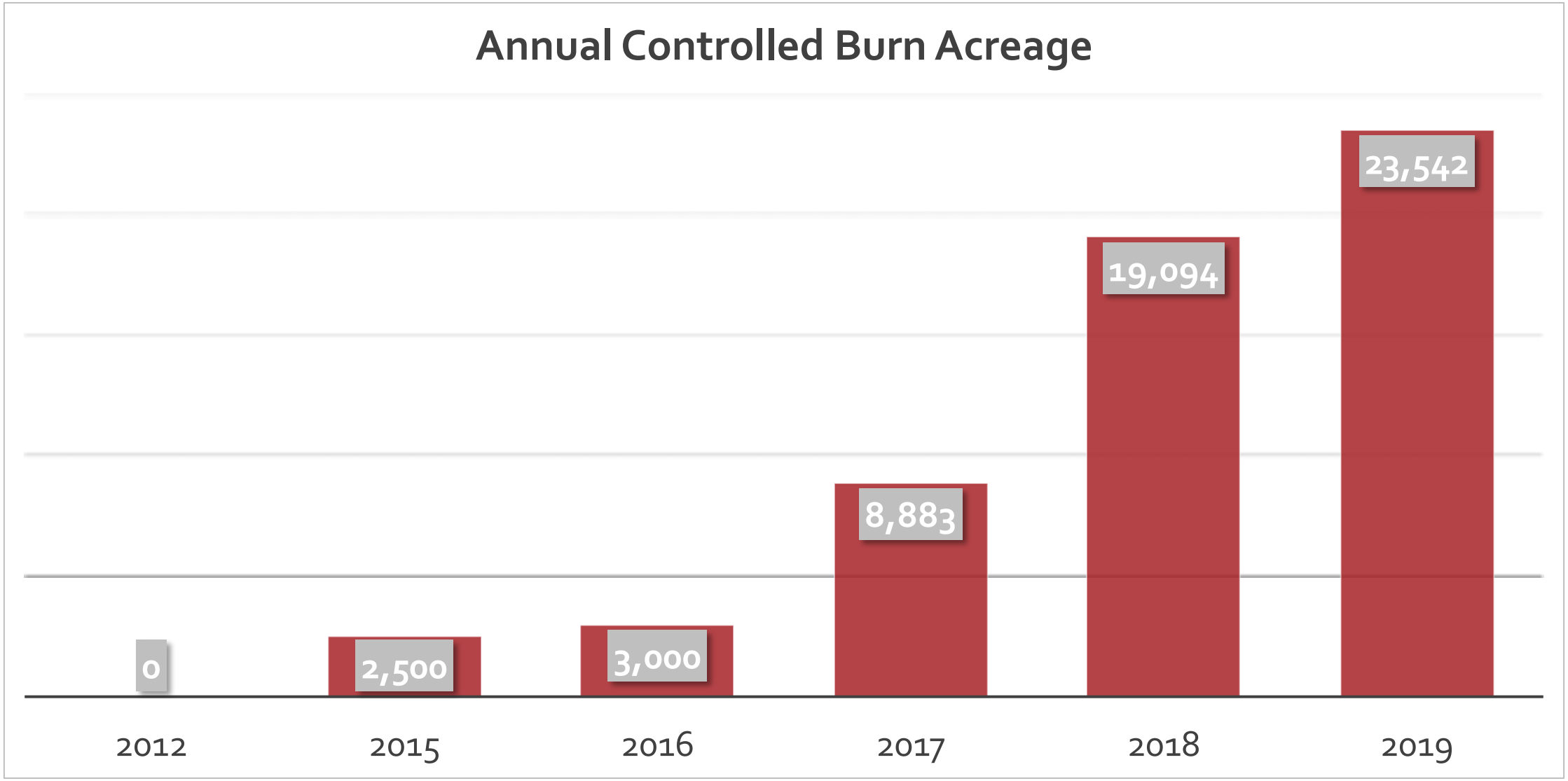
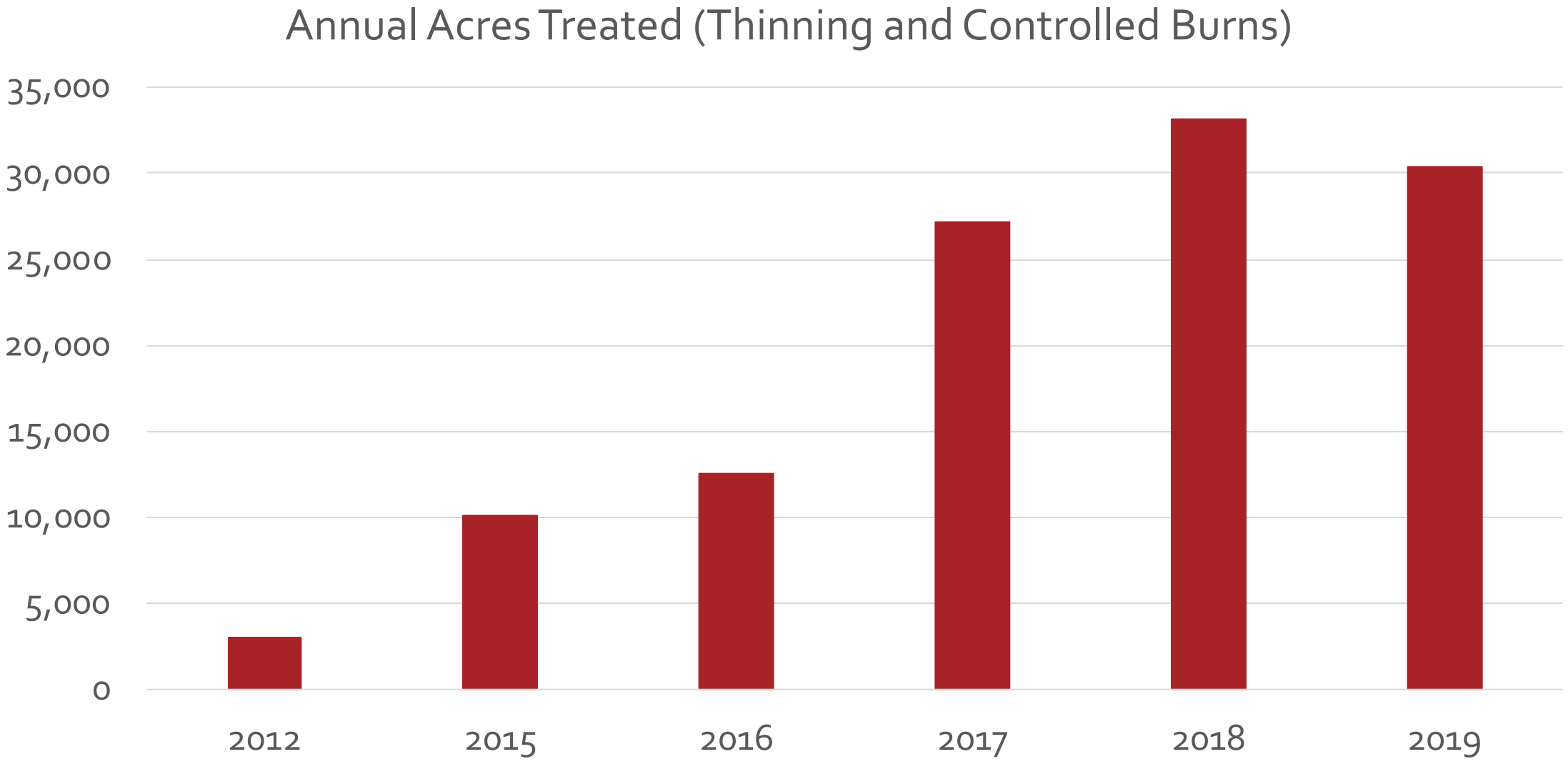
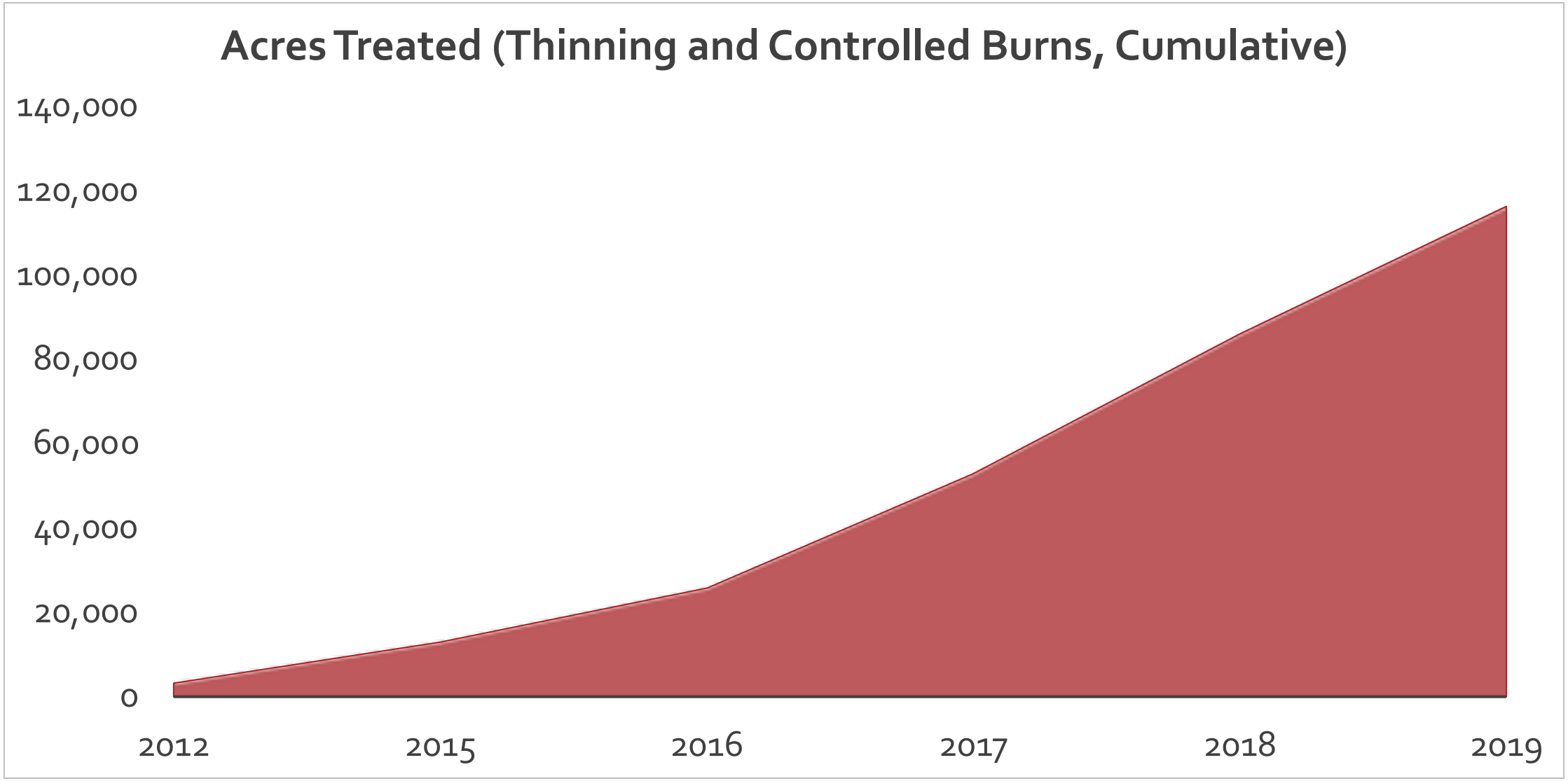
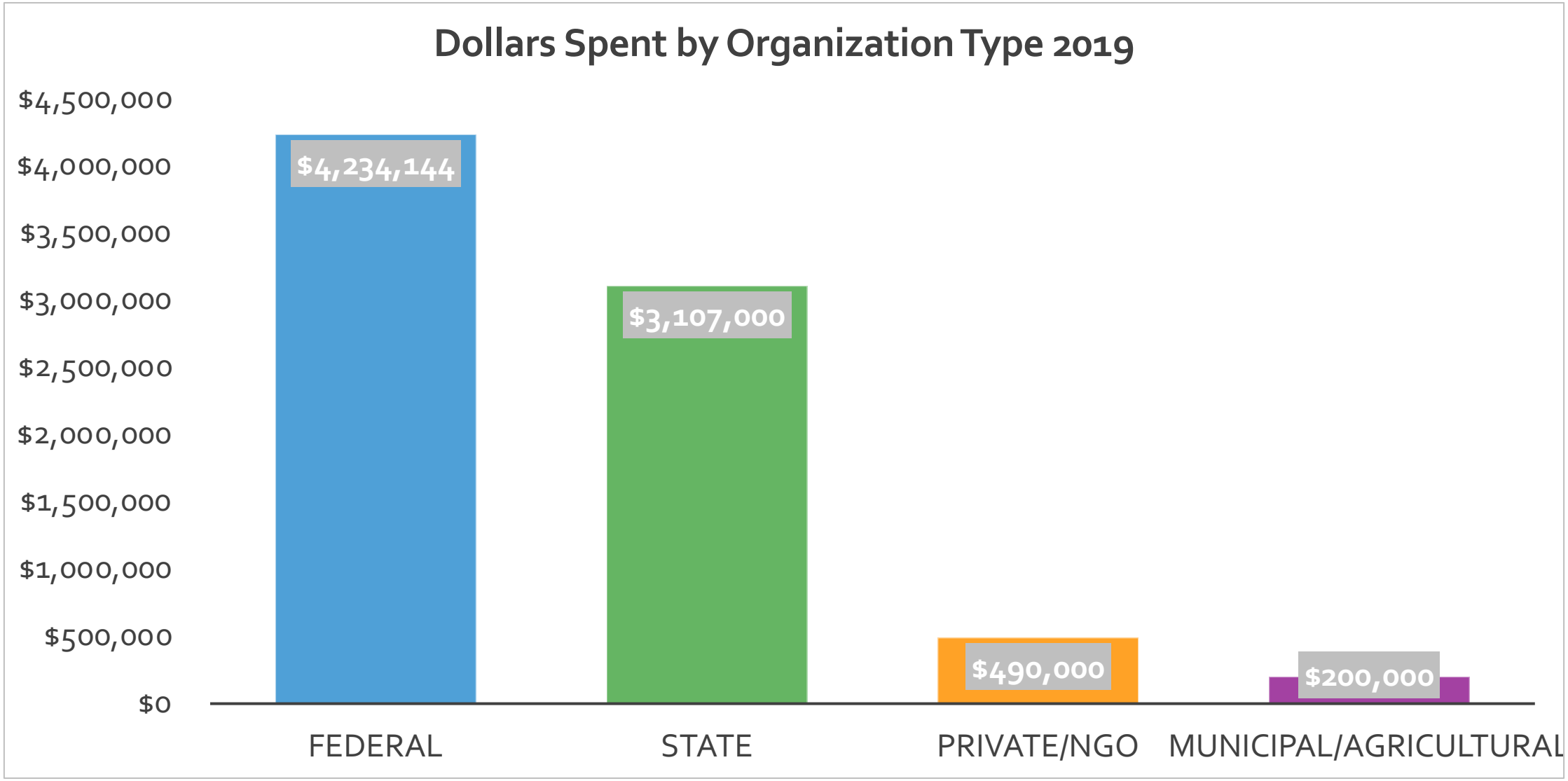

Annual Forest Thinning Acreage
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
3,000
7,630
9,561
18,228
14,074
6,795
2012
2015
2016
2017
2018
2019


Annual Controlled Burn Acreage
0
2,500
3,000
8,883
19,094
23,542
2012
2015
2016
2017
2018
2019


Annual Acres Treated (Thinning and Controlled Burns)
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
2012
2015
2016
2017
2018
2019


Acres Treated (Thinning and Controlled Burns, Cumulative)
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
2012
2015
2016
2017
2018
2019


Dollars Spent by Organization Type 2019
$4,500,000
$4,000,000
$3,500,000
$3,000,000
$2,500,000
$2,000,000
$1,500,000
$1,000,000
$500,000
$0
$4,234,144
$3,107,000
$490,000
$200,000
FEDERAL
STATE
PRIVATE/NGO
MUNICIPAL/AGRICULTURAL

85 Charter Signatories

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Economic Impacts of Rio Grande Water Fund Investments in 2018

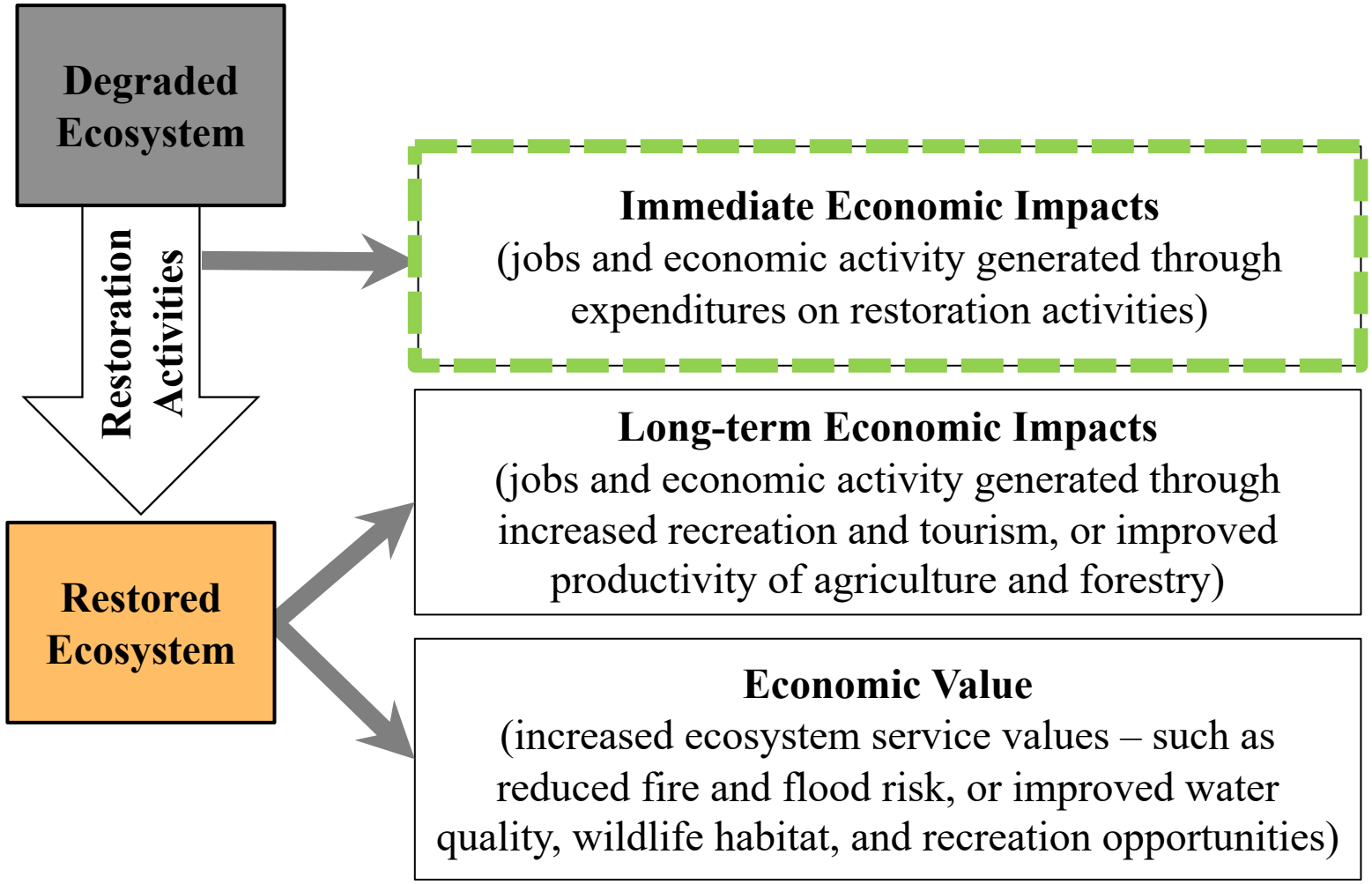
Chris Huber, Cathy Cullinane Thomas, and James Meldrum — USGS

Rachel Meier and Steve Bassett — TNC

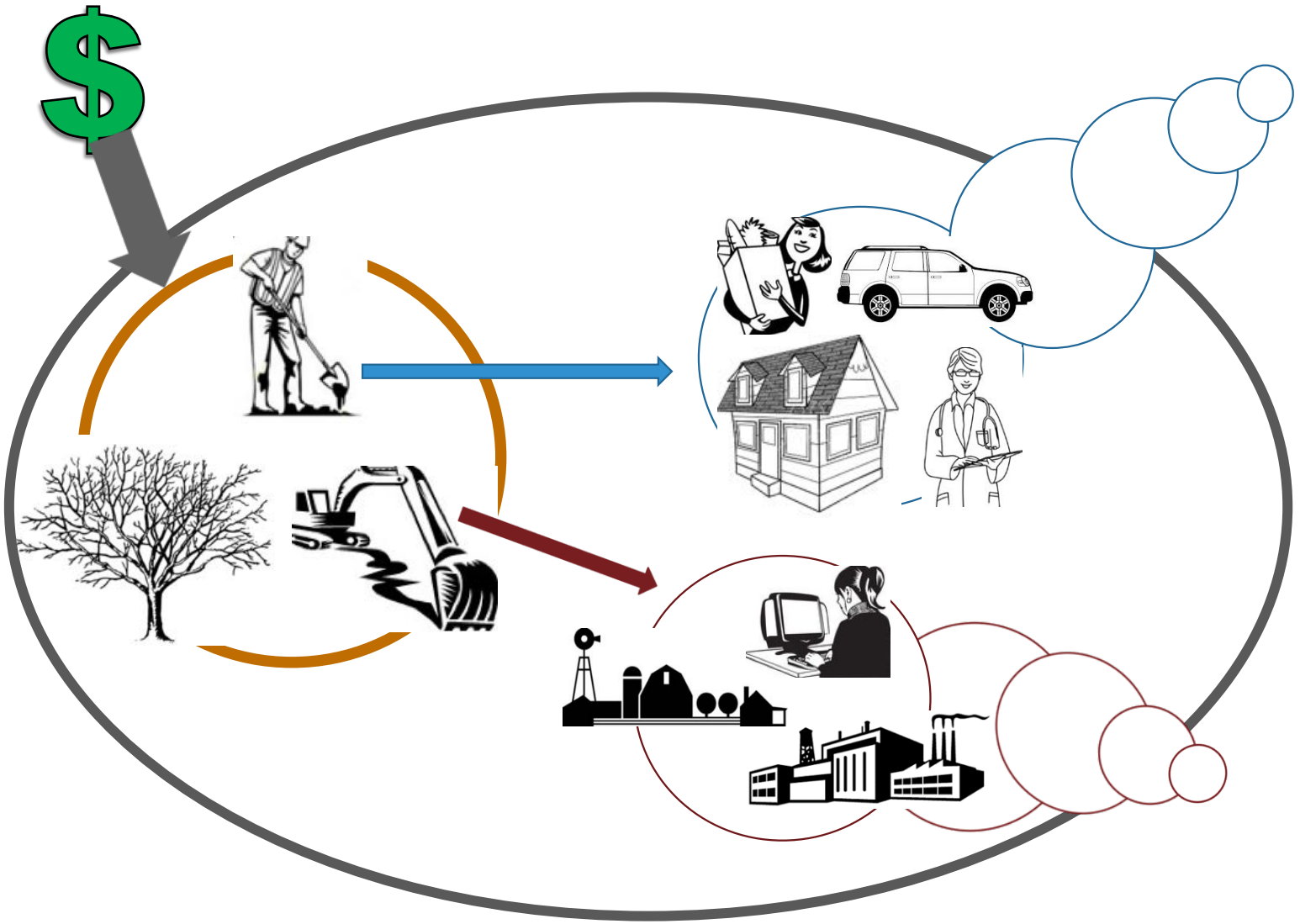
RGWF Economic Impacts

- Growing interest in the economic impacts of ecosystem restoration.
- USGS in Fort Collins, CO has studied these complexities since 2012.
- TNC recently partnered with USGS to study the economic impacts of RGWF project investments made during 2018.

Economic Effects of Ecosystem Restoration



Economic Impacts



Economic Metrics

- Jobs
  - annualized full and part-time jobs accumulated over the duration of a restoration project
- Labor income
  - wages and salaries earned through the jobs that are supported by project expenditures
- Economic output
  - total value of the production of goods and services supported by project expenditures
- Value added
  - the sum of the values added to a product at each step of the production chain; equivalent to gross domestic product (GDP)
  - Value added is the preferred metric for evaluating net changes to the economy

Economic Regions and Multipliers

- Local economic impacts in RGWF project area
  - Thirteen counties in northern NM & southern CO
  - Impacts to jobs and business activity supported in communities directly surrounding RGWF project area
  - Circulation of expenditures made locally measured by IMPLAN multipliers
- Western-States economic impacts
  - Regional impacts to the 17 western states (AZ, CA, CO, ID, KS, MT, NE, NV, NM, ND, OK, OR, SD, TX, UT, WA, and WY)

Data & Models

- RGWF project expenditures made in 2018
  - $855,000 total
  - $623,000 to businesses in RGWF project area
- USGS estimated direct and ripple effects of project expenditures using economic input/output models (i.e., IMPLAN modeling software)

Local Economic Impacts

Local expenditures = $623,000

Local impacts	
Jobs	15
Labor Income	$676,000
Value Added	$792,000
Economic Output	$1,121,000

Western States Economic Impacts

Total expenditures = $855,000

Western States regional impact	
Jobs	22
Labor Income	$1,089,000
Value Added	$1,325,000
Economic Output	$1,907,000

Normalized Economic Impacts

Impact per $1M spent in Western States

- When invested in similar blend of watershed enhancement and fuel reduction projects.

Western States regional impact / $1M spent	
Jobs	26
Labor Income	$1,274,000
Value Added	$1,550,000
Economic Output	$2,231,000

Acknowledgements

- USGS Social and Economic Analysis Branch
- BLM Socioeconomics Program
- DOI Office of Policy Analysis
- DOI NRDA Restoration Program and the Office of Resource and Damage Assessment
- US Forest Service
- University of Oregon Ecosystem Workforce Program
- Restoration managers and practitioners

Questions or Comments

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Forest Mayordomo Community Forestry

J.R. Logan
Cerro Negro Forest Council


STIHL
STIHL
CERRO NEGRO
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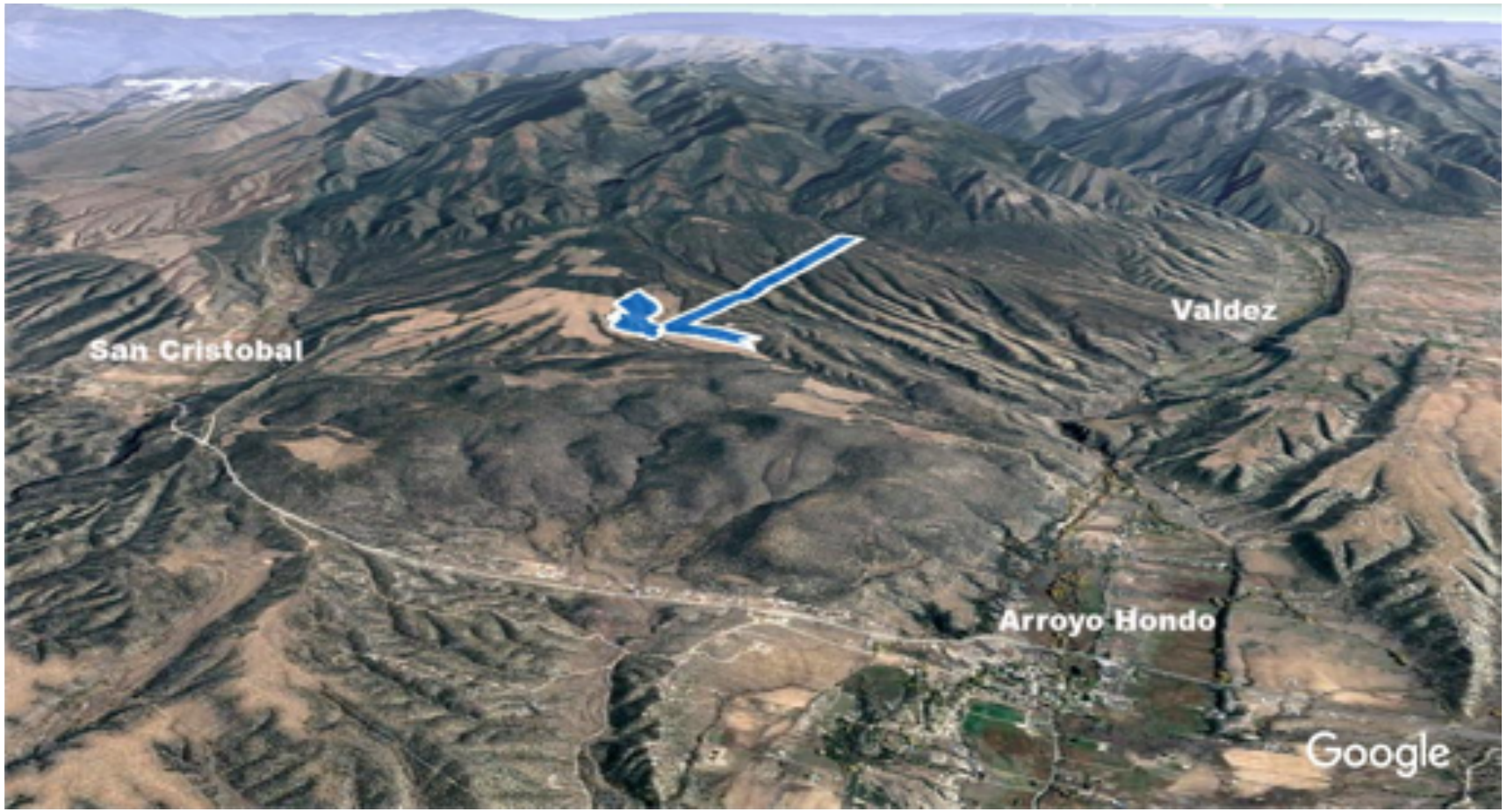
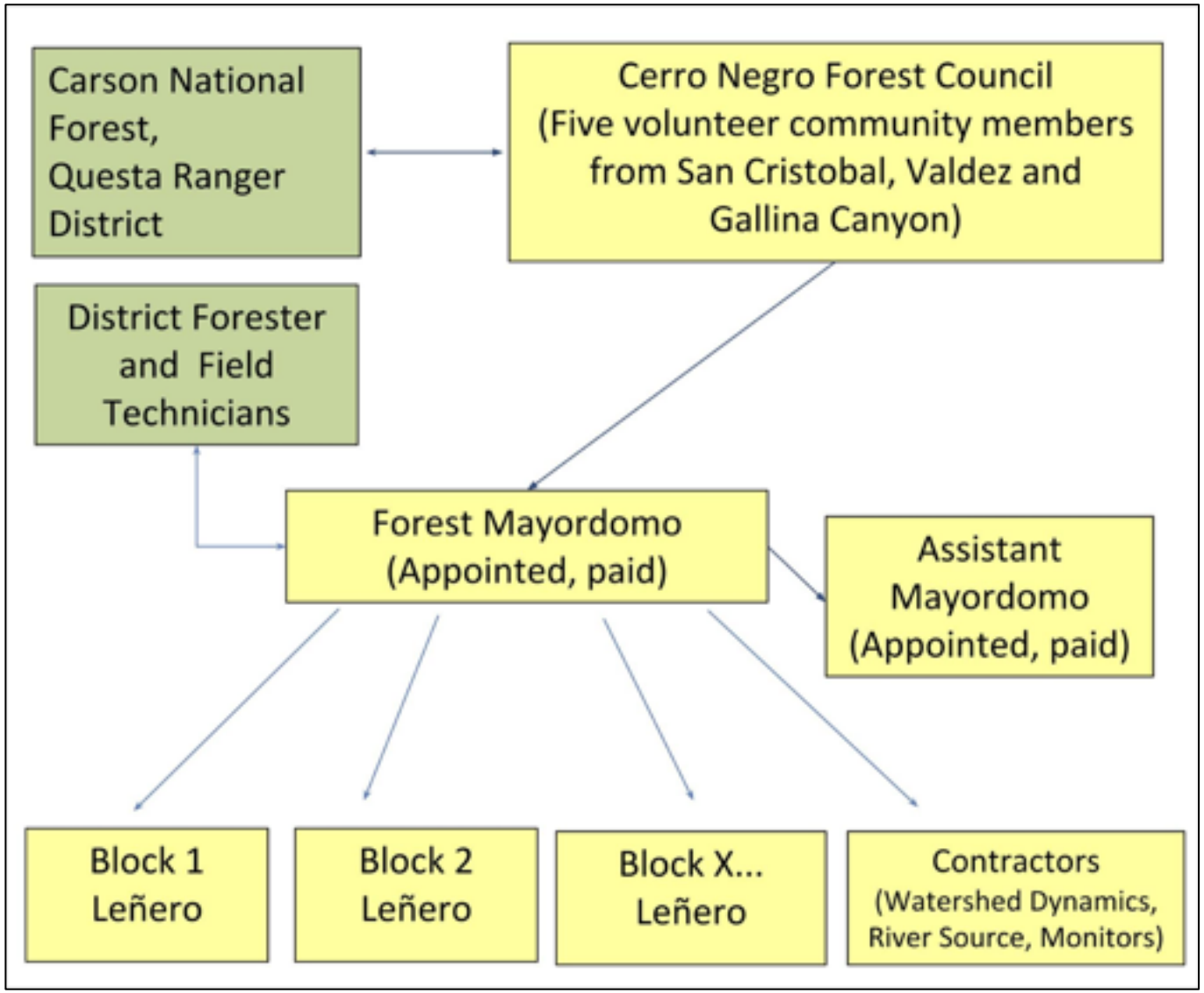
"What happens in our mountains, we feel in our valleys."

- Fuels reduction
- Erosion control
- Habitat/range improvement
- Rural workforce and economic development



A New Mexico Model for Community Forestry

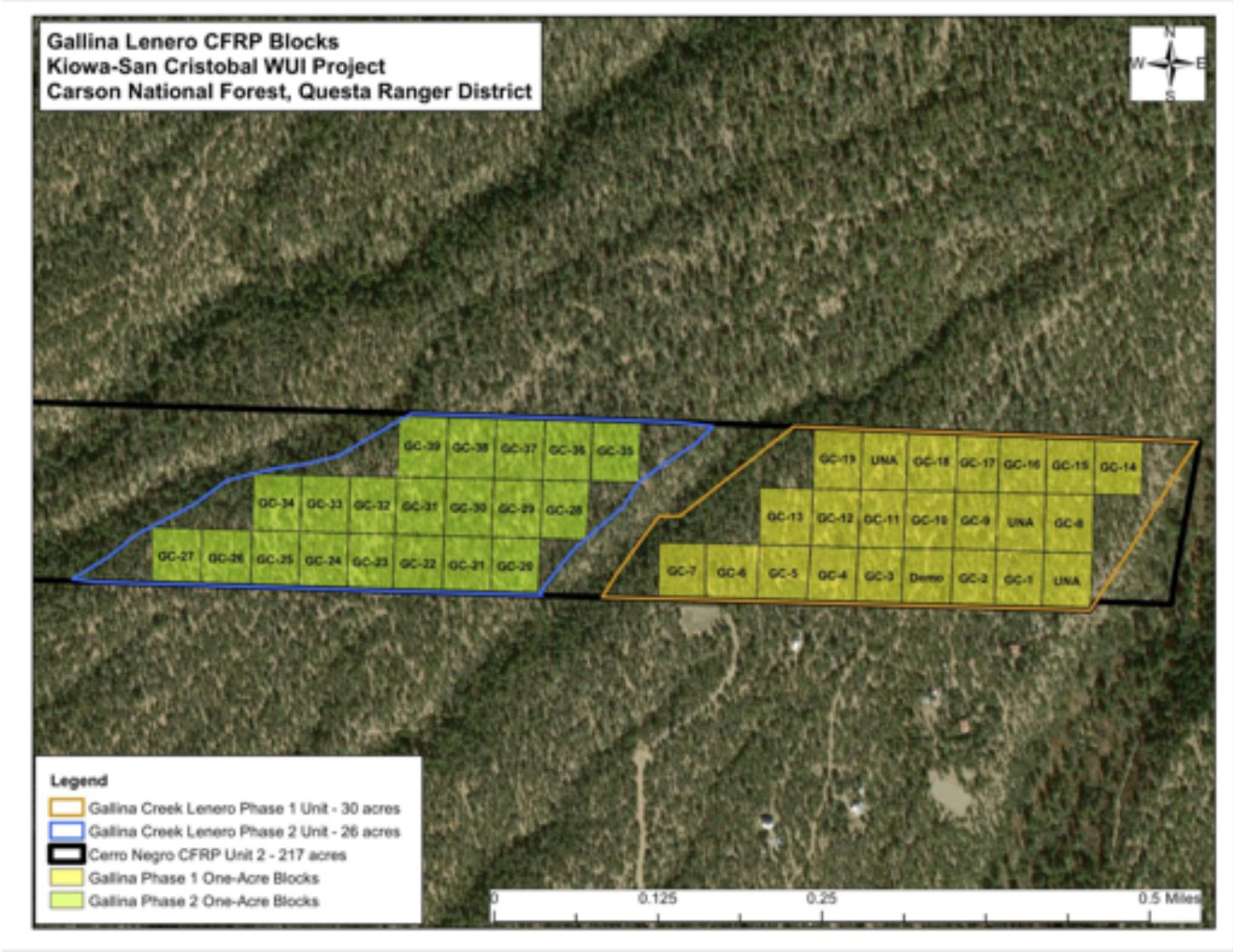


Leñeros:

- Recruited from local villages
- Keep all wood for sale and personal use, paid $300 per completed acre.

The Nuts and Bolts

- 300 acres in 1-acre blocks
- Mayordomo flags blocks, paints leave trees. He also oversees work and resolves disputes.



Per Acre Perks:

- 4-7 cords of fuelwood (piñon/juniper)
- Most "take" trees <8"
- 10-20 cedar posts (8'-14')

Encouraging Student Scientists

- Monitoring by paid interns from Taos High
- Protocols and data sharing with Highlands University and NMFWRI

After 5 months, how's it going?

- 55 leñeros cutting, many more on wait list
- 23 acres completed
- 53 acres underway
- More than 250 cords harvested already
- Avg. cost $700/acre (incl. $300 stipend)

Scalability

- Stand up more councils
- Aggregate product and build a market to fund more restoration
- Build pipelines for workforce development.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www.cerronegroforestcouncil.org

Case study on the Francisquito and Alamosa Rx Fires

Daniel Cedeno
Carson NF

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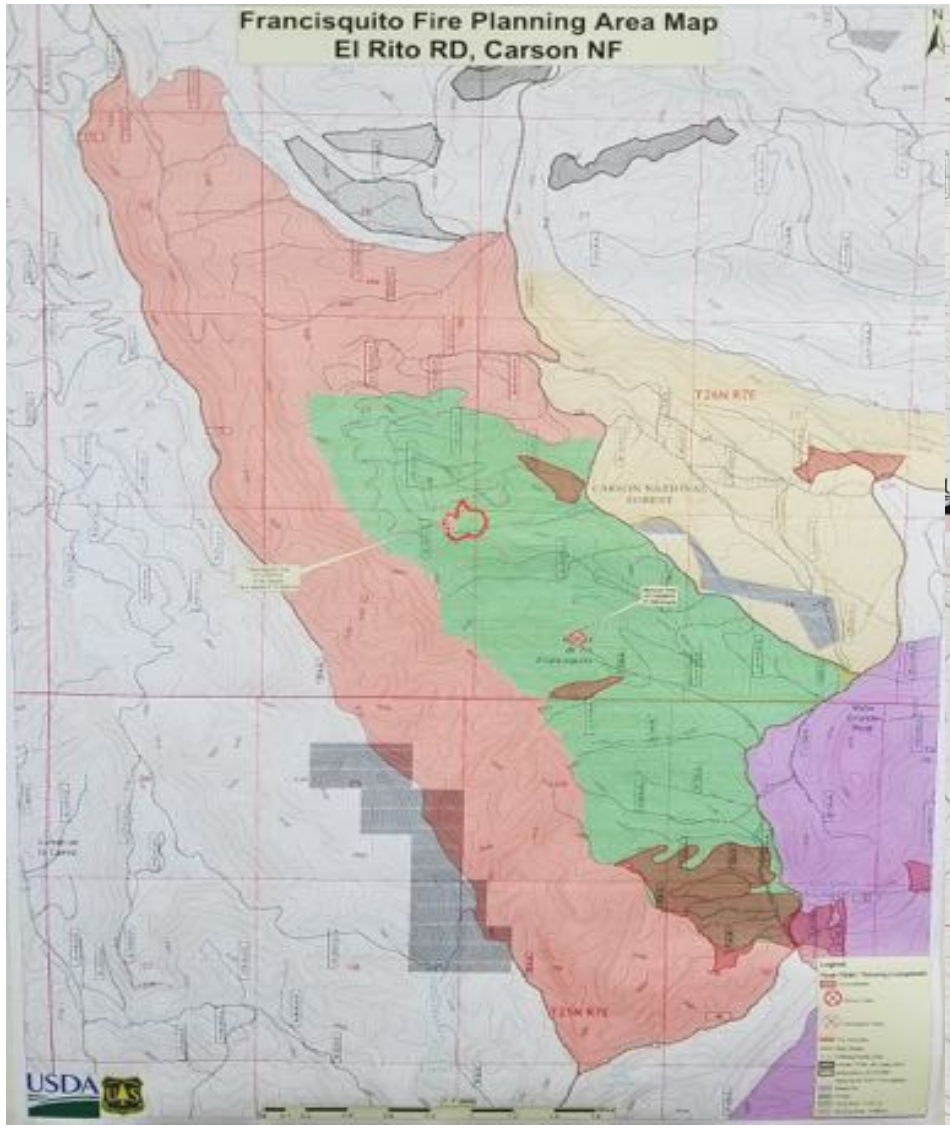
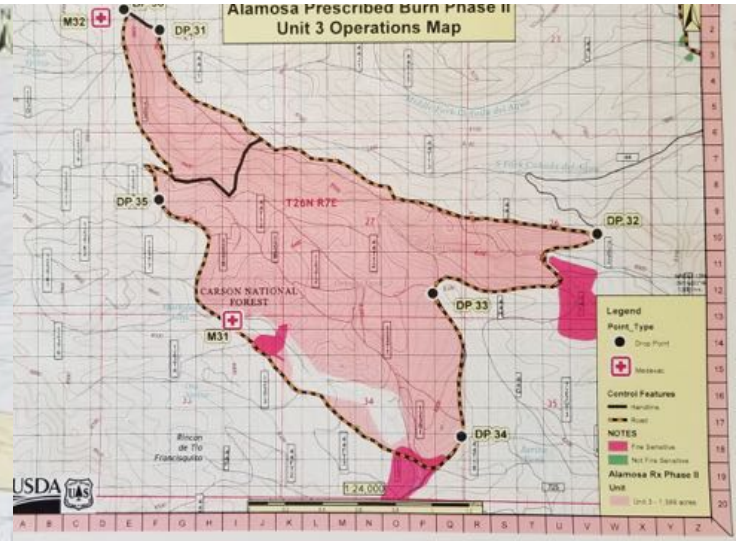
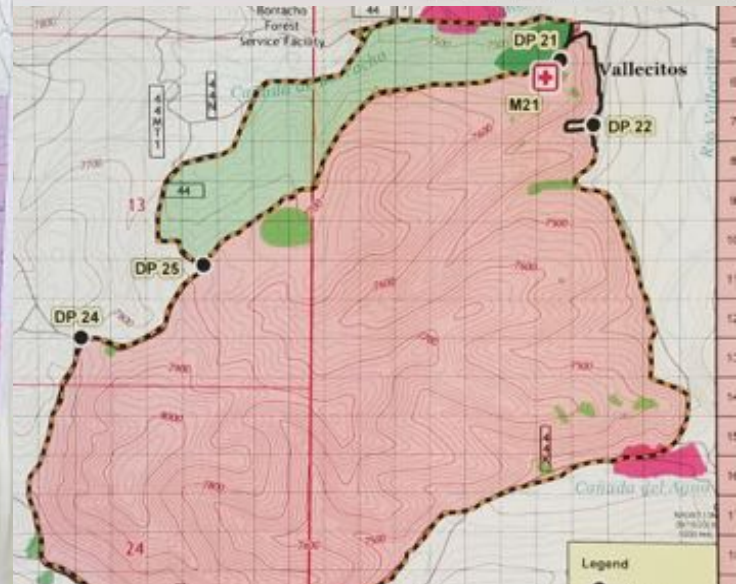
Francisquito Fire Planning Area

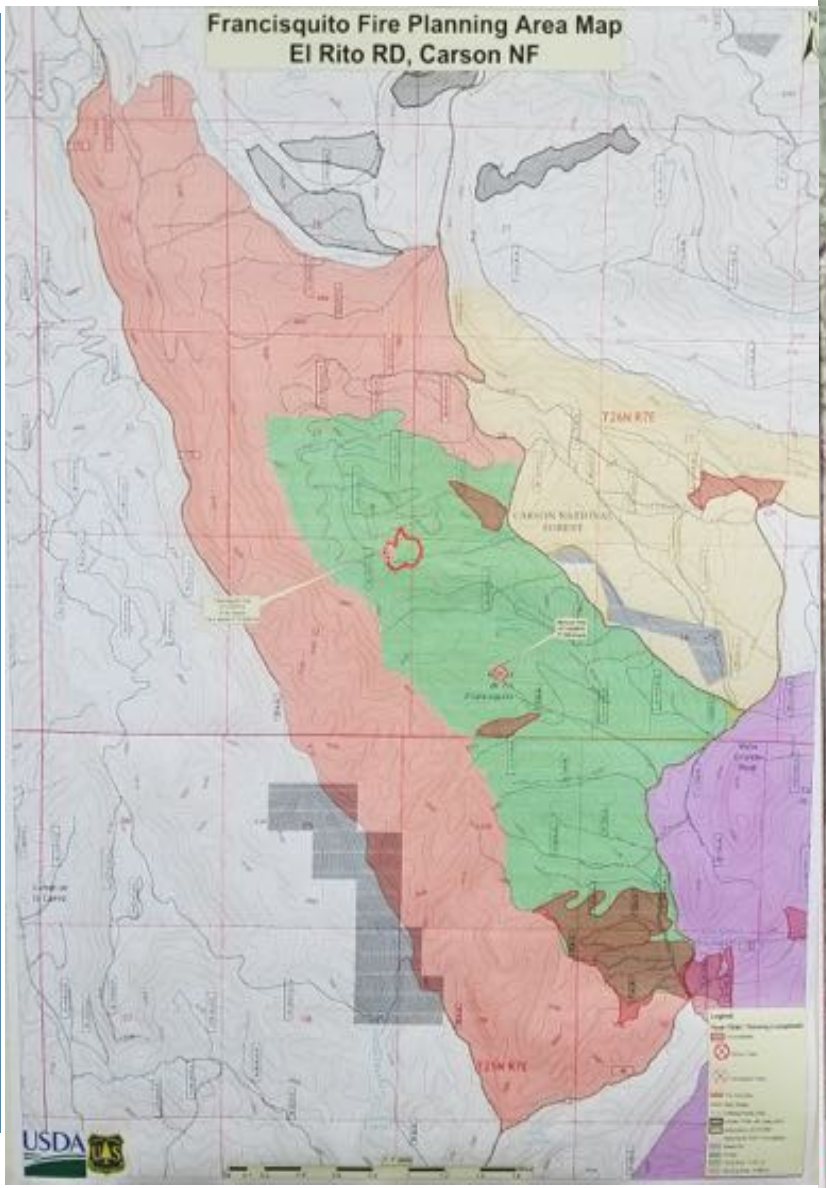
Alamosa Rx Project Area

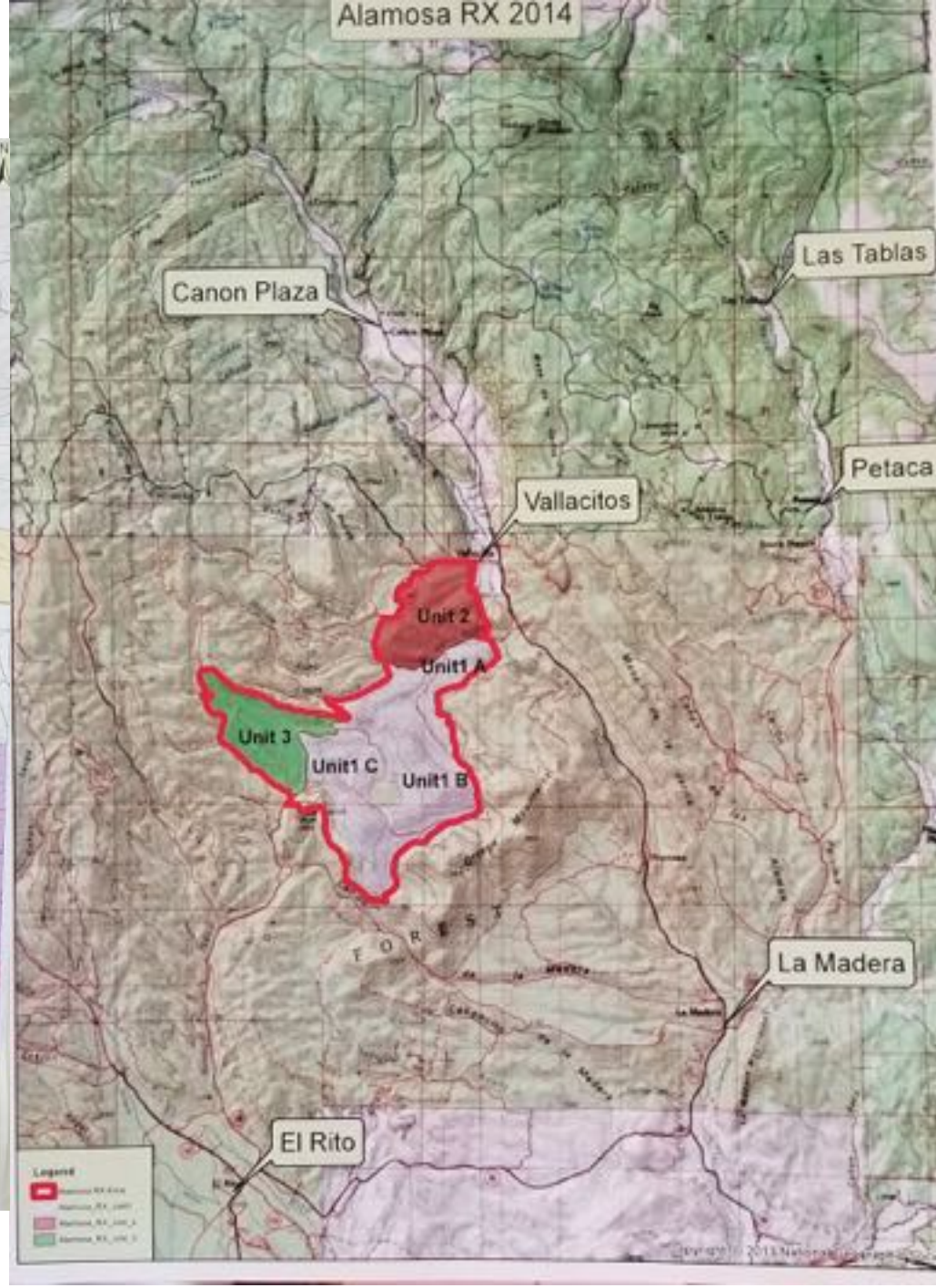






Alamosa project area as "catchers mitt" for the Francisquito and a fuel break for communities along the Hwy 111 Corridor





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A Wildfire and Water Source Protection Project

Carson National Forest

West Zone Fire Management

Francisquito Managed Fire Post-fire Field Visit with TNC


Francisquito
Managed Fire:
Post-fire

Francisquito Managed Fire: Post-fire

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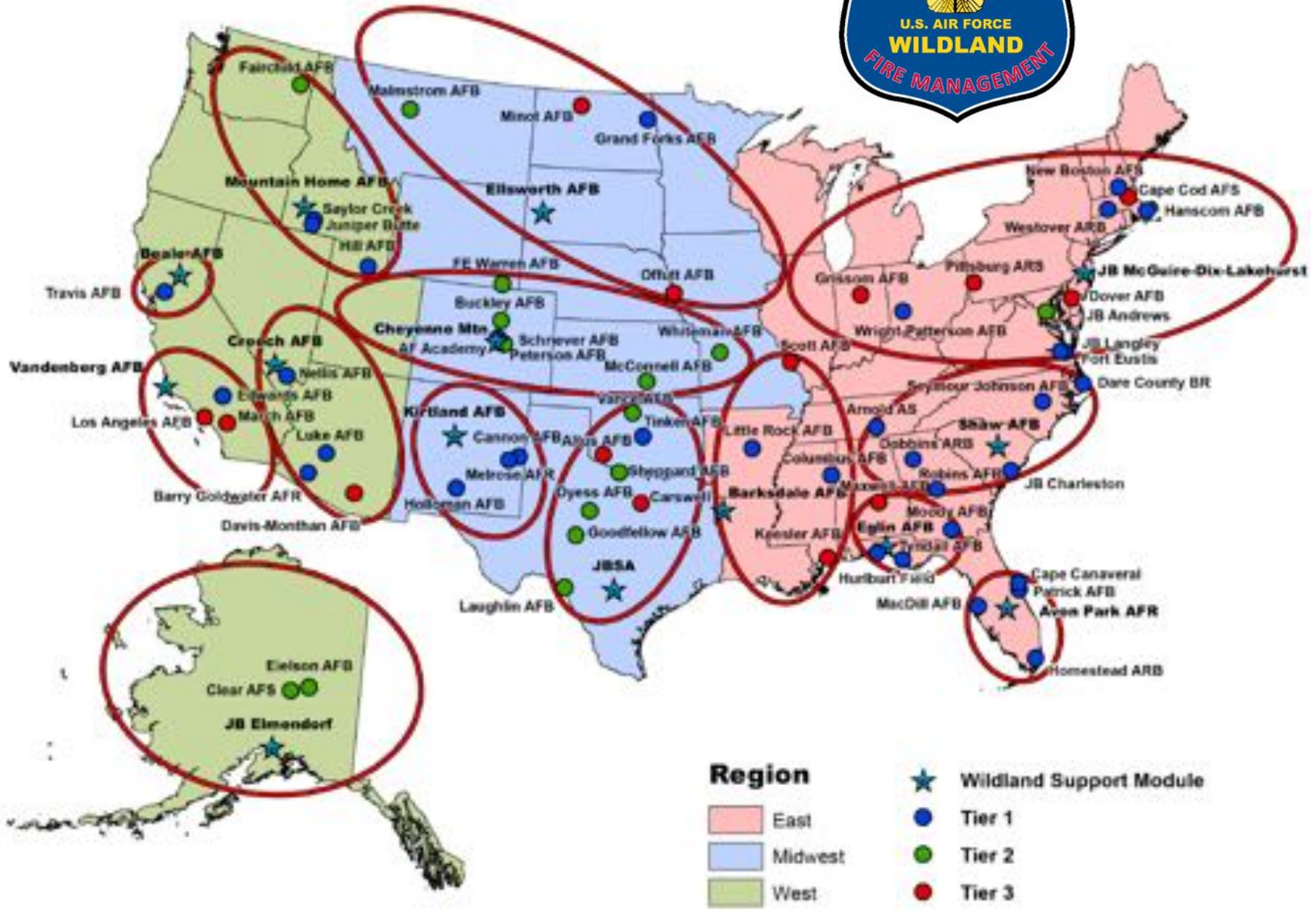
Kirtland AFB Ecosystem Restoration

Robert Morales

Kirtland Wildland Support Module Lead

Kirtland Wildland Support Module:

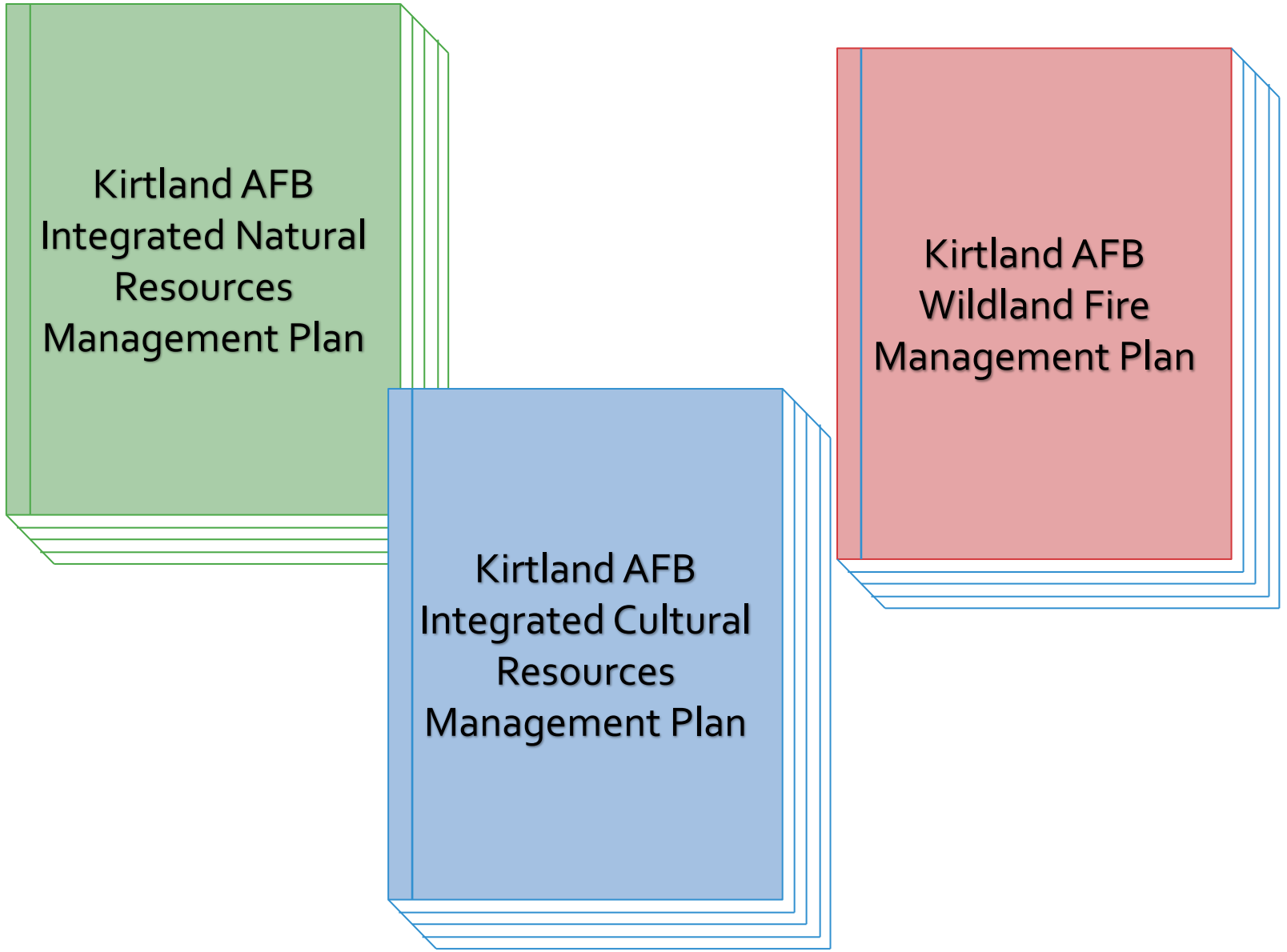
Module Lead
Asst Module Lead
4-8 Crew Members
2 Engines
2 UTVs
Support Vehicle
2 Bobcats
D3K2 Mulcher



Kirtland AFB Fuels Management Program

Purpose:

Execute natural resources program ensuring Sikes Act compliance for ecosystem management



Current Work Area

Total Managed (KAFB)
33,179 acres

Juniper Invasion

Heavy Bug Kill in our Persistent Pinon/Juniper

Before Treatment

Post Treatment

Accomplishments

- Reducing potential crown fire risk
- Increasing fire fighter and public safety
- Increasing wildlife forage
- Improving wildlife habitat
- Improving watershed function
- 125 + acres completed
- Building good partnerships

Challenges

- Volume of work
- Equipment breakdowns
- Terrain
- Other areas of responsibility
- Weather

Lessons Learned

- Focus on long-term vs short-term
- 10 - 15 acre units
- Different treatment methods

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NM Urban Tree Planting

Jennifer Dann

New Mexico State Forestry

The Nature Conservancy
New Mexico

Don’t Tune Out!

This isn’t what we’re talking about today

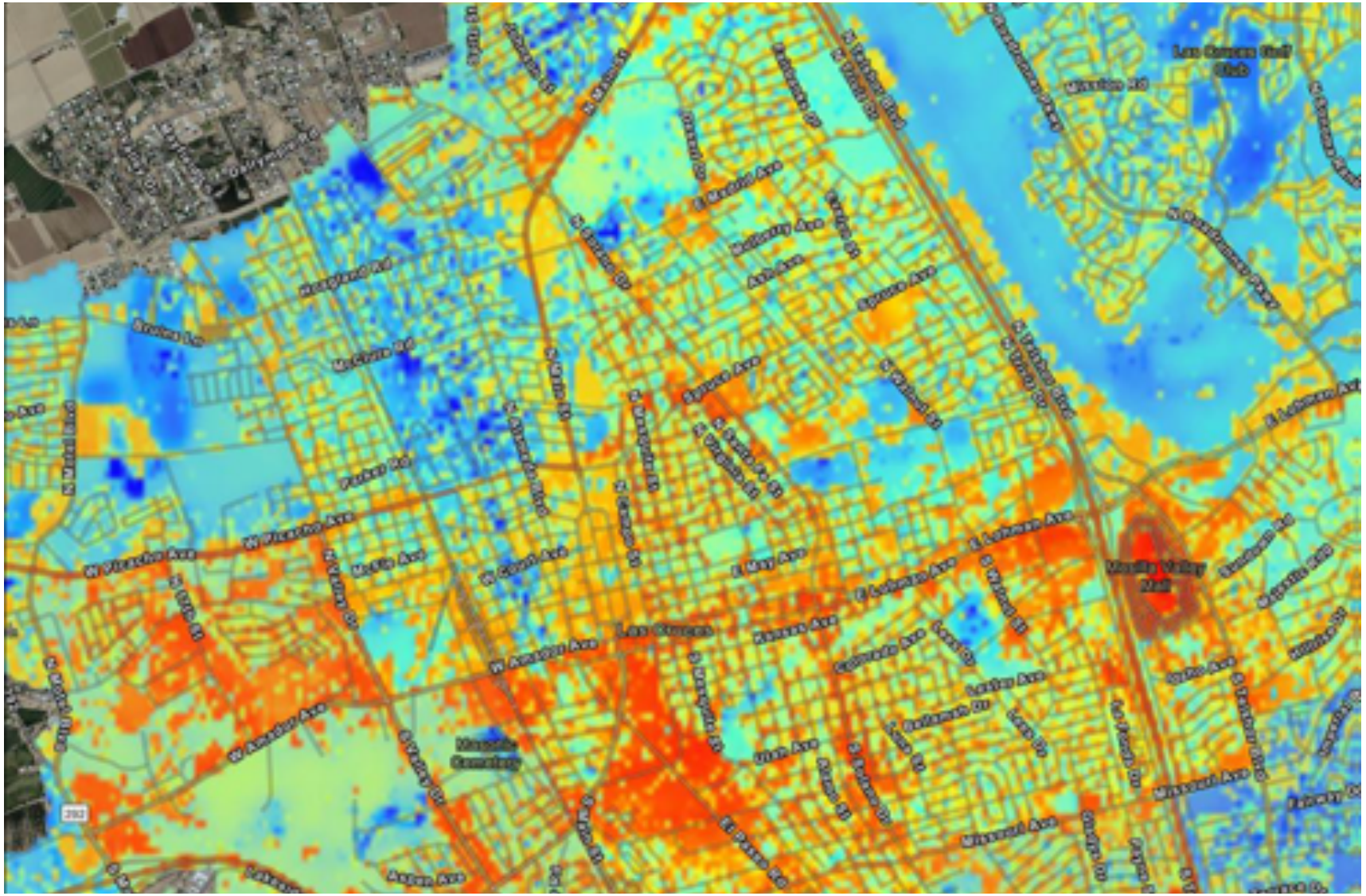
Urban canopy is in decline

NM projected to experience an acute drop in the next 20-30 years

Los Alamos Fuller Lodge Tree Projections - NMSF and Groundwork Studio

Consequences are serious

Heat kills more people each year than all other weather related deaths combined



Las Cruces Urban Heat Island Analysis – NASA DEVELOP

Partners are working together

And we are poised to be part of a larger strategy

TREE NEW MEXICO

Climate-Ready Tree Species

Extreme heat and cold tolerance

Drought tolerance

Soil type tolerance

Planting environments

NMSF - Deodar cedar

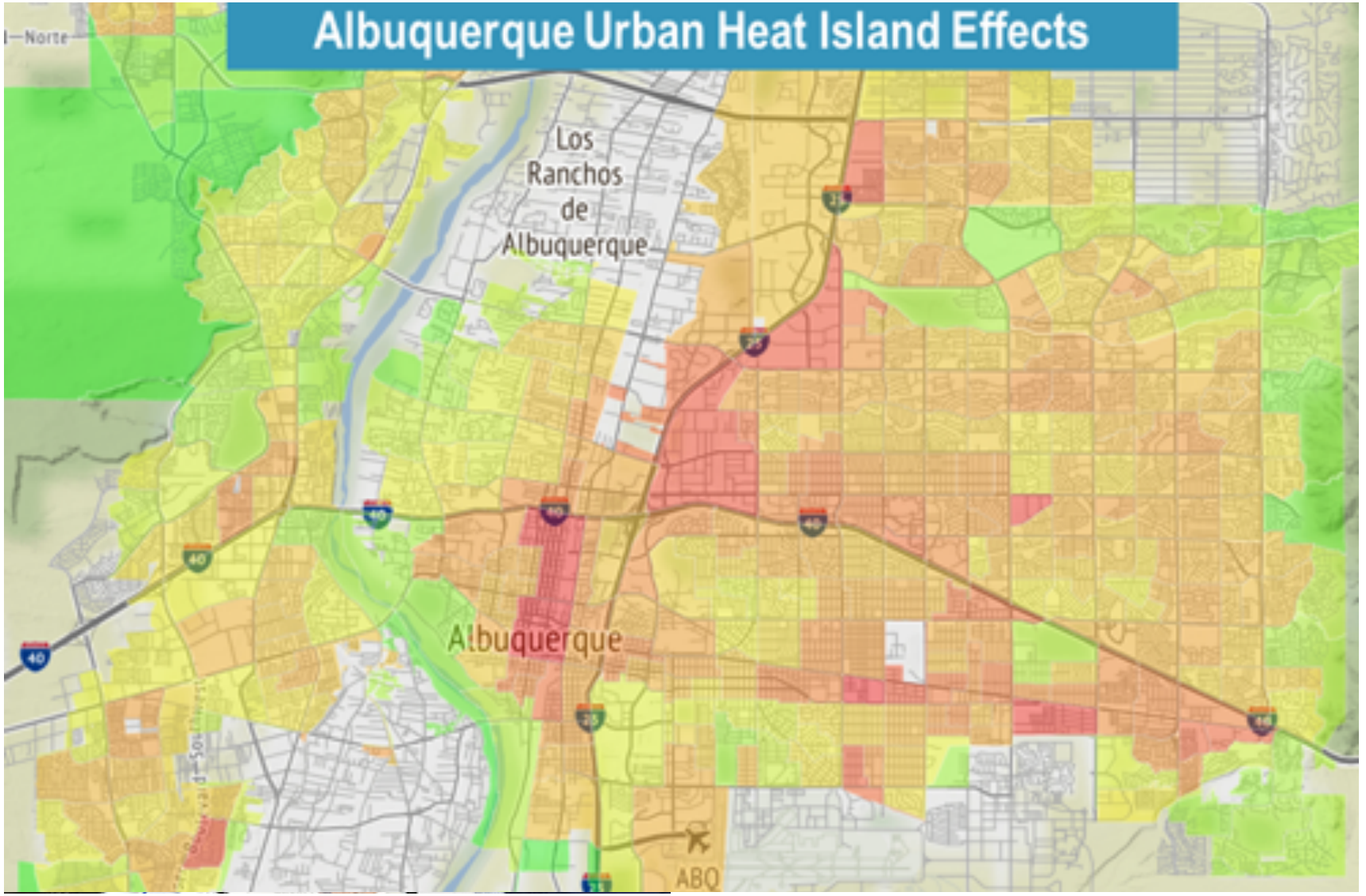
CABQ Parks – Chinquapin oak

Strategic Planting

Highest impact

Equity

Sustainable maintenance



Portland State University – Albuquerque Urban Heat Island Priority Tree Planting

Public-Private Partnerships

>90% of the urban forest is on private land

Tree New Mexico – Albuquerque Neighborwoods

Planning and Policy Development

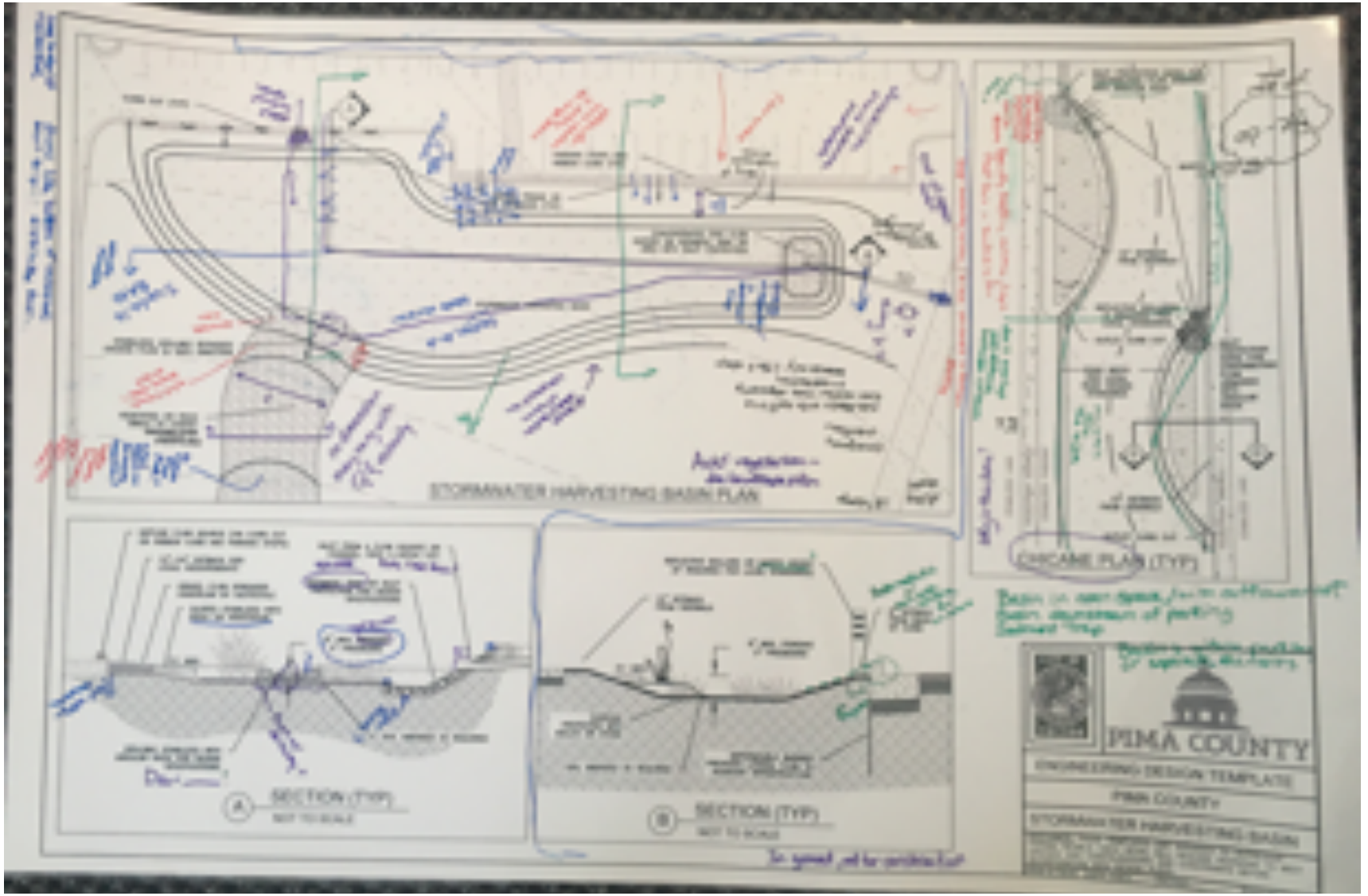
Maintenance Planning

Ordinances

Design Process Manuals

Development Policy

Workforce Development



Arid LID Coalition

Urban forests are an important part of the whole

Paul Bryan Jones, Urban Forest Council Member, Taos Valley

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Rio Chama CFLRP

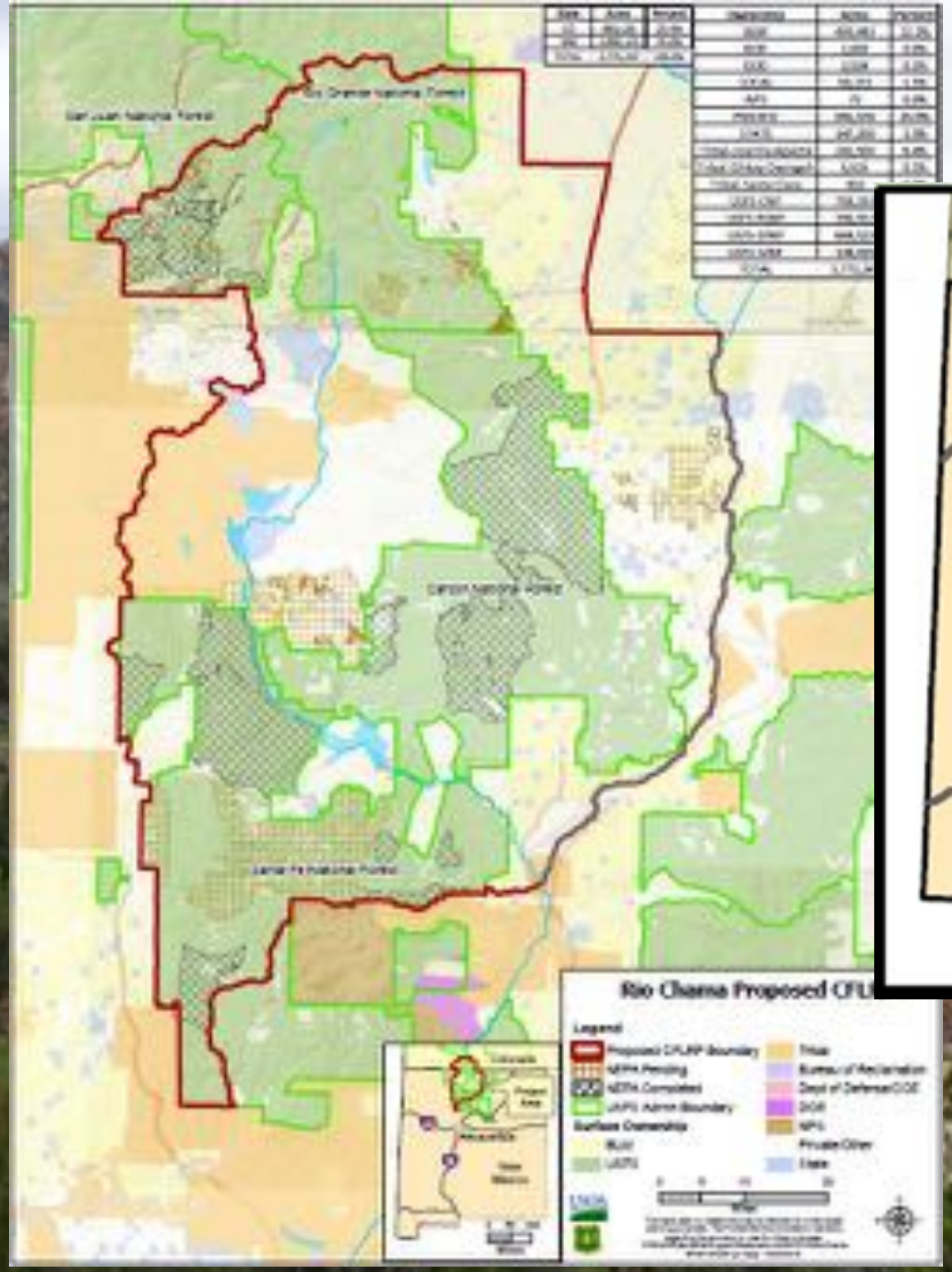
James Melonas

US Forest Service

Rio Chama CFLRP Proposal

3.77 Million Acre Project Area

50% is managed by USFS



Rio Chama CFLRP Proposal

Why is this landscape important?

Water

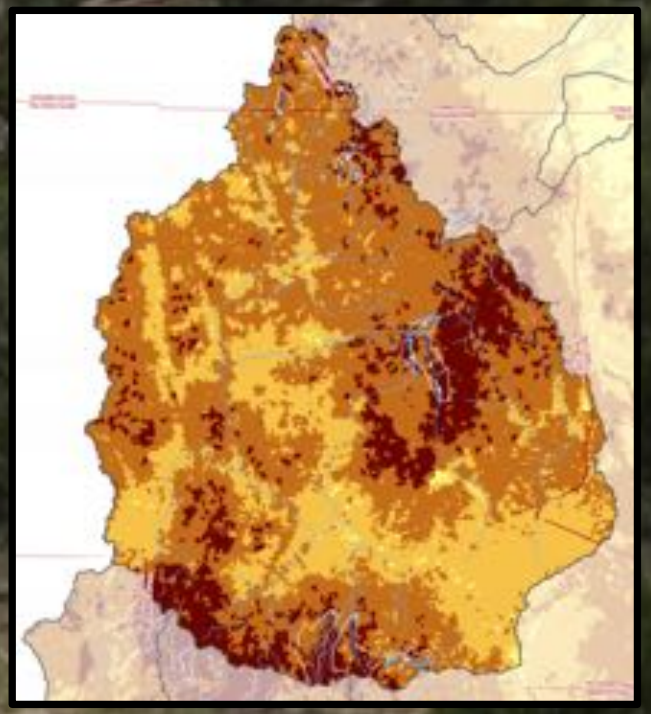
- Landscape provides drinking water to nearly 500,000 individuals in New Mexico

Economy

- Landscape provides jobs and recreation opportunities

Fire

- 71% of the Chama Watershed is at high to extreme risk for wildfires and debris flows



Rio Chama CFLRP Proposal

What does the project include?

- Prescribed fire, mechanical thinning, timber management, watershed, wildlife, and range improvement projects across more than **300,000 acres.**
- Currently, nearly **500,000 acres are NEPA cleared.**
- More than **150,000 additional acres** are in the NEPA process and should be ready for implementation in 2021.
- NEPA is currently underway for **Riparian, Aquatic, and Wetland Restoration** across all of the Carson and Santa Fe in order to implement projects in 2021.

Rio Chama CFLRP Proposal

How to get involved

- Group includes federal, state, tribes, and local governments, as well as NGOs, schools, utilities, businesses, as well as several established collaboratives working across this landscape.
- Partner's meeting December 4th, at the Santa Claran in Espanola.
- For more information and to get involved contact Josh Hall, Joshua.hall@usda.gov, 505-438-5430


Thank you!!
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