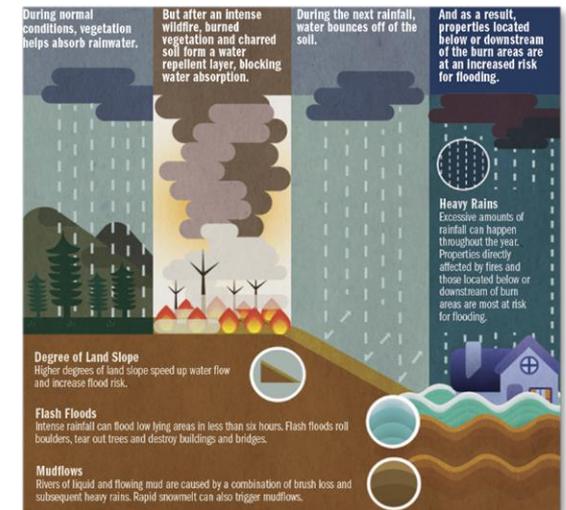


# New Mexico Risk of Flooding from Wildfires



WATER & NATURAL RESOURCE INTERIM COMMITTEE

JULY 25, 2022

# 2022 Large New Mexico Wildfires

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Hermits Peak/Calf Canyon (Mora & San Miguel) - 341,735 Acres

Black (Catron, Grant, Sierra) – 325,136

Cerro Pelado (Jemez Mountains) - 45,605 Acres

Cooks Peak (Mora & Colfax) – 59,359 Acres

McBride (Ruidoso) - 6,159 Acres

Bear Trap (Socorro) – 38,225 Acres



Photos courtesy Inciweb USFS

Photo Courtesy Inciweb, NM Forestry Division, Matthew Garcia, Type 3IMT

# Flood After Fire

Did you know wildfires dramatically alter the terrain and increase the risk of floods? Excessive amounts of rainfall can happen throughout the year. And properties directly affected by fires and those located below or downstream of burn areas are most at risk for flooding.

- 1 During normal conditions, vegetation helps absorb rainwater.
- 2 But after an intense wildfire, burned vegetation and charred soil form a water repellent layer, blocking water absorption.
- 3 During the next rainfall, water bounces off the soil.
- 4 As a result, properties located below or downstream of the burn areas are at an increased risk for flooding.

### Degree of Land Slope

Higher degrees of land slope speed up water flow and increase flood risk.

### Flash Floods

Intense rainfall can flood low-lying areas in less than six hours. Flash floods roll boulders, tear out trees and destroy buildings and bridges.

### Mudflows

Rivers of liquid and flowing mud are caused by a combination of brush loss and subsequent heavy rains. Rapid snowmelt can also trigger mudflows.

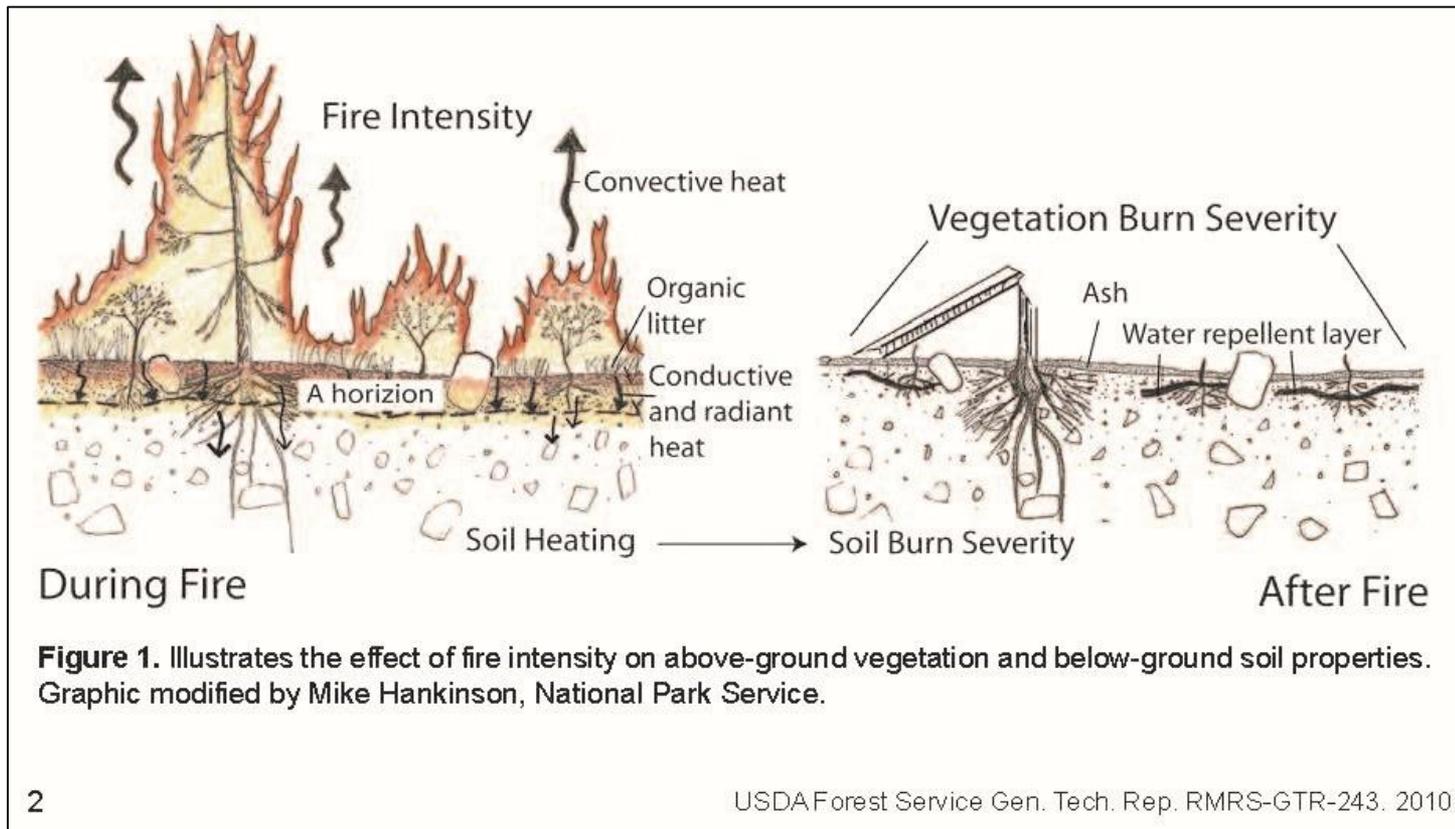


Reduce your risk. The time to buy flood insurance is now. Contact your local insurance agent for more information or visit the National Flood Insurance Program at [FloodSmart.gov/wildfire](https://www.floodsmart.gov/wildfire).

Freshly burned landscapes are at risk of damage from post-wildfire erosion hazards such as those caused by flash flooding and debris flows (mud flows). Burn scar areas have a tremendous impact on flood and debris flow following short duration high intensity rainfall. These high volume low frequency floods result from typical monsoon summer rains and occur in and downstream of the burn scar areas. Dramatic changes in runoff, erosion, and deposition have been documented in watersheds affected by wildfire. These post-fire changes have led to loss of life, damage to property, and significant impacts on infrastructure. (NM State Hazard Mitigation Plan 2018)

Source: <https://www.nmdhsem.org/wp-content/uploads/2019/06/NM-HMP-Approved-Body-9-13-18-V2-low-res.pdf>

# Hydrophobic Soils



Source: Field Guide for Mapping Post-Fire Soil Burn Severity USDA Forest Service General Technical Report RMRS-GTR-243 [https://www.fs.fed.us/rm/pubs/rmrs\\_gtr243.pdf](https://www.fs.fed.us/rm/pubs/rmrs_gtr243.pdf)

# Soil Burn Severity

## Hermits Peak-Calf Canyon

57% Moderate to High Severity



Santa Fe and Carson National Forests | June 2022

### Hermits Peak-Calf Canyon Burned Area Emergency Response (BAER) Phase 2 Assessment Report

#### Executive Summary



Figure 1 Aerial View of Unburned, Low, Moderate, and High Severity

#### Fire Background

The Hermits Peak fire started on April 6, 2022, from Veges Ranger District (PLVRD) of the Santa Fe National Forest. Team 1 (Type 1) assumed command of the fire on April 7 from a winter PLVRD pile burn project, and SWMIT merged on April 22 during high wind events and are Canyon (HPCC) Fire, eventually burning onto the C divided into three zones, each under management. Due to the fire's size and continuing active fire behavior, the fire was transitioned back to two zones and was managed by June 30, 2022, the fire has burned 341,735 acres.

#### BAER Assessment

The Forest Service assembled a Burned Area Emergency Response (BAER) team to assess the fire's impact on soil and water resources. The team's field analysis was delayed due to the fire's size and continuing active fire behavior. The team was reestablished on June 30, 2022, and completed its assessment on July 1, 2022.

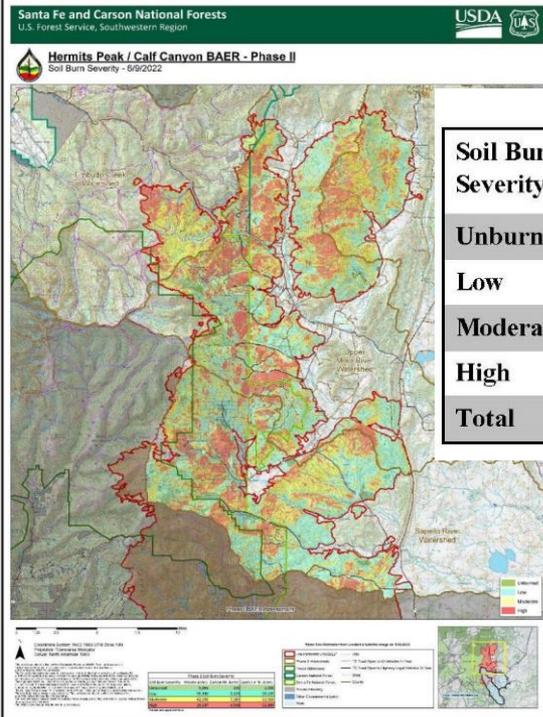


Figure 2: Soil Burn Severity Map for the northern area (BAER Phase 2) of the Hermits Peak-Calf Canyon Fire.

Table 2: Soil burn severity by land ownership

Soil Burn Severity	NFS	Other Federal	State	Private	Total	% of HPCC Phase 2 Perimeter
Unburned	2,443		0	5,065	7,508	4
Low	18,382		0	55,940	74,322	39
Moderate	20,223		0	42,581	62,804	33
High	16,045		0	29,347	45,392	24
<b>Total</b>	<b>57,093</b>		<b>0</b>	<b>132,933</b>	<b>190,026</b>	<b>100</b>

Source: Hermits Peak-Calf Canyon Burned Area Emergency Response (BAER) Phase 2 Assessment Report [https://inciweb.nwcg.gov/photos/NMSNF/2022-05-15-2009-HermitsPeak-Calf-Cyn-BAER/related\\_files/pict20220608-001049-0.pdf](https://inciweb.nwcg.gov/photos/NMSNF/2022-05-15-2009-HermitsPeak-Calf-Cyn-BAER/related_files/pict20220608-001049-0.pdf)



Low Burn Severity

Moderate Burn Severity

High Burn Severity



Hydrophobic Soil  
Moderate Burn Severity



Source: Hermits Peak-Calf Canyon Burned Area Emergency Response (BAER) Phase 2 Assessment Report  
[https://inciweb.nwcg.gov/photos/NMSNF/2022-05-15-2009-HermitsPeak-Calf-Cyn-BAER/related\\_files/pict20220608-001049-0.pdf](https://inciweb.nwcg.gov/photos/NMSNF/2022-05-15-2009-HermitsPeak-Calf-Cyn-BAER/related_files/pict20220608-001049-0.pdf)

# Waldo Canyon Fire Watershed Assessment

Burn Severity	Acres	Percentage
Low/Unburned	7,586	41%
Moderate	7,286	40%
High	3,375	19%

← 59% Moderate/High

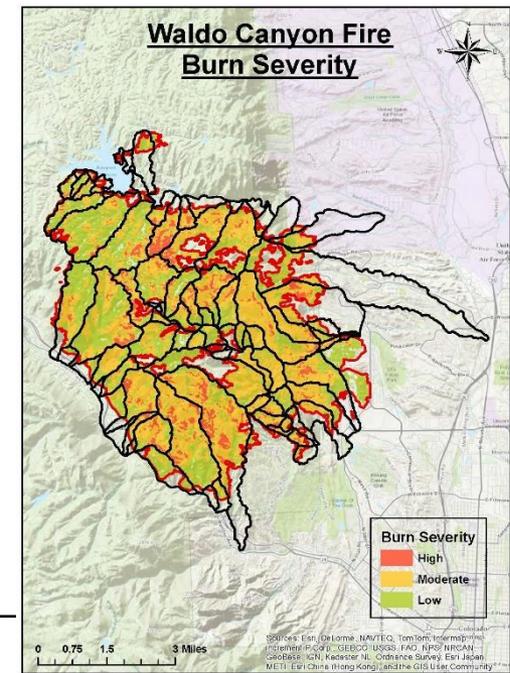


Figure 1. Waldo Fire burn severity and watershed

Watershed	Pre-Fire		Post-Fire		Increase		
	Water Yield (acre-ft)	Total Sediment (tons/yr)	Water Yield (acre-ft)	Total Sediment (tons/yr)	Water Yield Increase (acre-ft)	Total Sediment Increase (tons/yr)	Total Sediment per Unit Area (Post-Fire) (tons/acre/yr)
Camp Creek	2,115	71	3,702	16,897	1,587	16,826	2.12
Douglas Creek	1,511	47	2,156	7,834	646	7,787	3.07
Fountain Creek	2,500	90	4,822	25,075	2,322	24,985	2.69
West Monument Creek	2,747	104	4,035	7,489	1,288	7,385	1.23

Source: Waldo Canyon Fire Watershed Assessment: The WARSSS Results, 2013, Figure 1, Tables 4 and 13.  
<http://www.uppertsouthplatte.org/pdf/WARSSS/1.WaldoCanyonFireAssessmentReport.pdf>

# Risk to Acequias

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Acequias are vulnerable to flooding, which can damage the acequia itself as well as cause property damage surrounding the acequia. Flood waters can damage culverts and diversion dams, and fill acequias with silt, requiring extensive restoration efforts (NM State Hazard Mitigation Plan 2018)

>125 miles of acequias within Hermits Peak Calf Canyon Perimeter

Source: <https://www.nmdhsem.org/wp-content/uploads/2019/06/NM-HMP-Approved-Body-9-13-18-V2-low-res.pdf>

Photo credit: OSE Acequia Mapping Project <https://arcg.is/K0nCO>

# NWS Weekly Weather Briefings

## Weekly Weather Briefing Thunderstorm Threat Guidance



**Albuquerque**  
WEATHER FORECAST OFFICE

Issued July 18, 2022 7:31 AM MDT

### Recent Burn Scars

Northern Group	Today	Tuesday	Wednesday	Thursday	Friday
Calf Canyon/Hermits Peak (2022)	Slight	Slight	Moderate	Moderate	Moderate
Cerro Pelado (2022)	Slight	Slight	Slight	Slight	Moderate
Cooks Peak (2022)	Slight	Moderate	High	High	Moderate
Luna (2020)	Slight	Moderate	High	High	Moderate
Medio (2020)	Slight	Slight	Moderate	Moderate	Moderate
<b>STORM MOTION (mph)</b>	<b>E 5-10</b>	<b>SE 5-10</b>	<b>E/SE 5-10</b>	<b>S/SE 5</b>	<b>Slow &amp; Erratic</b>

Southern Group	Today	Tuesday	Wednesday	Thursday	Friday
Bear Trap (2022)	Slight	Slight	Moderate	Moderate	Moderate
Black (2022)	Very Low	Slight	Moderate	Moderate	Moderate
McBride (2022)	Very Low	Slight	Moderate	Slight	Moderate
Nogal Canyon (2022)	Very Low	Slight	Moderate	Slight	Moderate
<b>STORM MOTION (mph)</b>	<b>NW 5-10</b>	<b>Slow &amp; Erratic</b>	<b>S/SW 5-10</b>	<b>Slow &amp; Erratic</b>	<b>NW 5-10</b>

MOISTURE CONTENT	Today	Tuesday	Wednesday	Thursday	Friday
	Average	Average	Above Normal	Above Normal	Above Normal

Table indicates the probability for thunderstorms over wildfire burn areas. Storm motion and atmospheric moisture content are also listed as these factors can have considerable influence on the risk for burn scar flash flooding. Storm motion is the direction that storms will move toward. This product is experimental and for planning purposes only. Refer to the latest bulletins from the NWS concerning immediate threats for flash flooding. For a map of the burn scars, please visit: <https://www.weather.gov/images/abq/BurnScarMap2022.png>

Very Low < 10%	Slight = 10-39%	Moderate = 40-59%	High = 60-79%	Very High = 80%+
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[www.weather.gov/abq](http://www.weather.gov/abq)

**DEBRIS FLOW WARNING SIGNS**

- RUSHING WATER AND MUD
- UNUSUAL SOUNDS INCLUDING CRACKING, BREAKING ROARING, OR A FREIGHT TRAIN

Never Underestimate a Debris Flow

Source: Albuquerque NWS Office Weekly Briefing July 18, 2022

# After Wildfire NM

**AFTER WILDFIRE**  
A GUIDE FOR NEW MEXICO COMMUNITIES

Search Site Search Log In  
only in current section

Immediate Safety Mobilizing Your Community Who Can Help? Post-Fire Treatments Financial Tips Flood Information Additional Resources

Home

PRINT PAGE

**Immediate Safety**

Safety is a primary issue immediately following a destructive wildfire. This section offers some general advice on steps to take after disaster strikes in order to begin getting your home, your community and your life back to normal.

**Welcome to the After Wildfire Guide**

Experiencing a destructive wildfire can be devastating. This guide was written to help New Mexico communities recover after wildfire. It includes information on mobilize your community, a list of resources available to communities and individuals for assistance, and a technical guide with information about post-fire treatments to address the catastrophic effects of a wildfire on the land and to prepare for potential flooding. If you are reading this guide before a wildfire occurs, use it to help you plan ahead.

This guide is intended to provide useful information during this difficult time, and to start you on the road to recovery.

**Fire Specific Information-Burned Area Emergency Response (BAER)**  
Hermit's Peak and Call Canyon BAER  
Cerro Pelado BAER

## Resources for citizens and communities after and during a wildfire

- Safety
- Community Resources
- Assistance for Individuals & Families
- Post-Fire Treatments
- Flood Information
- Planning

<https://afterwildfirenm.org/>

# Flood Mitigation & Remediation Efforts

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USGS & NWS – water flow and precipitation gages

USACE – gabion structures, log booms, debris basins, GeoBrugg (wire netting), inundation mapping (Mora River & Gallinas Watershed)

USFS Forest Land – hazard signs & barriers, seeding and mulching, sediment catchment basins, storm proofing roads, protecting Gila Trout

NRCS – Emergency Watershed Protection Program

Hermit's Peak Watershed Alliance team started to distribute seed on private property, helped to reduce sediment loading, and creating one rock dams to slow water flow

Office of State Engineer: Cleaning out debris/ash in front of Storrie diversion

State Land Office: protecting campgrounds, hazardous tree removal, seeding and erosion control

General: sand bagging operations, culvert cleaning



Gila Trout & Ash flowing in SF Palomas Creek near Hermosa (inciweb, USFS)

# USACE GALLINAS WATERSHED: DIRECT ASSISTANCE PROJECT #1

CAO 16JUL2022

**Location:** Gallinas Watershed, NM

**MSC:** South Pacific Division (SPA)

**FEMA Region:** VI

**FCCE 510 Funds:**

**KTR:**

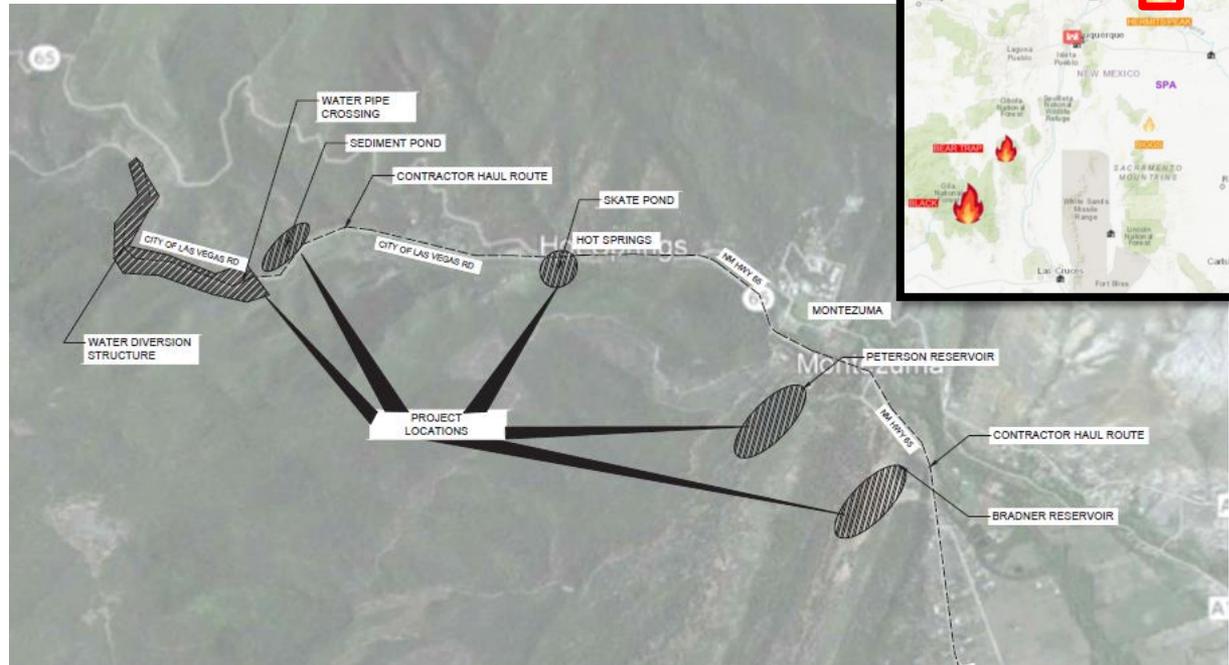
**Purpose:** Multiple upstream areas with severe soil burn that present an increased flood risk.

**SOW:** 4x Log Booms, Debris Basins, 4x GeoBrugg (wire netting), 3x large Gabion structures, 5x Rip Rap structures and misc. Gabion/HESCO/Jersey barrier structures

CONTRACT TIMELINE	
Contract Awarded	10 June 22
Contractor on Site	11 June 22
Estimated Completion Date	15 July 22
Percent Complete	100%

## UPDATE

- .
- Log booms complete.
- Geobrugg 100% complete.
- **RIPRAP 100% complete.**

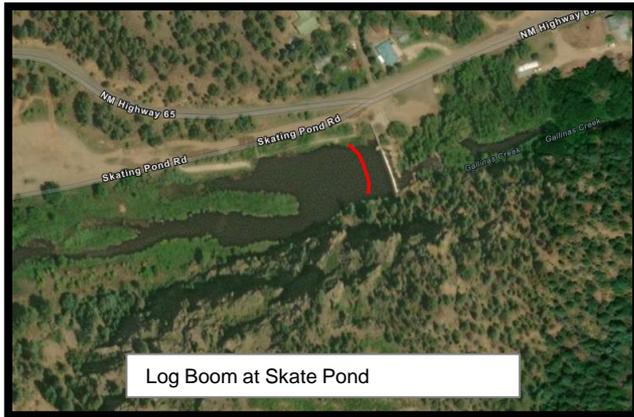


pl84-99: Advance Measures

Source: USACE Briefing 7/18/2022



# GALLINAS WATERSHED: DIRECT ASSISTANCE PROJECT #1



pl84-99: Advance Measures

Source: USACE Briefing 7/18/2022

# Ongoing & Future Actions

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## Debris Removal – Culvert Cleaning

- Sebastian Canyon - CoRd A11A - debris flows impacting road, Canyon del Agua severe burn area

## Water Infrastructure Protection

- Storrie Lake water intakes & other water system infrastructure
- Acequia intakes and ditches

## Watershed & River Restoration

## Road Repairs

## Post-Fire Treatments – public and private lands

# Questions?

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Shawn L. Penman, PhD, CFM, GISP

New Mexico Cooperating Technical Partner Coordinator  
RGIS GIS Clearinghouse Manager  
Earth Data Analysis Center, UNM  
spenman@edac.unm.edu

