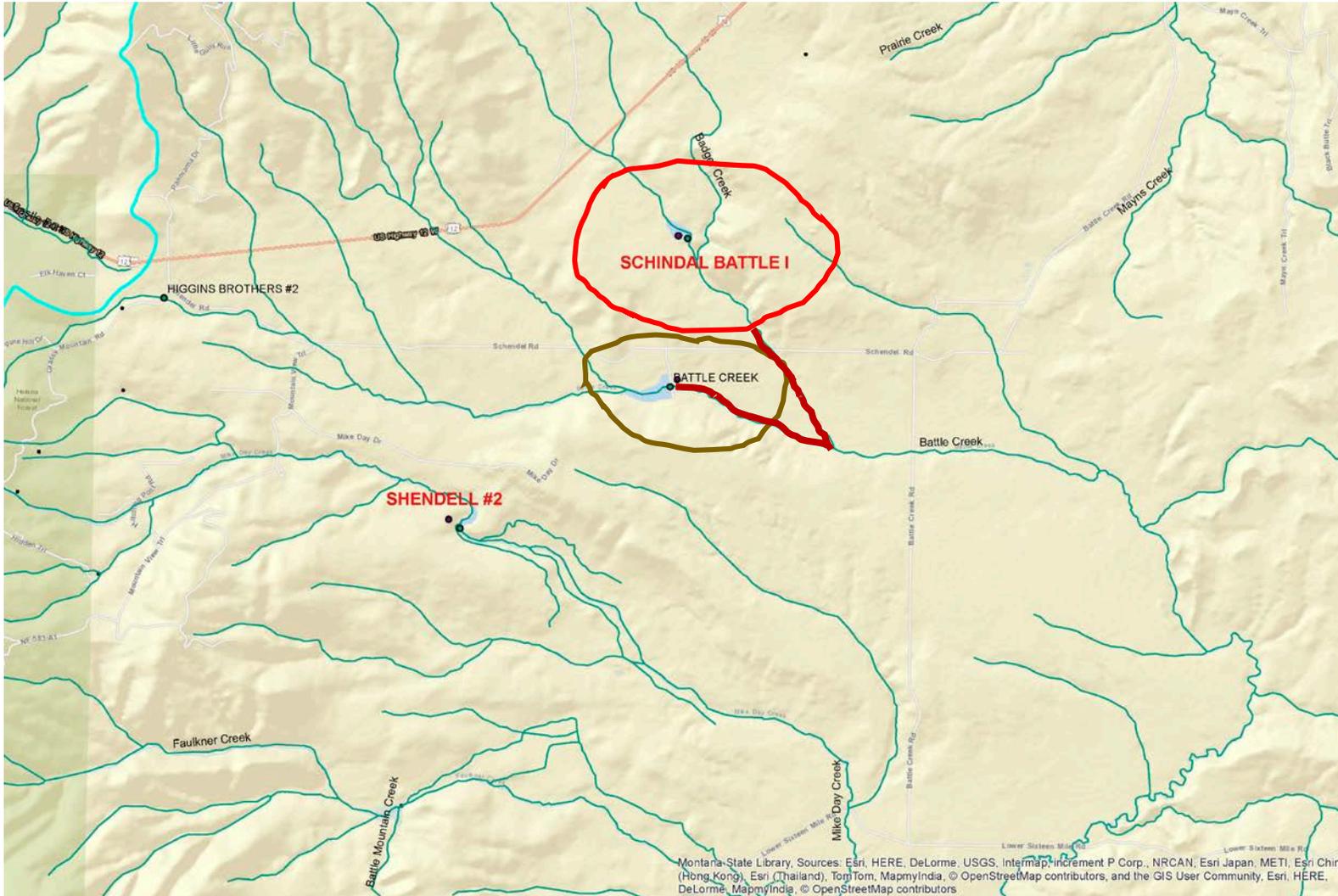




Floodplain Program Update – The First Wave



Meagher County – Dam failures



- **Badger Creek runs into Battle Creek and ultimately dumps into Sixteenmile Creek at the townsite of Sixteen.**

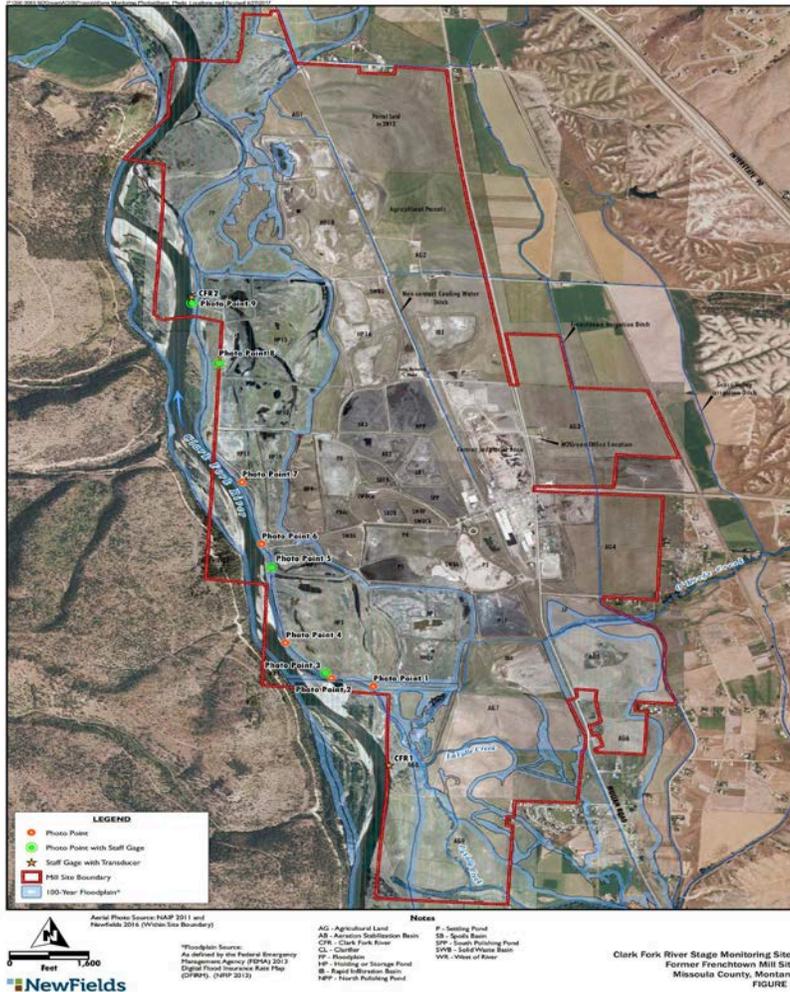
- **Schindal Battle I (Lower)**
 - **Lower part of dam in series – was breached late last week. Three feet of water topped a county road. Less than 100 AF.**
- **Schindal Battle I (Upper)**
 - **Upper part of dam in series – evidence of overtopping – owner is actively making repairs and the dam is being monitored at this time. Less than 100 AF.**
- **Battle Creek Dam – will continue to monitor – no concerns at this time. This is a larger dam at 500+ AF.**

Meagher County – Dam failures



- **Picture of the Schindal Battle I (Lower) dam breach**
- **Dam Safety has created an inundation map that is being distributed to DES and the Meagher County. It is based on a Dam Failure for Battle Creek Dam.**
- **There appears to be plenty of snow in the upper reaches of these drainages that have yet to melt. Monitoring in this area will continue.**

Smurfit Stone Berms



- Inspected on 5/10 and will continued to be monitored through spring runoff.
- No evidence of CFR Berm erosion.
- USACE did an additional inspection of the berms on 5/11.
- Water surface elevations were 6 feet or more fellow the top of CFR Berm elevation.

Current List of Disaster Declarations

- Pondera County – April 12, 2018
- Blaine County – April 18, 2018 –
- Valley County – April 18, 2018
- Toole County – April 18, 2018
- Liberty County – April 18, 2018
- Town of Chester – April 19, 2018
- Fort Belknap Indian Community – April 19, 2018
- Hill County – April 19, 2018
- Petroleum County – April 24, 2018
- Fergus County – April 25, 2018
- Missoula County – April 30, 2018
- Lewis/Clark County – May 3, 2018
- Town of Plains – May 3, 2018
- Ravalli County – May 7, 2018
- City of Missoula – May 7, 2018
- Powell County – May 8, 2018
- Sanders County – May 8, 2018



Community Updates – Recovery and continued Response



- **State and Federal agencies are continuing to work with local communities on:**
- **Community meetings/visits**
- **Insurance questions**
- **Outreach materials**

Mapped and Participating Communities

Model Regulations Feb 20 2014.doc

2014 MODEL REGULATIONS

September 3, 2013
Revision February 20, 2014

FLOODPLAIN HAZARD MANAGEMENT REGULATIONS

MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
WATER RESOURCES DIVISION
1424 9TH Avenue
P.O. Box 201601
Helena, Montana 59620-1601

<http://www.mtfloodplain.mt.gov>

1.6 REGULATED AREA

- These regulations apply only to the flood hazard areas specifically adopted herein as Regulated Flood Hazard Areas (or Special Flood Hazard Areas) which are more fully and specifically described in Section 4.

1.17 DISASTER RECOVERY

- The Floodplain Administrator shall notify owners that a permit may be necessary for an alteration or substantial improvement before repair or reconstruction commences on damaged structures because of damages caused by natural or man-made disasters such as floods, fires or winds.

Community Updates – Recovery and continued Response

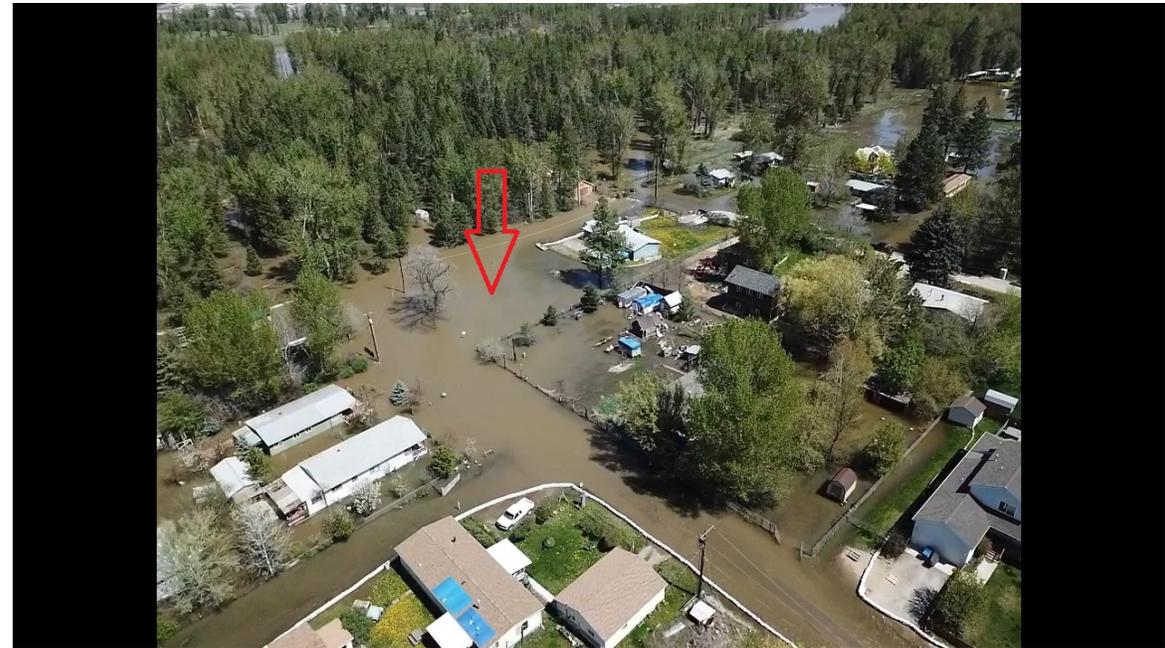
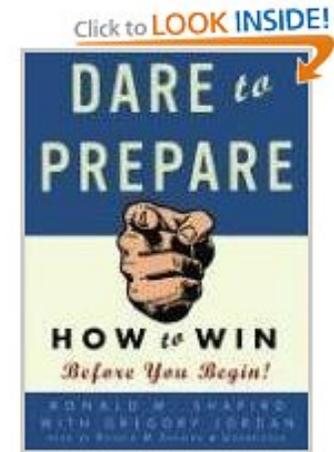


- **Missoula is working on damage assessments.**
- **Community meetings/visits**
- **Insurance questions**
- **Outreach materials**
- **Floodplain community visit on 5/17.**
- **Working on next wave of potential flooding.**

Mitigation and Recovery Success Story



- Systematic and inclusive
- Leadership and unity of effort
- Pre-disaster & post-disaster recovery planning



Long Term – Higher Standards-Losses Avoided

WHAT HAPPENED

Beginning September 9, 2013, a cold front coupled with warm and moist air from the Gulf stalled over Colorado to generate heavy rainfall. In Boulder, up to 17 inches of rain fell by September 15. The National Oceanic and Atmospheric Administration determined this event amounted to a maximum 1,000-year rainfall event (0.1% annual probability) in some locations.

The unprecedented rainfall resulted in catastrophic flooding along Colorado's Front Range of the Rocky Mountains impacting 18 Colorado counties and 132 jurisdictions. The most substantial flood damage occurred in Boulder, Larimer, and Weld Counties, which also have some of the highest-rated National Flood Insurance Program (NFIP) Community Rating System (CRS) communities.



Location of the 18 impacted counties as a result of the 2013 Colorado flood event.

Please refer to the following resources for more information on higher regulatory standards, mitigation planning, and the 2013 Colorado flood event.

Floodplain Management – <http://www.fema.gov/floodplain-management>

Building Science Publications – <http://www.fema.gov/building-science-publications>

Colorado Water Conservation Board – Floodplain Management Program – <http://cwcbstate.co.us>

Colorado Action Plans for Disaster Recovery – <http://dola.colorado.gov/cdbg-dr/content/action-plans>

Contact

Federal Emergency Management Agency
FEMA Region VIII
Denver Federal Center
Building 710,
Box 25267
Denver, CO 80225
(303) 235-4800
<http://www.fema.gov/region-viii-co-nt-nd-sd-ut-wy>



INFORMATION AND RESOURCES



Reducing Losses Through Higher Regulatory Standards

A Study of the 2013 Colorado Floods

Region VIII
March 2015



HIGHER STANDARDS

Jurisdictions can become more resilient by taking the following actions:

- Adopting and enforcing higher floodplain management standards than National Flood Insurance Program (NFIP) minimum requirements (see the examples below)
- Promoting open space through property buyouts and community planning
- Encouraging responsible building practices
- Maintaining rigorous enforcement



Open space preserved in McMurry Natural Area and Legacy Park along the Poudre River in Fort Collins. Floodwaters in the September 2013 event were able to spread out and slow down and not cause damage.

BEST PRACTICES

Best practices are mitigation measures proven to be effective in reducing flood damages and economic losses. FEMA Region VIII performed a study to evaluate regulatory best practices. Regulatory best practices determined to have the most impact were: requiring increased freeboard, restricting floodplain development, and restricting construction of basements in floodplain areas.

Floodplain

Regulating floodplain development when the community entered the NFIP (referred to as "earlier") would have resulted in 36% estimated losses avoided in Boulder and more than 53% estimated losses avoided in Larimer and Weld after the 2013 Colorado flood event.

Estimated Losses Avoided
36% in Boulder
>53% in Larimer and Weld

Floodway

Regulating floodway development earlier for the 100-year event would have resulted in estimated losses avoided of \$32 million for Boulder, \$64 million for Larimer, and \$13 million for Weld.

Estimated Losses Avoided
\$32m for Boulder
\$64m for Larimer
\$13m for Weld

FINDINGS

Freeboard

For the 100-year and 2013 events, if freeboard was increased by 2 feet, estimated losses would have decreased by more than 70 percent in Boulder, Larimer, and Weld Counties.

Decrease in Estimated Losses
>70%

In Boulder County, if freeboard had never been adopted for the 100-year event, there would have been a 331% increase in losses or \$1.5 billion additional losses.

The results show that adopting higher floodplain regulations results in benefits to jurisdictions and that not implementing regulations can result in a substantial increase in losses. This information can be used by floodplain managers and jurisdictions to support the case for implementing higher regulatory standards, in addition to conducting standard mitigation projects like acquisition and elevation.

WHAT CAN YOU DO?

The Losses Avoided study shows that both a community or property owner actions can reduce future losses.

Communities

Become an NFIP participating community. Joining the NFIP allows property owners within a participating community to purchase NFIP flood insurance and receive disaster assistance for flood-related damage.

Adopt higher standards. Higher standards can be adopted at any time. With higher standards, a community can expect faster recovery from flooding events and reduced financial and physical effects on individual property owners. Higher standards provide a good foundation for joining the CRS and passing along reduced flood insurance premiums to residents.

Property Owners

Know your risk. To reduce your flood risk, you need to know your level of risk. Flood hazard maps show different degrees of risk and help determine the cost of flood insurance. To identify the risk, visit FEMA's Map Service Center (<http://msc.fema.gov>) to see an online map or visit your local floodplain administrator.

Reduce your risk. If located in a high-risk zone, consider elevating your structure, installing approved flood vents, or partially filling in enclosures. These actions could reduce your flood insurance premium.

Insure your risk. Another way to reduce flooding impacts is to purchase flood insurance through the NFIP. Premium discounts are available if your community participates in the CRS. If your community does not participate, encourage your community leaders to join.



Talking about Floods During Wildfires?



- **Wildfires Are Not A Singular Disaster**
- **They are the Beginning of Many Disasters.**

(Maia Potts & Brian Varrella – Fort Collins Presentation)

- **Disaster Cycle lasts 5 – 10 Years**
- **Disasters continue until the watershed is stabilized**



FLOOD AFTER FIRE

Did you know that wildfires dramatically alter the terrain and increase the risk of floods?

**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 www.fema.gov/national-flood-insurance-program



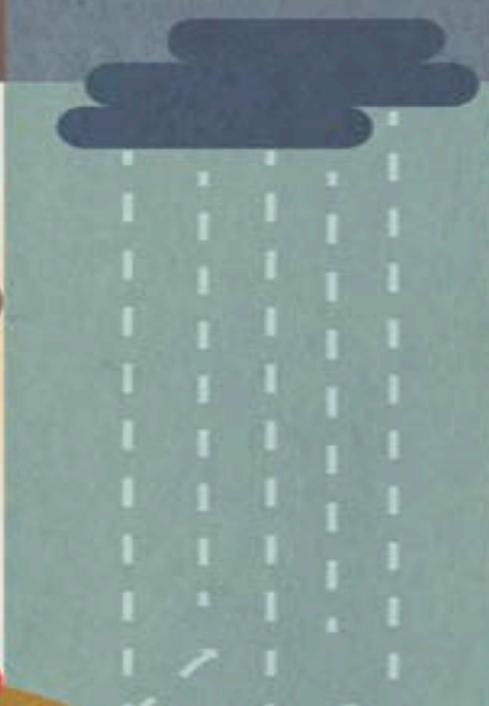
During normal conditions, vegetation helps absorb rainfall water.



But after an intense wildfire, burned vegetation and charred soil form a water repellent layer, blocking water absorption.



During the next rainfall, water bounces off of the soil.



And as a result, properties located below or downstream of the burn areas are at an increased risk for flooding.

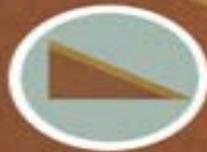


Heavy Rains

Excessive amounts of rainfall can happen throughout the year. Properties directly affected by fires and those located below or downstream of burn areas are most at 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.

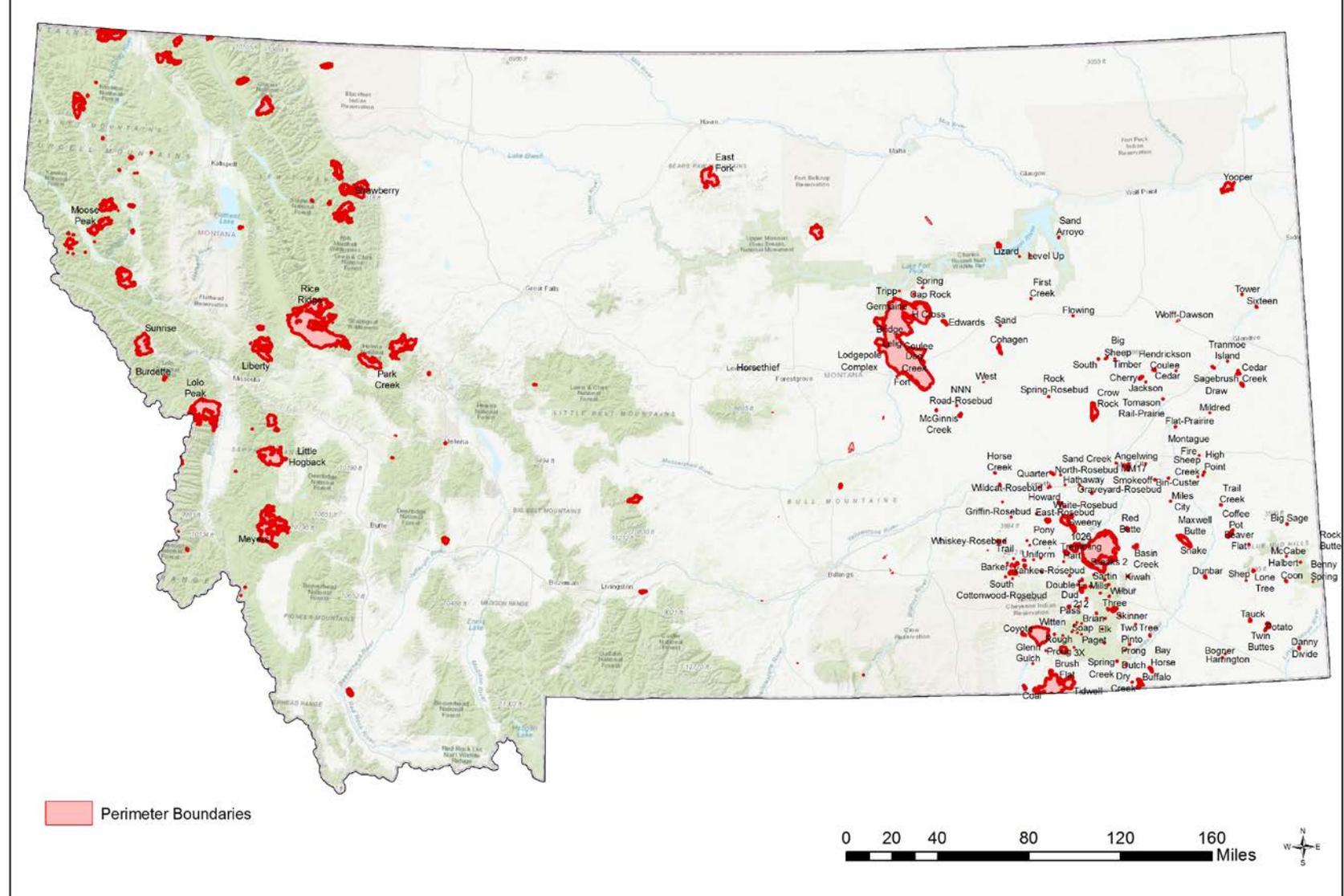


Montana's 2017 fire season tops 1 million acres burned

Posted: Sep 06, 2017 4:56 PM MDT

LOCATION	NAME	ACRES BURNED
47.268, -113.485	Rice Ridge	101,424
45.739, -106.009	Sartin Draw	99,735
45.12, -106.59	Brush Flat	57,000
45.995, -113.58	Meyers	53,737
46.675, -114.27	Lolo Peak	45,012
46.588, -113.584	Sapphire Complex	41,904
47.037, -114.879	Sunrise	26,115
47.139, -113.78	Liberty	21,388
48.169, -109.612	East Fork	21,103
47.575, -115.285	Highway 200	17,489
47.154, -112.502	Alice Creek	17,480
48.973, -115.441	Caribou	15,142
47.042, -112.797	Park Creek	14,985
45.04, -106.32	Tidwell	10,000
48.607, -113.829	Sprague Fire	9,403
48.17, -113.094	Crucifixion	7,604
48.857, -114.857	Gibraltar Ridge	6,966
47.957, -113.071	Scalp	4,678
45.934, -111.989	Conrow	2,727
47.273, -113.138	Monahan	2,523

2017 Montana Fires



- **Keys to Recovery Success**
 - Act quickly
 - Actively plan
 - Engage the community
 - Develop partnerships, networks and effective coordination strategies



Thank you!

▶ **Traci Sears**
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