

Holiday Farm Burned Area Emergency Response

Willamette National Forest, McKenzie River RD, Lane County OR



Photo Credit – Kate Meyer

USFS Team Members

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- Engineering –Walter Hislop, Mario Isaias-Vera (HazMat), and Kyle Yee
- Geology – Fred Levitan
- Recreation – Emily Long
- GIS –David Keenum, Rosana Costello, Dorothy Thomas
- Botany/Weeds – Krista Farris
- Fisheries – Kate Meyer, Matt Helstab
- Archaeology – Annemarie Kmetz
- Wildlife – Ruby Seitz, Esmeralda Bracamonte
- Fire Liaison/Logistics - Johan Hogervorst



Agency Coordination

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- NOAA NWS- Spencer Higginson, Tom Wright
- ACOE-Wendy Jones
- Lane County
- ODOT-Michael Tardif, Tony Robinson
- DOGAMI-Bill Burns and Nancy Calhoun
- EWEB-Karl Morgenstern
- HJ Andrews-Sherri Thompson, Mark Schultz
- USGS-Jason Kean, Dennis Staley
- Research-Cheryl Friesen, Pete Robichaud
- University of Oregon-Josh Roering



Holiday Farm Stats

Date Started – September 7, 2020;
Date Contained – October 29, 2020

- Suppression costs \$28,000,000
- Acres Burned – 173,393
- Mixed Ownerships
- 19 sub-watersheds burned
- 140 Miles of FS roads
- ~13 miles of McKenzie River
- ACOE Blue River and Cougar Dams
- Multiple FS CGs and boat ramps

Ownership	Acres	Percent
Army Corps of Engineers	1,072	0.6%
Bureau of Land Mgt	18,514	10.7%
Private	121,537	70.2%
U.S. Forest Service	31,578	18.2%
Undefined	348	.2%
Totals	173,050	100%

Holiday Farm Stats

Assessment started September 30th

- Satellite imagery acquisition September 29th
- Darren Cross - initial list of critical values
- Field validation of the whole fire, analysis on NFS
- SBS finalized and shared with partners on October 6th

Roads - 42 miles of 140 surveyed

2 helicopter recon flights-

- SBS mapping of whole fire
- Hwy 126-ODOT Coordination





Burned Area Emergency Response

Holiday Farm BAER

Vegetation Mortality Basal Area Loss

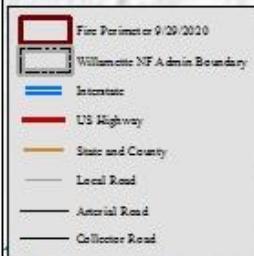
Willamette National Forest
October 12, 2020



0 1 2 4 6 8 Miles

Linn County

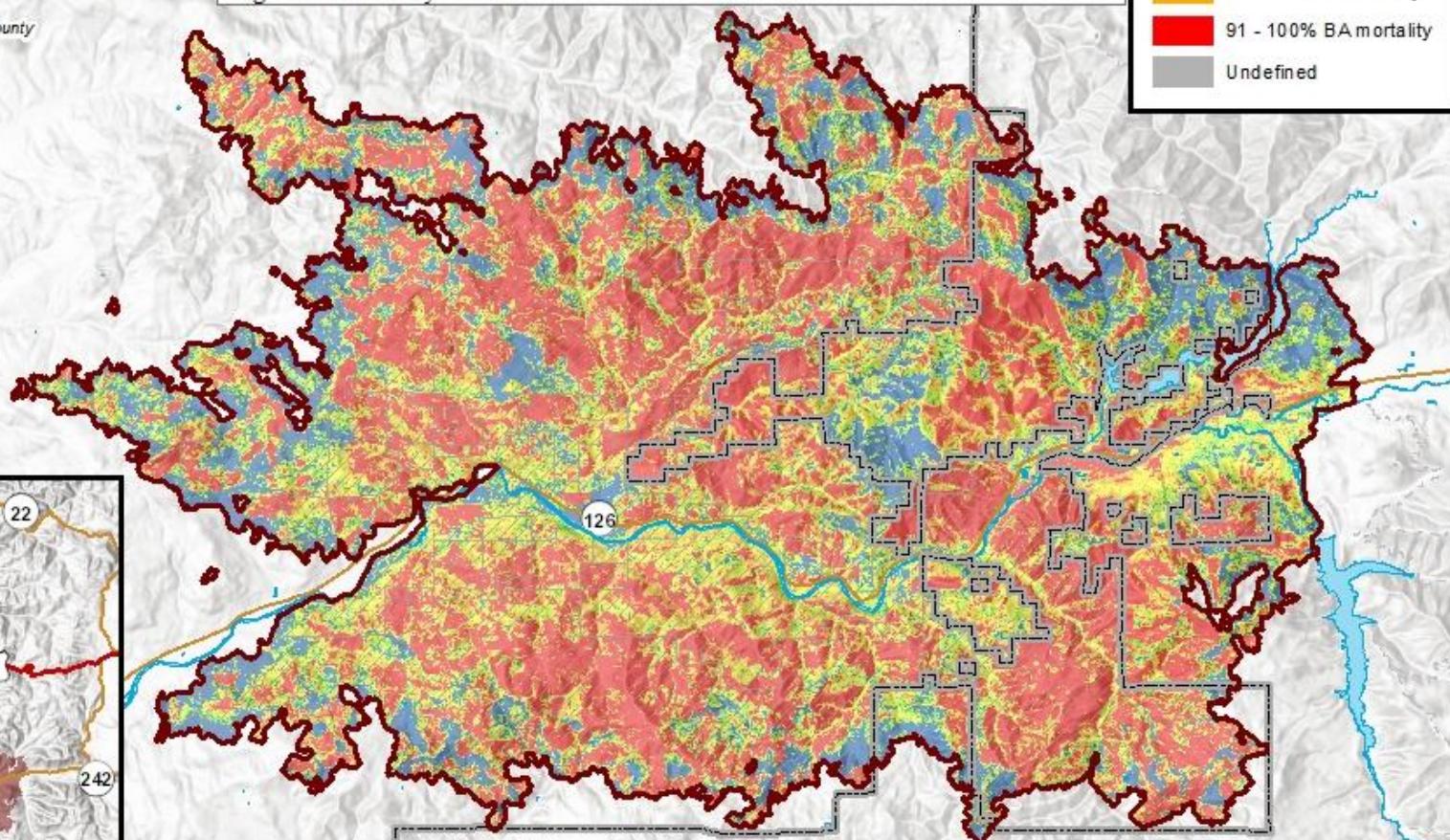
Lane County



Post-fire vegetation mortality products are intended primarily for use in assessing fire-related reforestation needs. These data help staff on local units prioritize areas for further assessment and support reforestation funding requests and decisions. They facilitate post-fire vegetation management decision-making by reducing planning and implementation costs. These data also serve a variety of related Agency objectives, such as wildlife habitat analysis and salvage harvest planning. In contrast, the soil burn severity map helps the BAER program meet its first priority, which is to address emergency soil stabilization needs to prevent further damage to life, property, and natural and cultural resources.

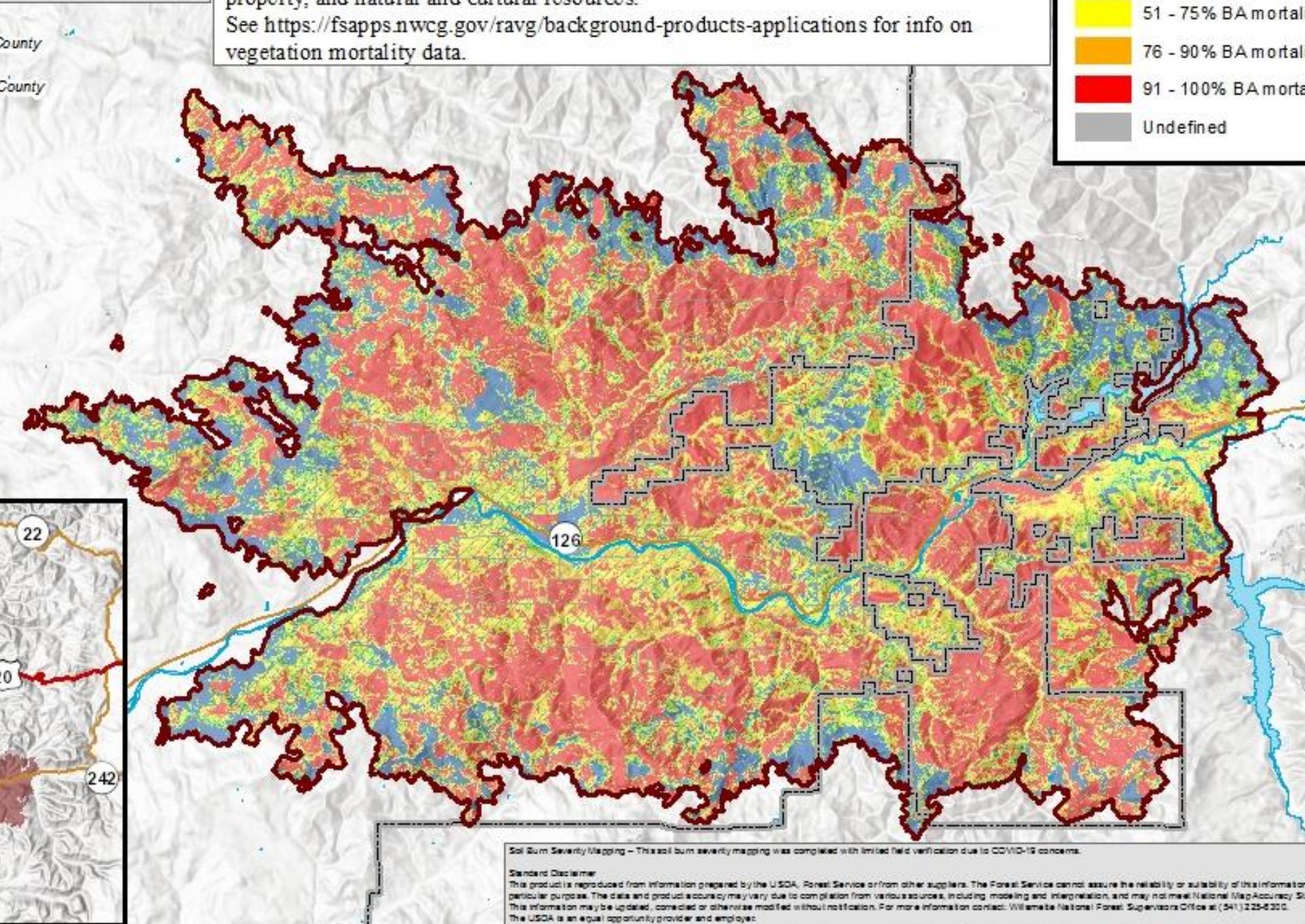
See <https://fsapps.nwcg.gov/ravg/background-products-applications> for info on vegetation mortality data.

Vegetation Mortality Basal Area Loss



property, and natural and cultural resources.

See <https://fsapps.nwcg.gov/ravg/background-products-applications> for info on vegetation mortality data.



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2020

 Burned Area Emergency Response

Holiday Farm BAER

Soil Burn Severity

Imagery Date: 9/29/2020



Willamette National Forest
October 4, 2020

0 1.25 2.5 5 7.5 10 Miles

	Fire Perimeter 9/29/2020
	Other Federal and State Lands
	Private Lands
	Interstate
	US Highway
	State and County
	Local Road
	Arterial Road
	Collector Road

Soil Burn Severity

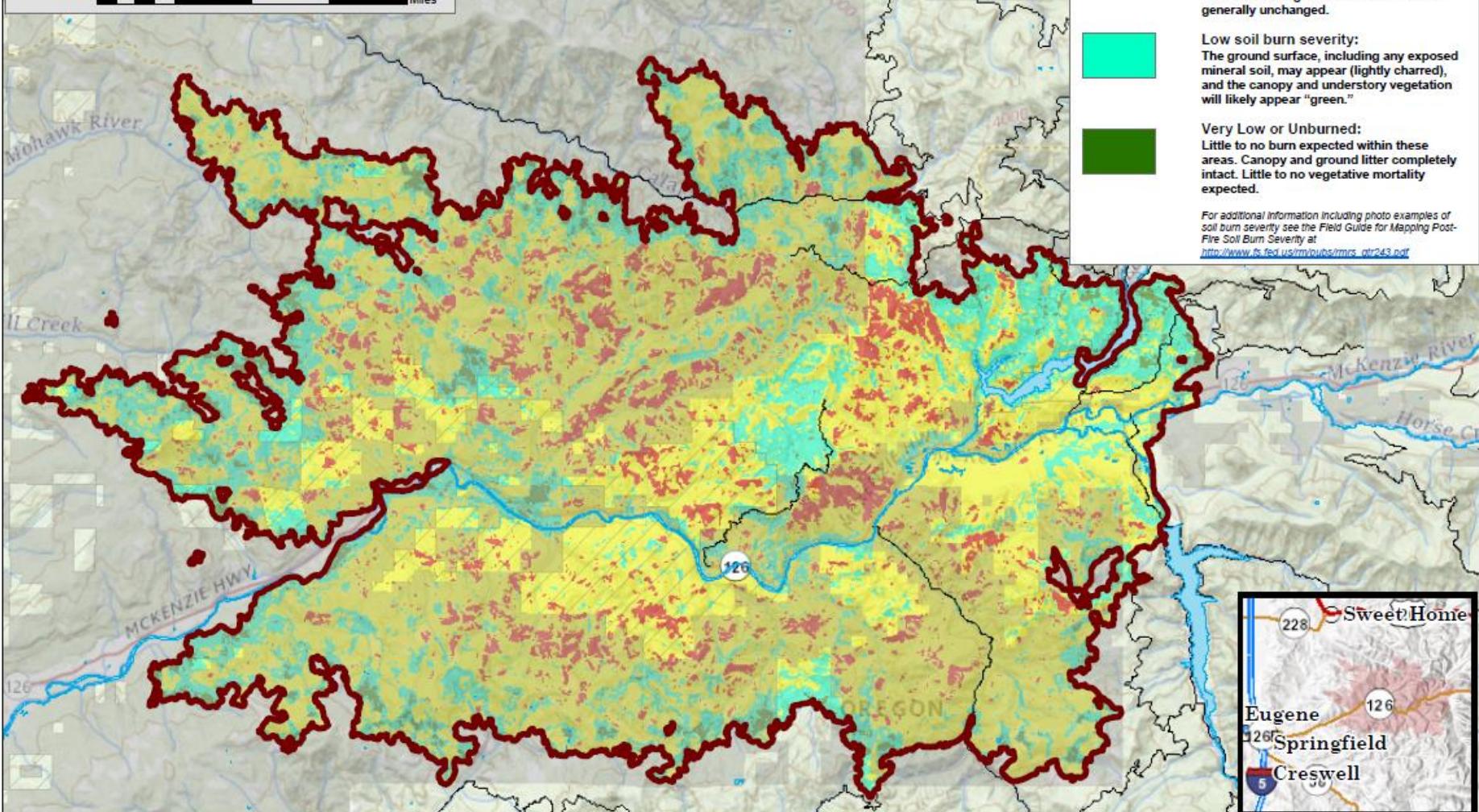
High soil burn severity:
All or nearly all of the pre-fire ground cover and surface organic matter (litter, duff, and fine roots) is generally consumed, and charring may be visible on larger roots. Soil is often gray, orange, or reddish at the ground surface where large fuels were concentrated and consumed.

Moderate soil burn severity:
Up to 80 percent of the pre-fire ground cover (litter and ground fuels) may be consumed but generally not all of it. There may be potential for recruitment of effective ground cover from scorched needles or leaves remaining in the canopy that will soon fall to the ground. Soil structure is generally unchanged.

Low soil burn severity:
The ground surface, including any exposed mineral soil, may appear (lightly charred), and the canopy and understory vegetation will likely appear "green."

Very Low or Unburned:
Little to no burn expected within these areas. Canopy and ground litter completely intact. Little to no vegetative mortality expected.

For additional information including photo examples of soil burn severity see the Field Guide for Mapping Post-Fire Soil Burn Severity at
http://www.fs.fed.us/rm/pubs/rmrs_ntr243.pdf



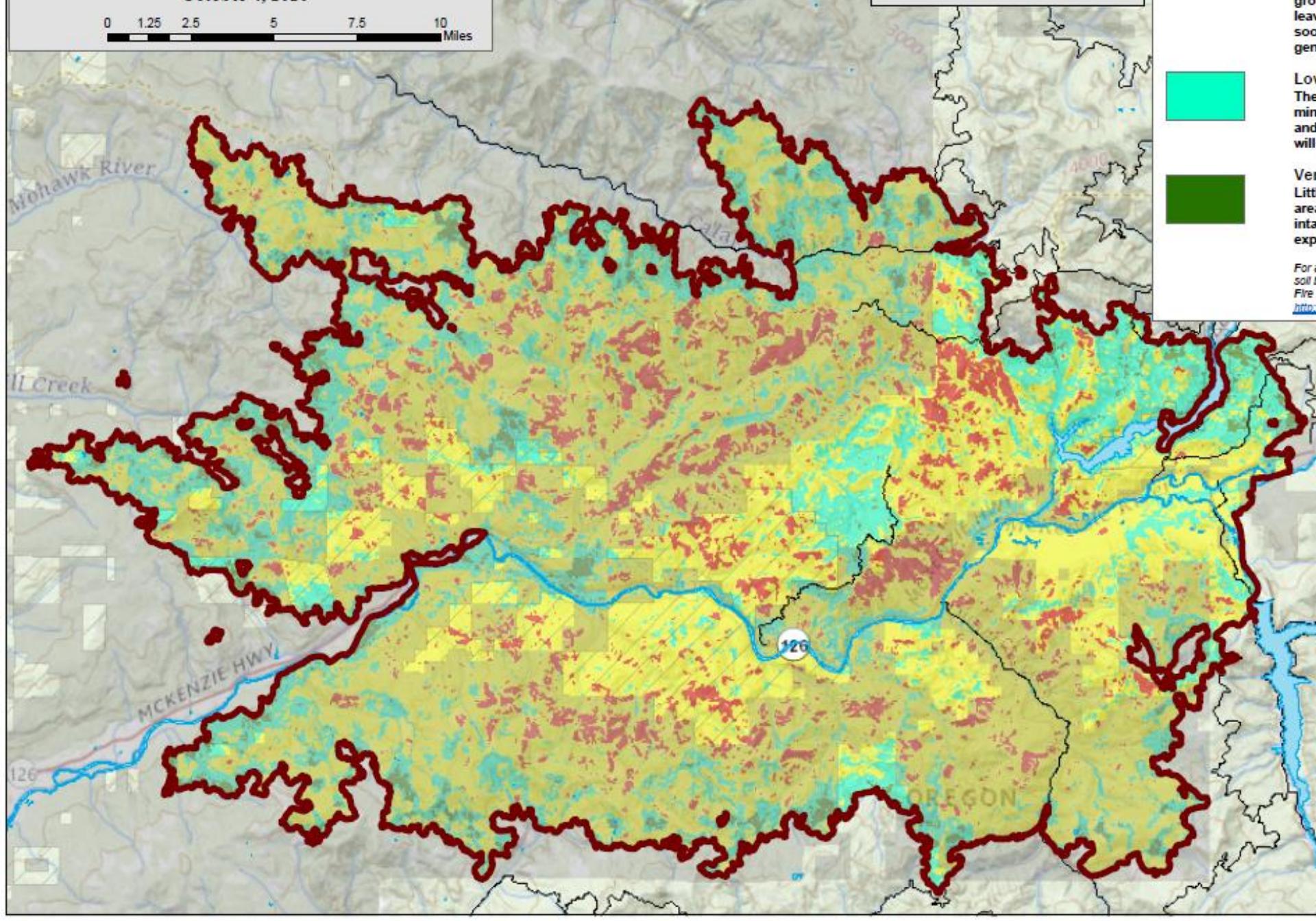
Imagery Date: 9/29/2020



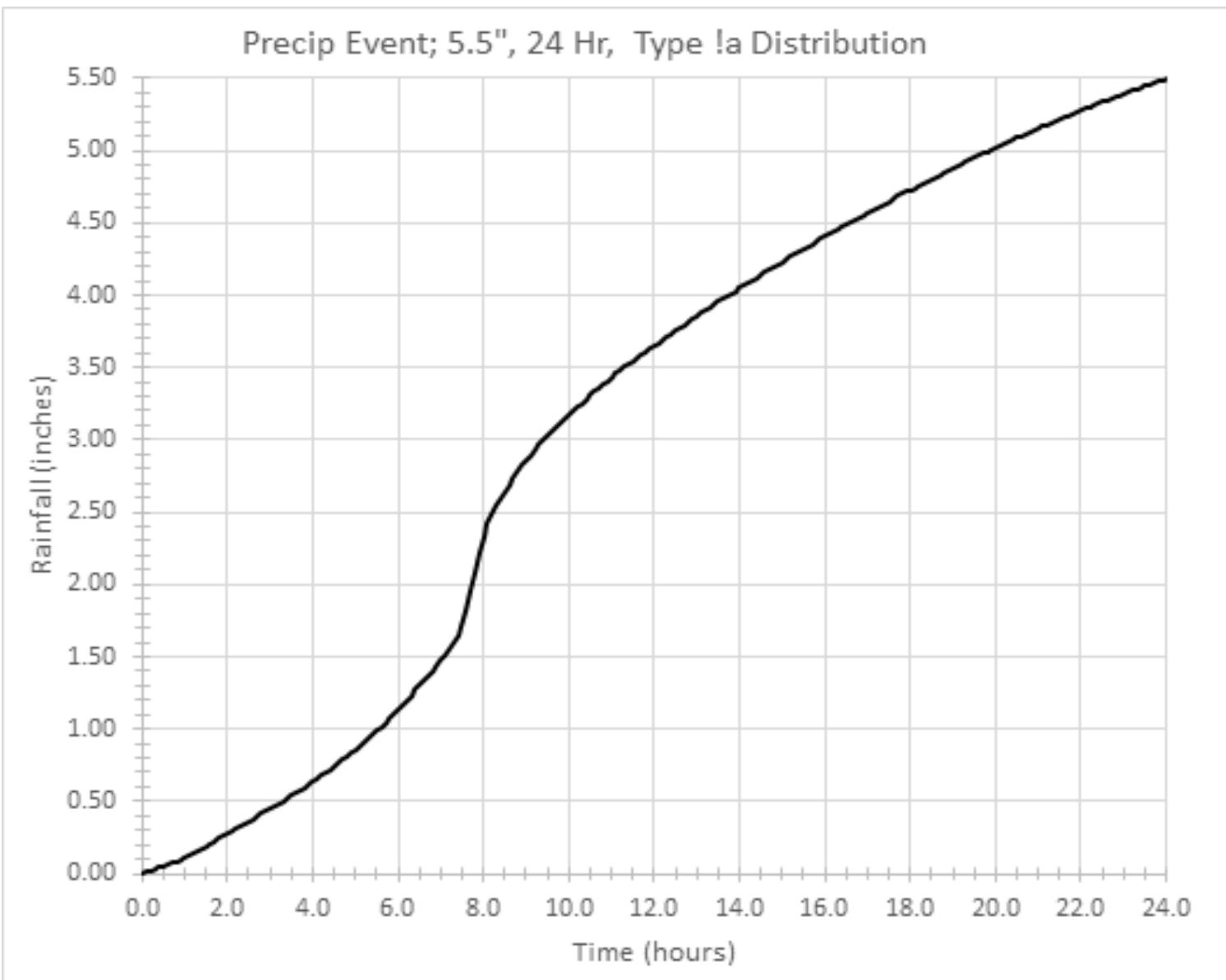
Willamette National Forest
October 4, 2020

0 1.25 2.5 5 7.5 10 Miles

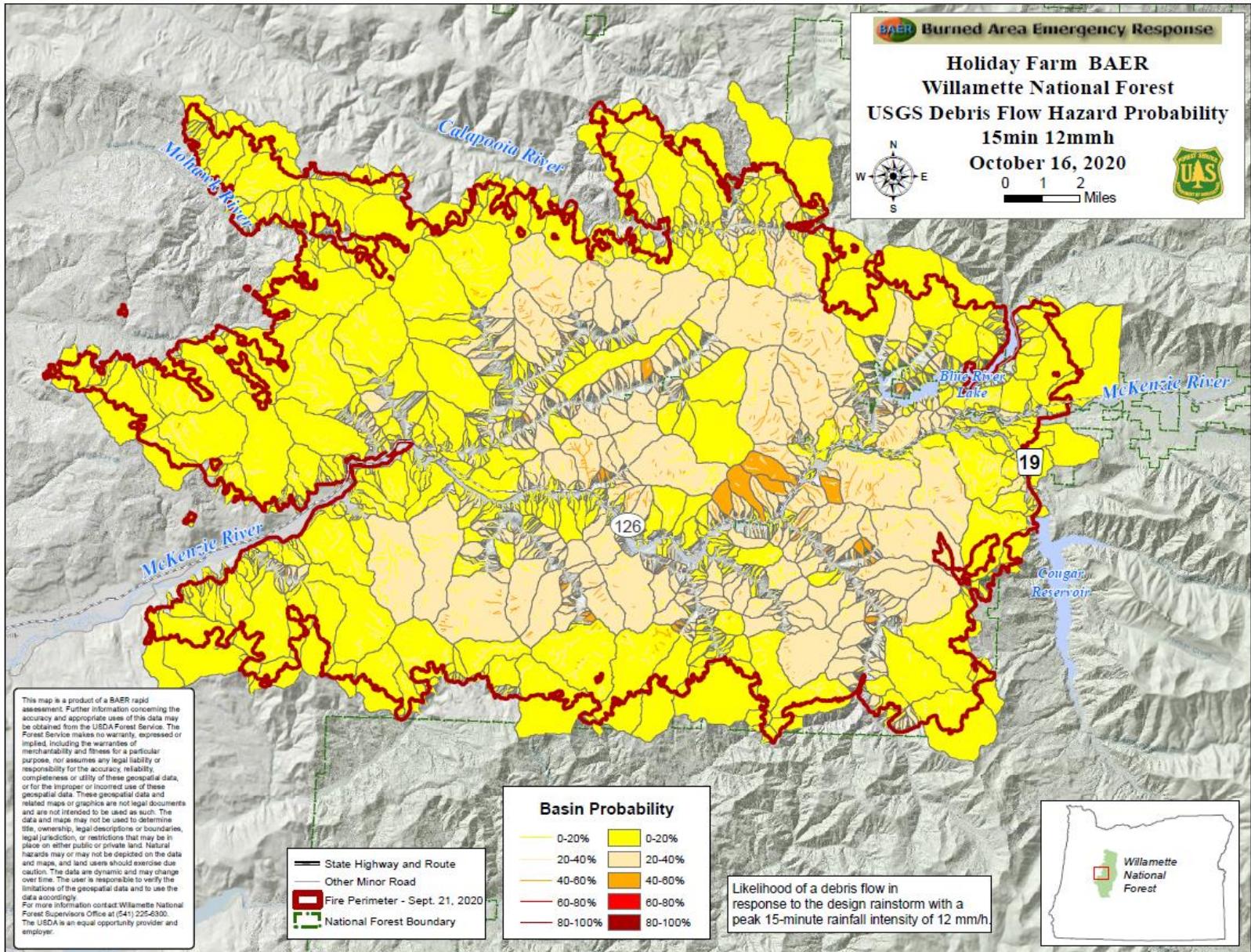
- Arterial Road
- Collector Road



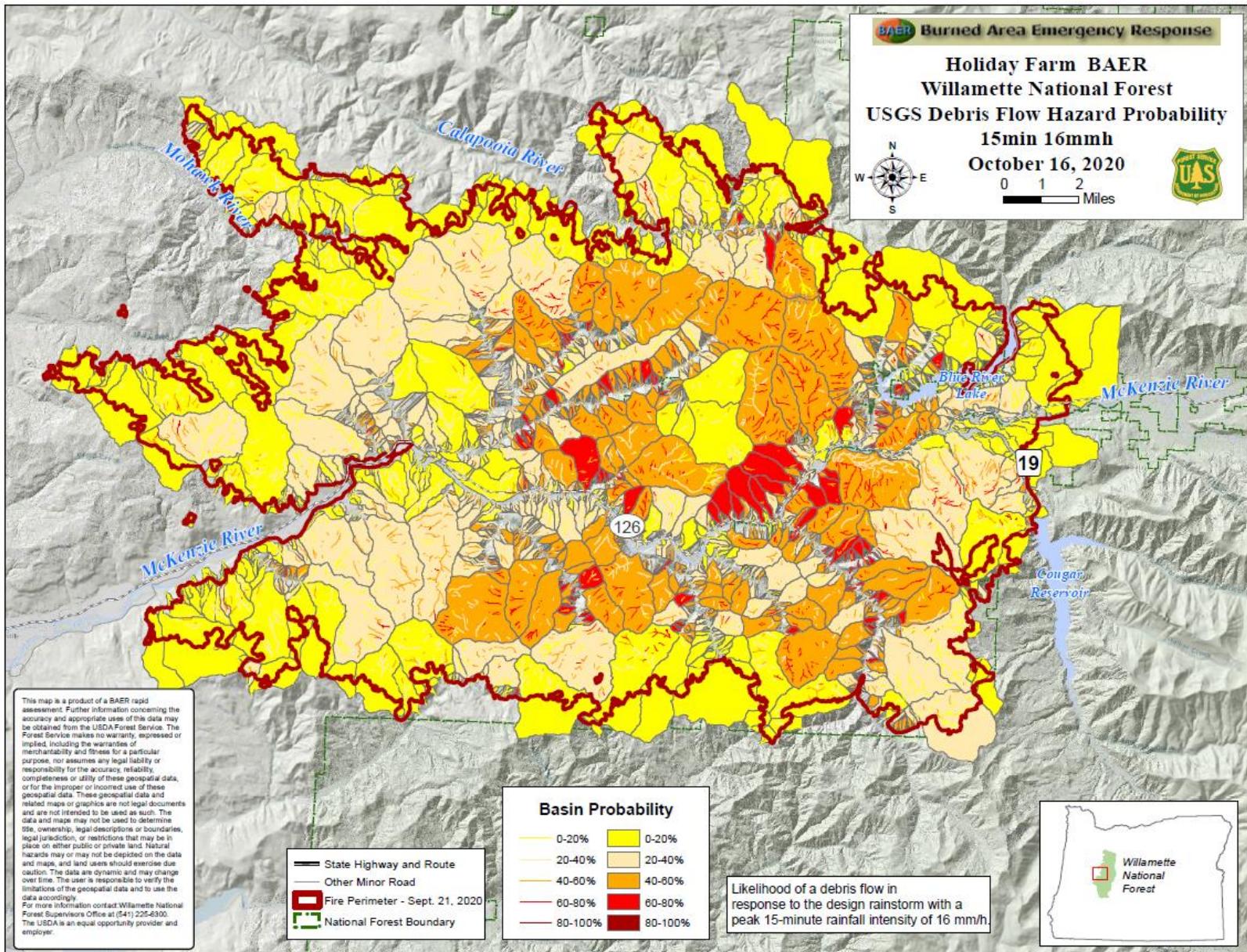
Probable Storm



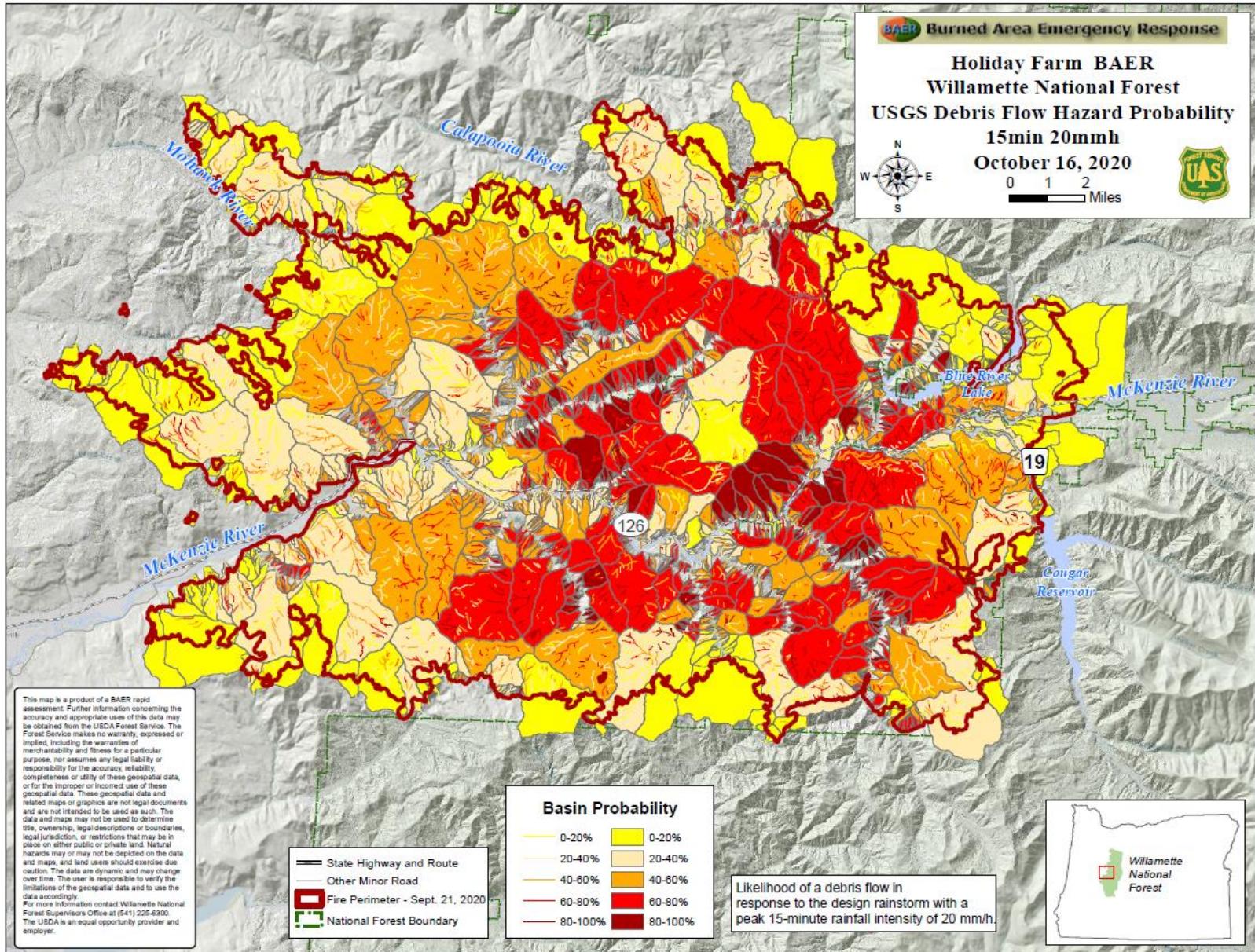
Debris Flow Risk



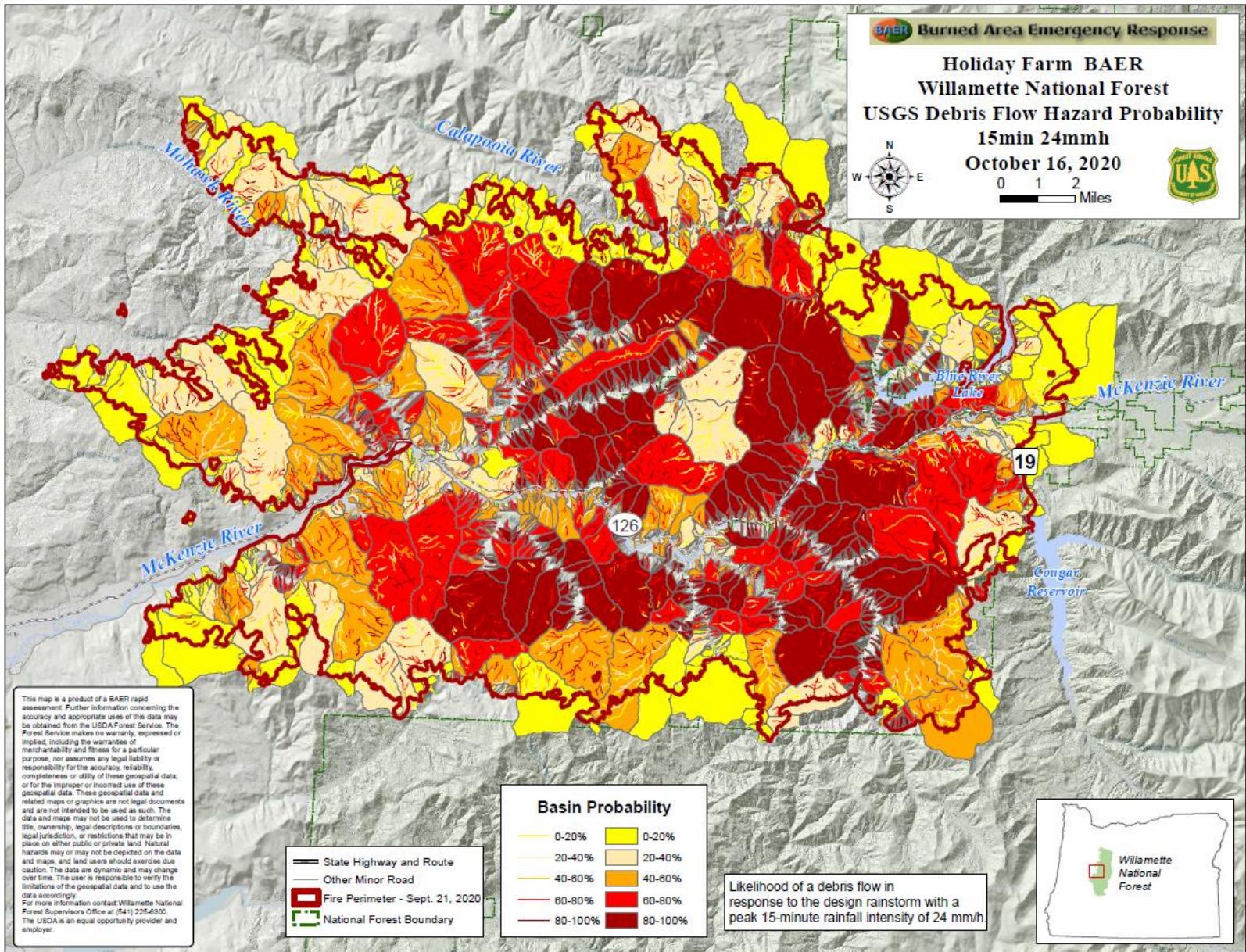
Debris Flow Risk



Debris Flow Risk



Debris Flow Risk

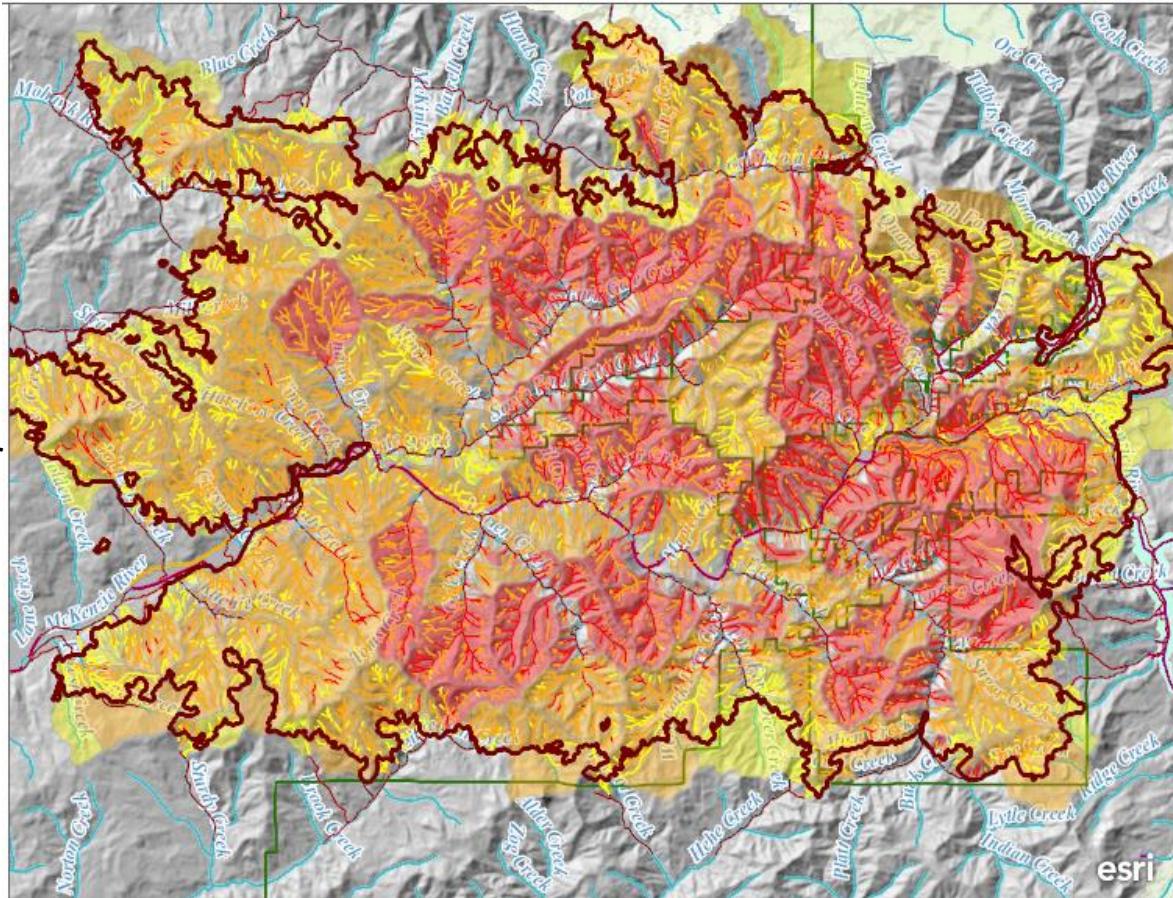


Geology

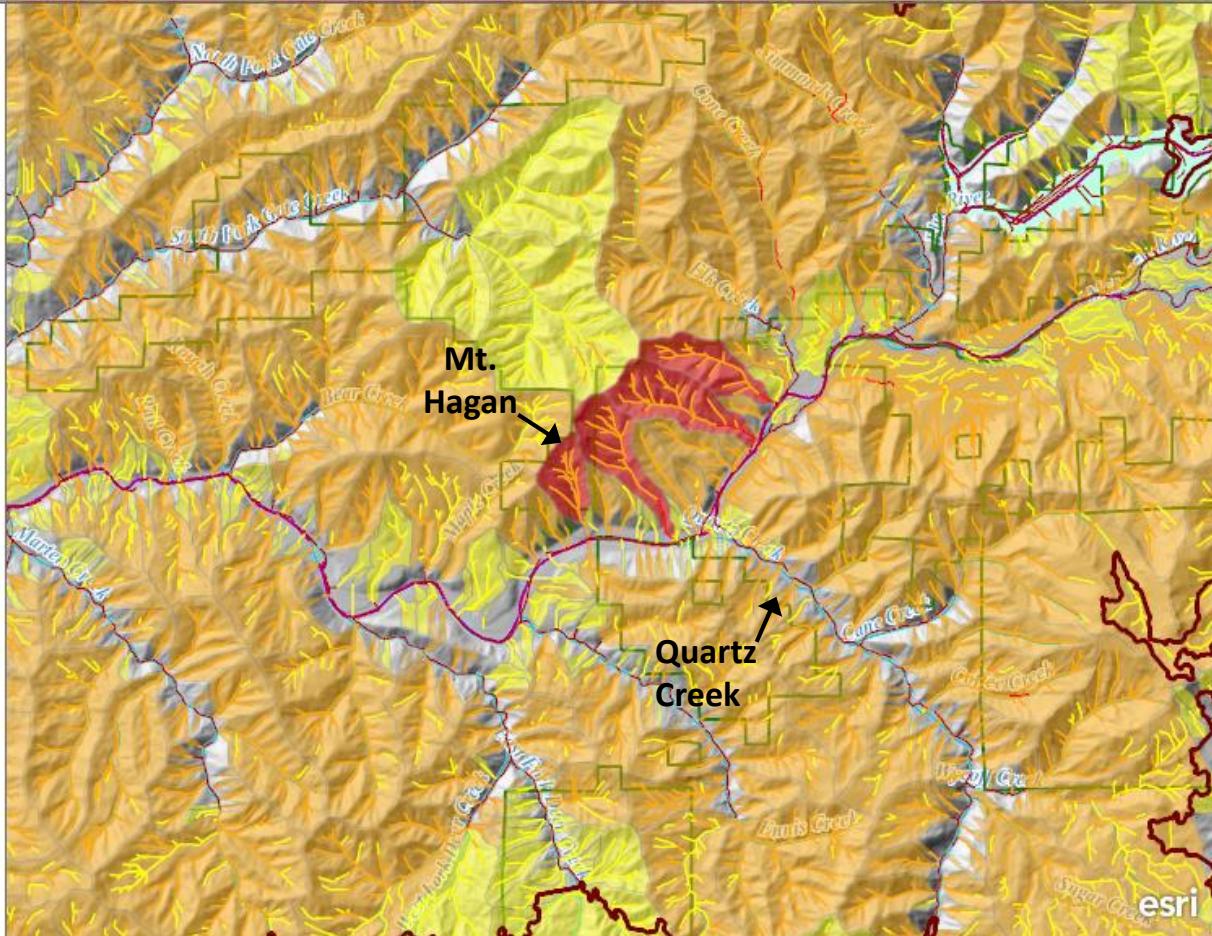
Debris Flow Hazard

- Steep terrain, long slopes
- Headwall basins, debris fans
- Morphology present; apparent where denuded
- Risk amplified following disturbance
- USGS debris flow model used for prediction; not calibrated to western Oregon, but useful for prioritizing risk
- Science planned in the burned area to confirm and calibrate model – excess runoff, shallow landsliding?

Rainfall duration-intensity?
(UO, USGS, DOGAMI)

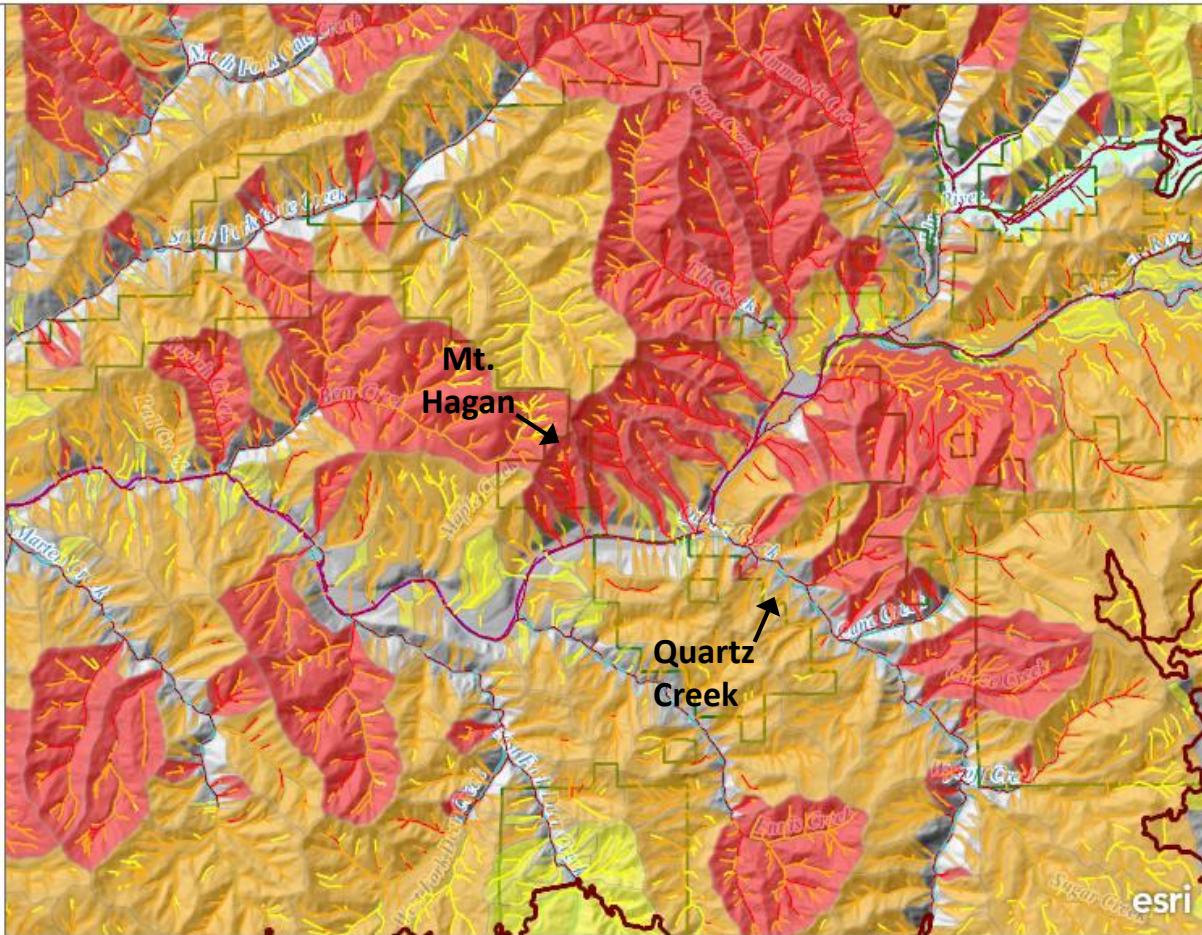


Geology



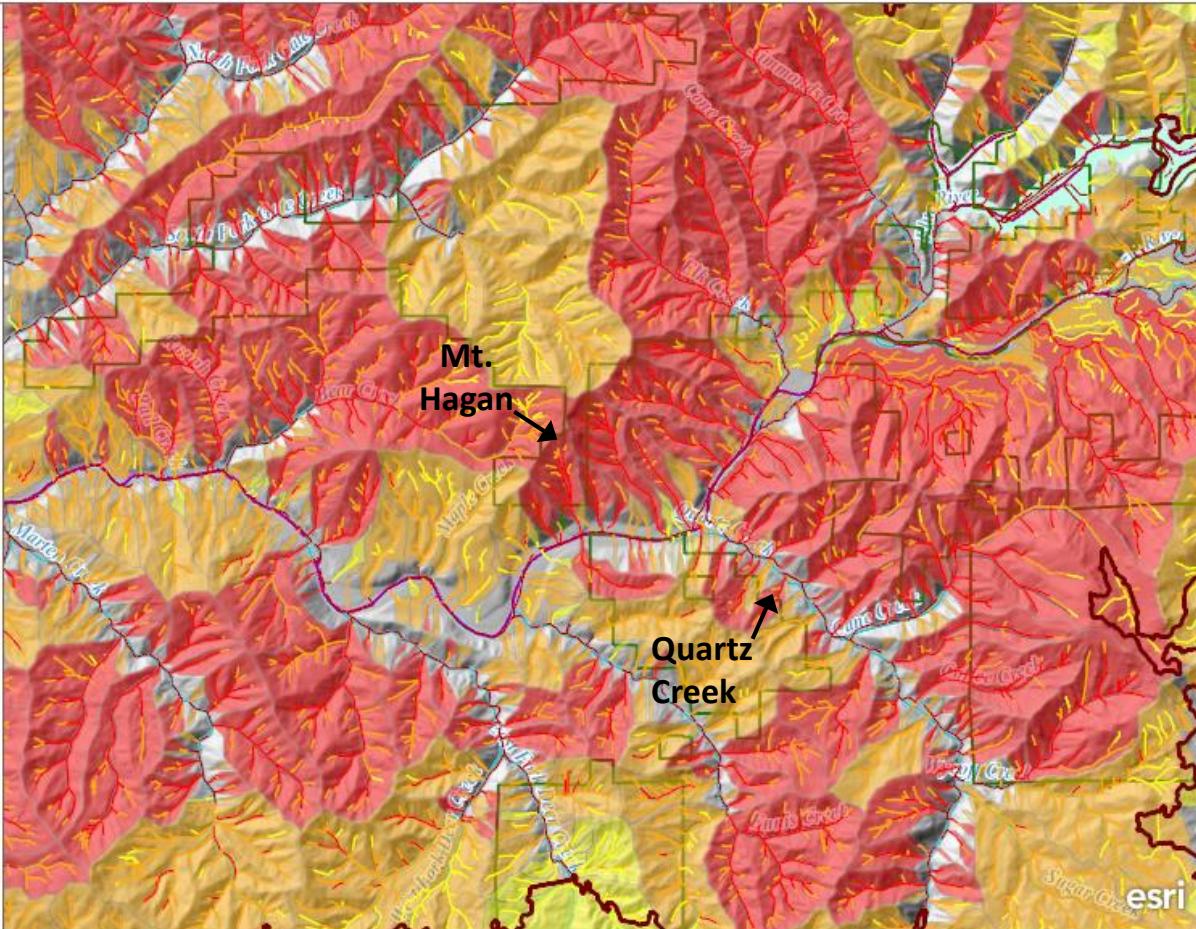
Headwall basin in
Quartz Creek drainage

Geology



Headwall basin in Quartz Creek drainage

Geology



Headwall basin in Quartz Creek drainage

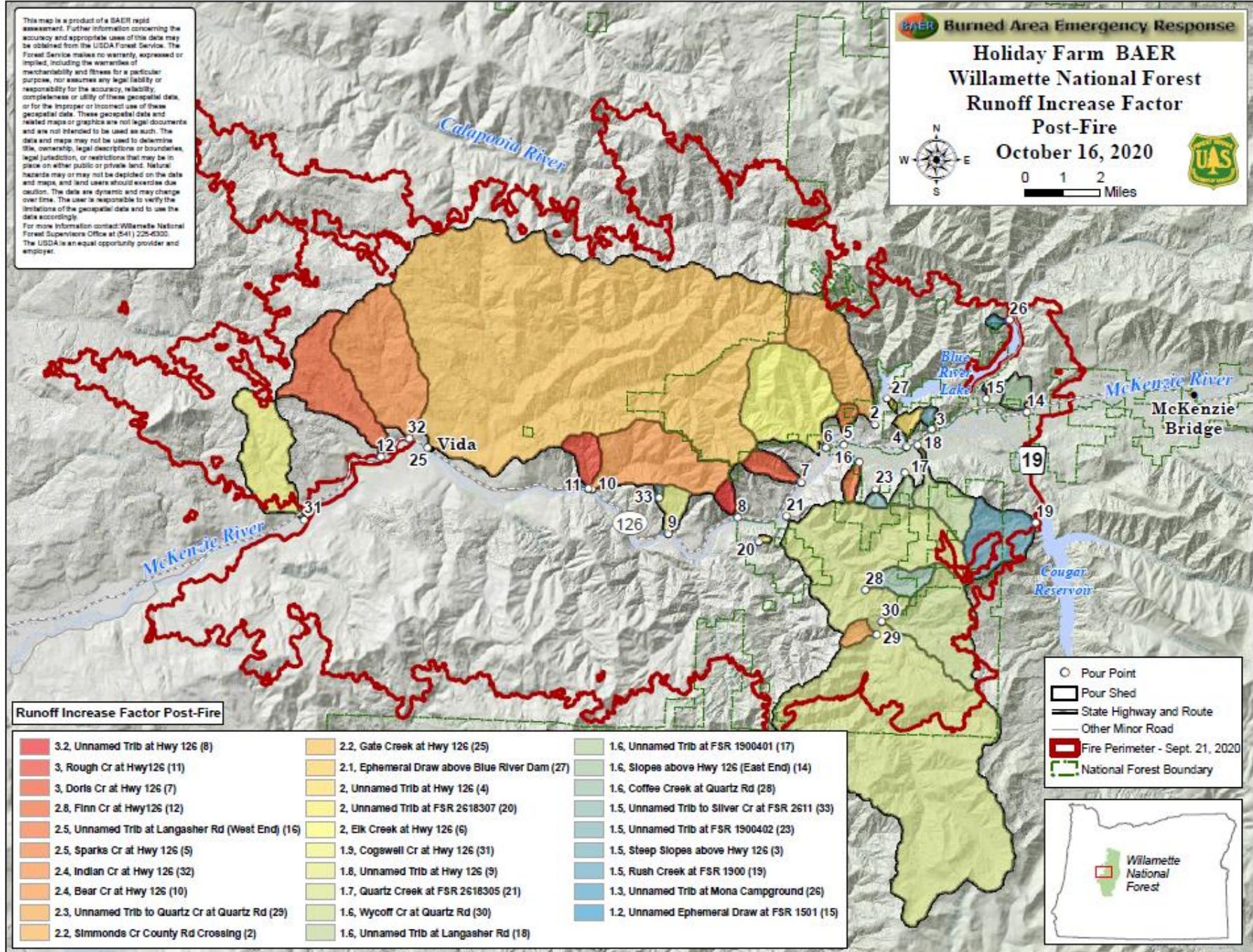
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BAER Burned Area Emergency Response
Holiday Farm BAER
Willamette National Forest
Runoff Increase Factor
Post-Fire
October 16, 2020



0 1 2 Miles



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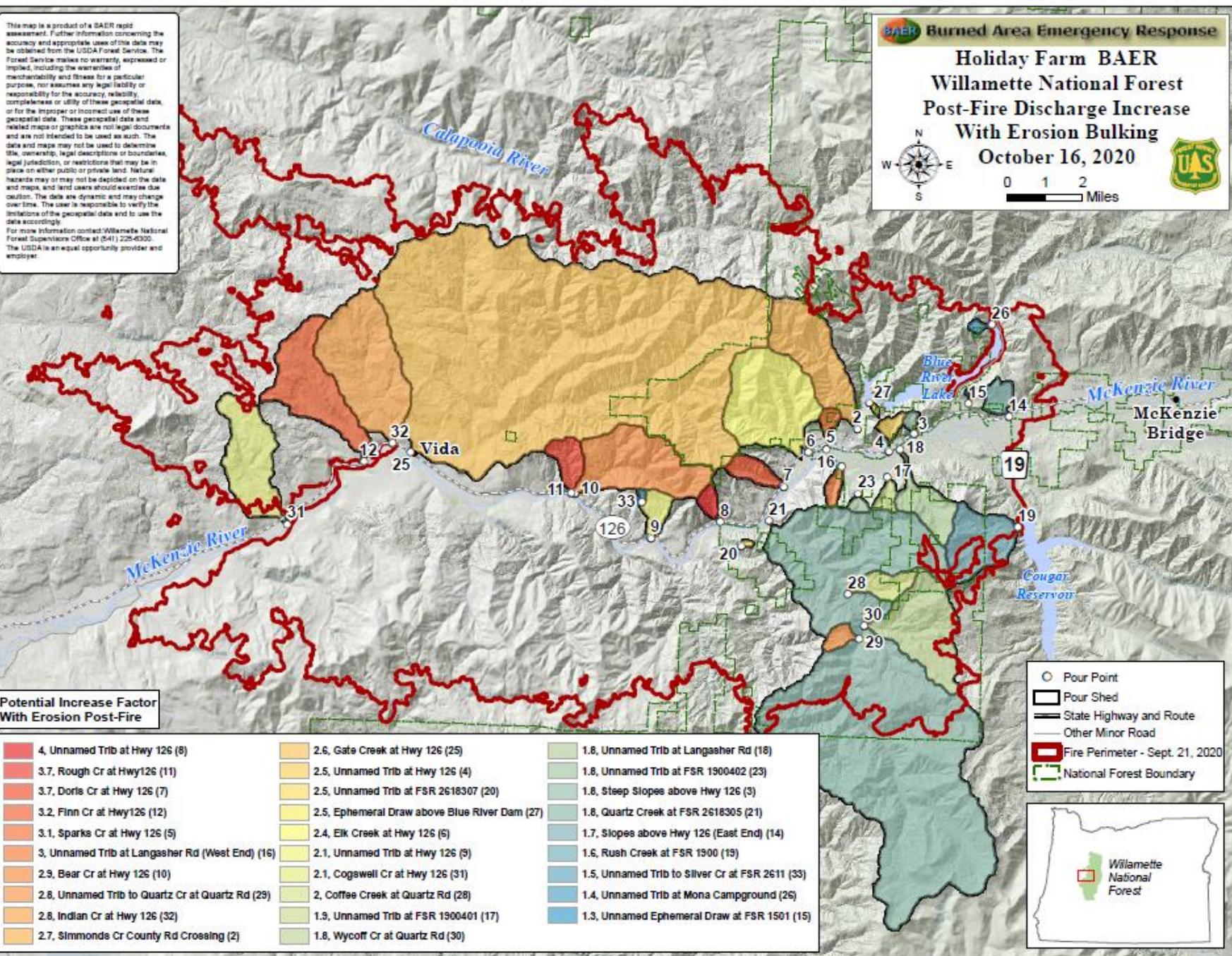
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BAER Burned Area Emergency Response

Holiday Farm BAER Willamette National Forest Post-Fire Discharge Increase With Erosion Bulking October 16, 2020



0 1 2 Miles



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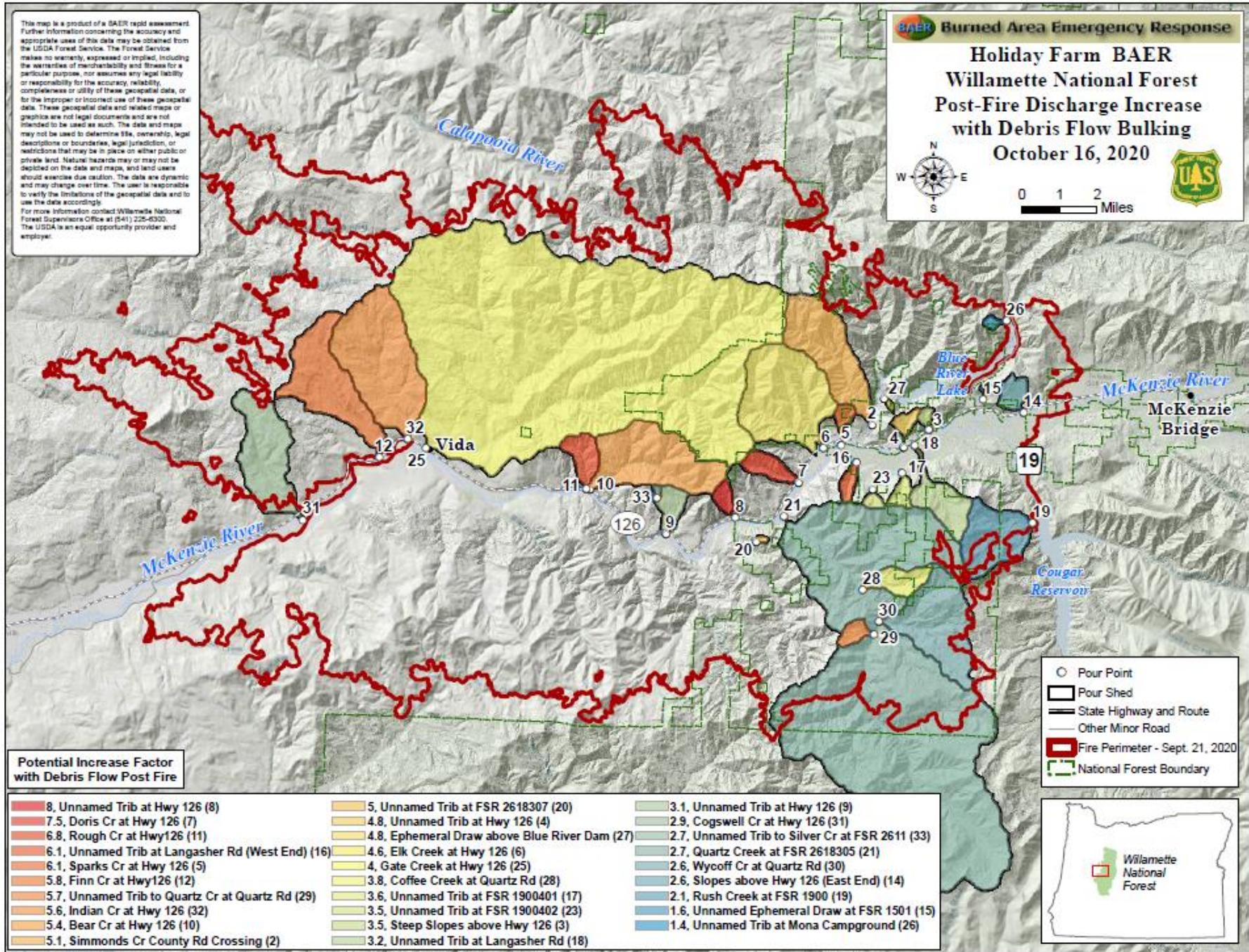


Burned Area Emergency Response

Holiday Farm BAER Willamette National Forest Post-Fire Discharge Increase with Debris Flow Bulking October 16, 2020



0 1 2 Miles



Critical Values at Risk for Each Resource

BAER Risk Assessment

Probability of Damage or Loss	Magnitude of Consequences		
	Major	Moderate	Minor
	RISK		
Very Likely	Very High	Very High	Low
Likely	Very High	High	Low
Possible	High	Intermediate	Low
Unlikely	Intermediate	Low	Very Low

Probability of Damage or Loss: The following descriptions provide a framework to estimate the relative probability that damage or loss would occur within 1 to 3 years (depending on the resource):

- Very likely. Nearly certain occurrence (90% - 100%)
- Likely. Likely occurrence (50% - 89%)
- Possible. Possible occurrence (10% - 49%)
- Unlikely. Unlikely occurrence (0% - 9%)

Magnitude of Consequences:

- Major. Loss of life or injury to humans; substantial property damage; irreversible damage to critical natural or cultural resources.
- Moderate. Injury or illness to humans; moderate property damage; damage to critical natural or cultural resources resulting in considerable or long term effects.
- Minor. Property damage is limited in economic value and/or to few investments; damage to critical natural or cultural resources resulting in minimal, recoverable or localized effects.

Geology

Proposed BAER Treatments

- **Hazard Signage – rockfall (USFS roads)**
- **Early Warning - rain gages**
- **Partner Agency Coordination – ODOT, NWS, ACOE, BLM, working groups**



Soils

Critical BAER Value = Soil productivity

Threat/Risk to Critical Value:

Reduced ground cover, reduced infiltration, and altered soil structure following wildfire increase the risk to soil productivity

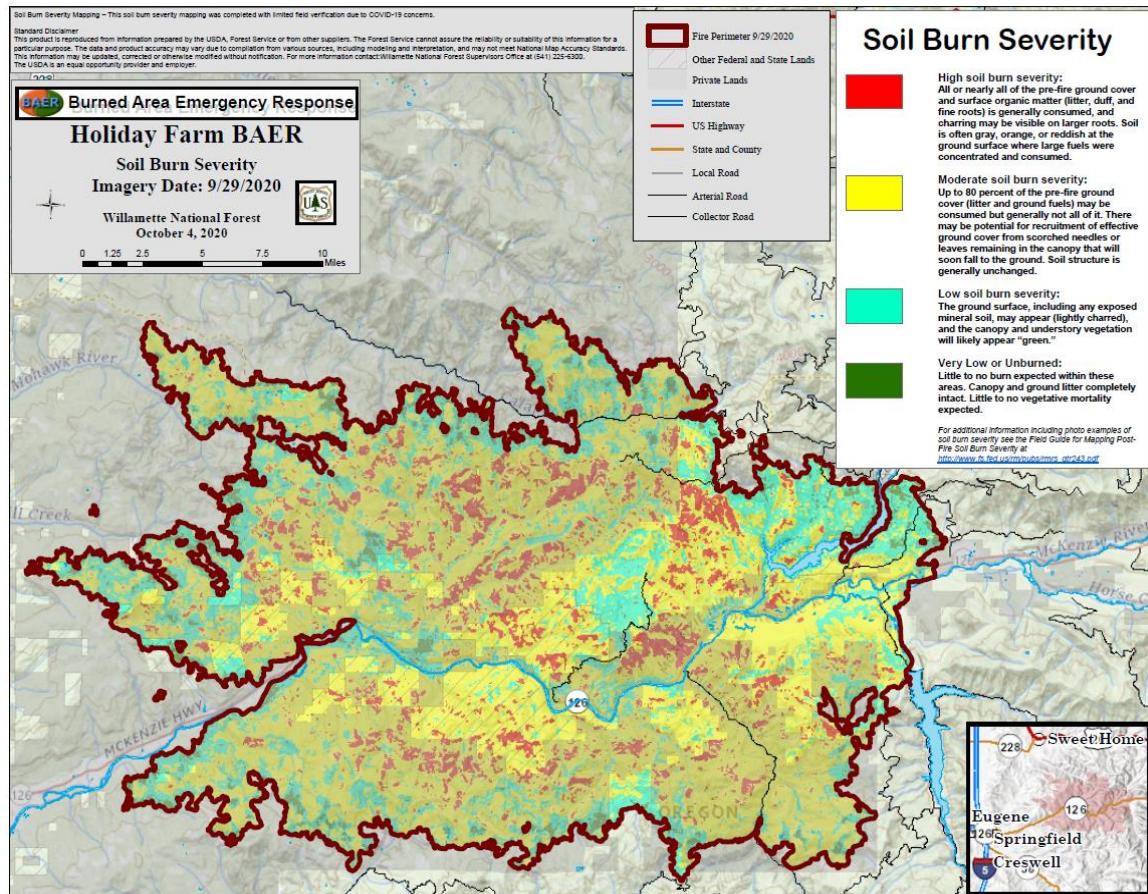


Moderate burn severity



High burn severity

No Treatment: Natural recovery is recommended treatment. No cost-effective treatment to mitigate on a scale that would effectively reduce risk of erosion and loss of soil productivity



Hydrology

HYDROLOGY

Critical BAER Values

*Roads, Stream Crossing Structures,
Structures, Recreation Sites,
Reservoirs/Dams, Downstream Municipal
Water Supplies & Hatcheries*

Threat/Risk to Critical Values

*Increased postfire flooding &
Increased postfire flows bulked with
sediment from debris flows*

Treatments

*Storm Inspection & Response, Storm
proofing, Public Warning System in
coordination w/ NWS for flooding & debris
flow hazard, further evaluation of
undersized culverts, further assessment of
non-NFS values by partners*



Engineering / Roads

Risk	Critical Value at Risk	Threat
Very High	Human Life and Safety	Falling trees, rocks, and other debris
Very High	Property (Forest Roads and Bridges)	Damage to existing infrastructure from increased runoff, erosion, and debris flows
High	Emergency Ingress and Egress	Washouts and debris flows on roads between private in-holdings and communities
High	Loss of Access	Washouts and debris flows on roads within the fire perimeter
High	Impacts to Riparian and Water Quality	Increased sediment delivery to water channels and riparian areas
High	Protection of Critical Habitat	Increased sediment delivery to water bodies that are designated critical habitat for a listed T&E species



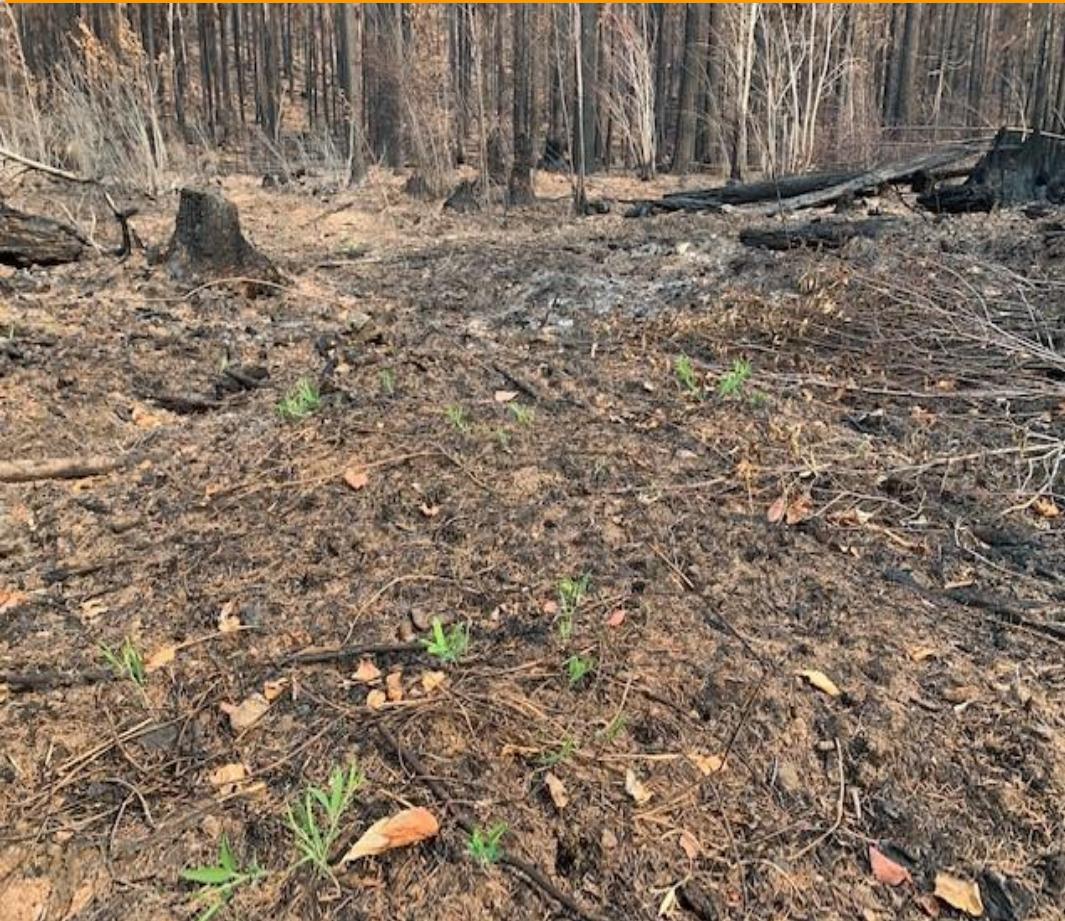
Engineering / Roads

Engineering Proposed Treatments and Recommendations:	
Signs	Re-install safety, directional, road route markers Install warning signs when entering the burned areas.
Storm Patrol and Response	Storm patrol on 57 miles of road – 10 days Clean-up with equipment - 5 days.
Road Drainage Improvement or Reconstruction	Cleaning ditches, catch basins, culverts, inlet guards, debris racks, and out-sloping roads as needed to prevent road failures.
Restrict Access	Restrict access on recommended high/medium risk roads through installation of warning signs or gates.
Road Closures	Coordinate road closures by maintenance level.

Engineering / Roads

Engineering Proposed Treatments and Recommendations:	
Road Repair	Repair damaged road sections with suitable material.
Bridge Repairs	Repair and/or replace bridges to maintain ingress and egress.
Guardrail Repairs	Repair and/or replace bridge approach rails and curbing, safety guardrails, guardrail posts, and appurtenances.
Removal of Hazardous Trees (Danger tree contract)	Mitigate hazard trees that could affect the road within 5 years.
Implementation of Safety Measures	Coordinate with partners on signs, patrol, and public notification.

Botany / Invasive Plants

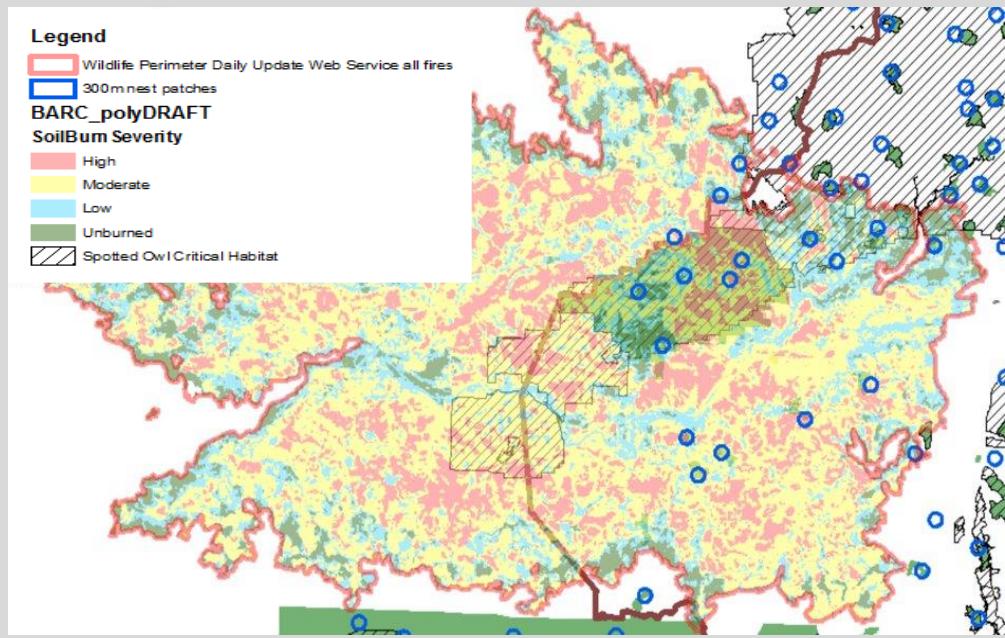


- High priority noxious weeds are the first to regenerate in burned areas. Early detection rapid response (EDRR) as well as seeding with native grasses can prevent newly burned areas from being colonized by weeds allowing the native plants to re-establish.

	Units	# of Units
L1a - Invasives EDRR	Acres	292.5
L1b- Invasives EDRR-Suppression	Acres	90.4
L2- Seeding against invasives	Acres	20

Wildlife

- Values at risk for wildlife: Designated critical habitat, ESA listed spotted owl territories and suitable owl habitat.
- Approximately 30 owl activity centers habitat and some areas have been recently occupied by nesting pairs.
- In Critical Habitat, ~5,800 acres of suitable owl habitat and ~650 acres of dispersal habitat converted to non-habitat
- ~9,200 acres within Mt. Hagan LSR of suitable and dispersal habitat acres were converted to non-habitat.
- Total of ~10,200 acres of suitable habitat into non-habitat on WNF.



Seasonal Operating Restrictions	
Northern Spotted Owl	March 1 – July 15
Bald Eagle	January 1 – August 31

Fisheries



Spring Chinook salmon spawning
on the South Fork McKenzie River

ESA-Threatened Fish and Critical Habitat in Fire

- Bull Trout – 30.4 miles
- Spring Chinook Salmon – 56.9 miles
- Winter Steelhead – 6.7 miles

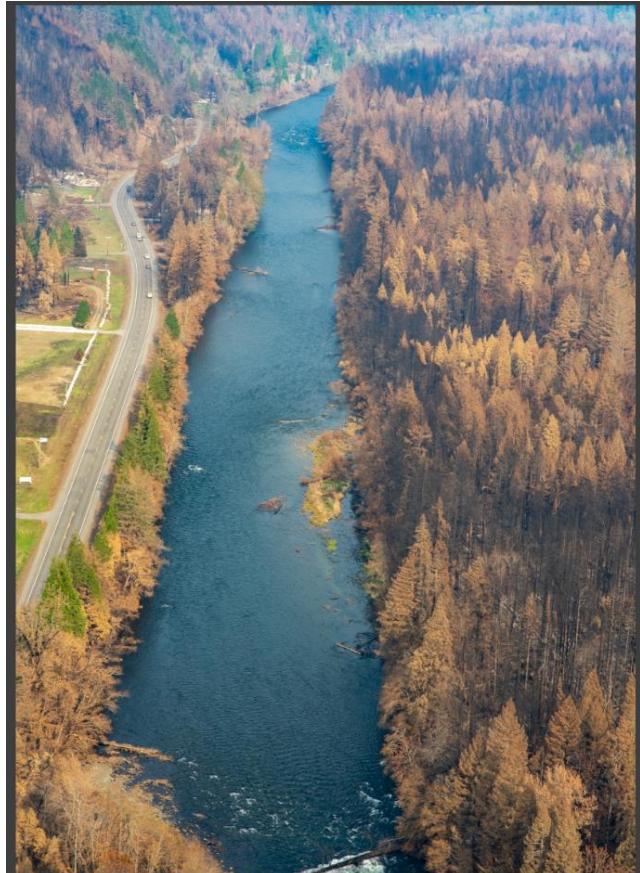
Benefits of Fire

- Enhanced primary productivity
- Replenish habitat-forming materials (sediment/ wood)
- Natural disturbance that salmonids need for persistence

Threats

- Reduced shade -> increased stream temperature
- Spread of invasive plants
- Channel scour and sediment delivery

Fisheries



TREATMENTS

McKenzie River Navigational Hazard Tree Mitigation

- Boating is vital to local economy and closing the river is not a viable option
- Hazard tree relocation is needed to mitigate hazards while reducing impact to Critical Habitat
- Work with partners and OSMB on strategy for wood relocation

* Road and Weed Treatments will benefit critical Fisheries values

Fisheries

Holiday Farm Basal Mortality and Potential Boatable Hazards



Legend

- Highway
- Fire Perimeter
- Stream/River
- Lake/Pond/Reservoir
- 0% BA mortality
- 1 - 25% BA mortality
- 25 - 75% BA mortality
- 75 - 100% BA mortality
- Undefined
- USFS



Fisheries



South Fork McKenzie River Floodplain Enhancement Project Proved its Resilience

- <1% of project wood burned
- 50-100 new trees recruited
- >90% survival of understory veg

Heritage

Critical BAER Values

- Prehistoric Sites
- Historic Sites
- Traditional Cultural Properties (TCP)



Prehistoric Obsidian flake

Threat/Risk to Critical Values

- Water flow moving artifacts out of context
- Debris crushing materials or standing structures
- Theft of exposed materials or vandalism

Historic logging landing



Heritage

Proposed BAER Treatments

- Monitor sites not visited during BAER due to Safety (Gold Hill Complex)
- Monitor all sites in heavy/moderate burn for hydrological impacts
- Consult with Tribes about impacts



Recreation

Critical BAER Values

- Human life and safety
- Property

Threat/Risk to Critical Values

- Mona Campground:
 - Danger/Hazard Trees
 - Potential rock fall
 - Potential blowout of culvert in campsites
- Bruckart Boat Launch:
 - Danger/Hazard Trees
- Delta Campground and Nature Trail:
 - Danger/Hazard Trees
 - Infrastructure damage



Delta Campground Vault Toilet

Recreation

Proposed BAER Treatments

- Mona Campground
 - Monitor for tree and rock fall
 - Monitor culvert and drainage between campsites 4 and 5
- Bruckart Boat Launch
 - Monitor for tree mortality and removal needs
 - Water hazard signs
- Delta Campground and Nature Trail
 - Install a gate at entrance to close the area
 - Post signs about the hazards in the site
- Life and Safety for McKenzie River Boaters
 - Treatment signage at FS boat ramps, warning river users of boating hazards posed by falling trees and trees in the river
 - Work with local boating community/OSMB on repositioning wood



BAER steps completed...

Values>Threats>Risk>Treatment

✓ Step 1. Identify critical values

✓ Step 2. Assess for threats

✓ Step 3. Evaluate risk

Step 4. Develop response strategy

Step 5. Implement the strategy

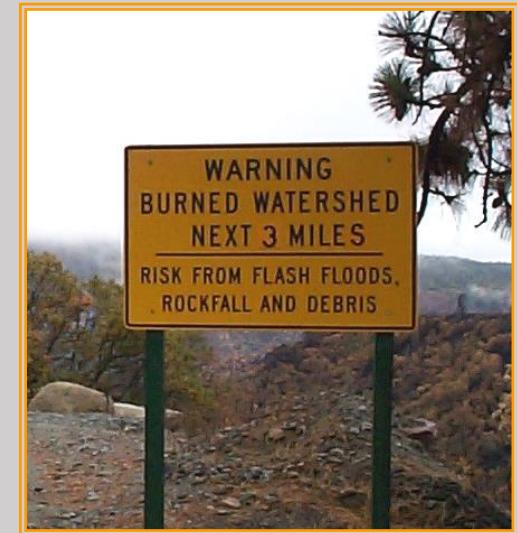


Step 4 – Develop a Response Strategy

ORDER OF PREFERENCE

- 1) Natural Recovery
- 2) Closures/Warnings Signs
- 3) Treatments

- **Minimal Treatment Necessary**
- Proven effectiveness
- Reduce risk in first year to acceptable
- Cost is economically justified
- Can be completed before damage is expected



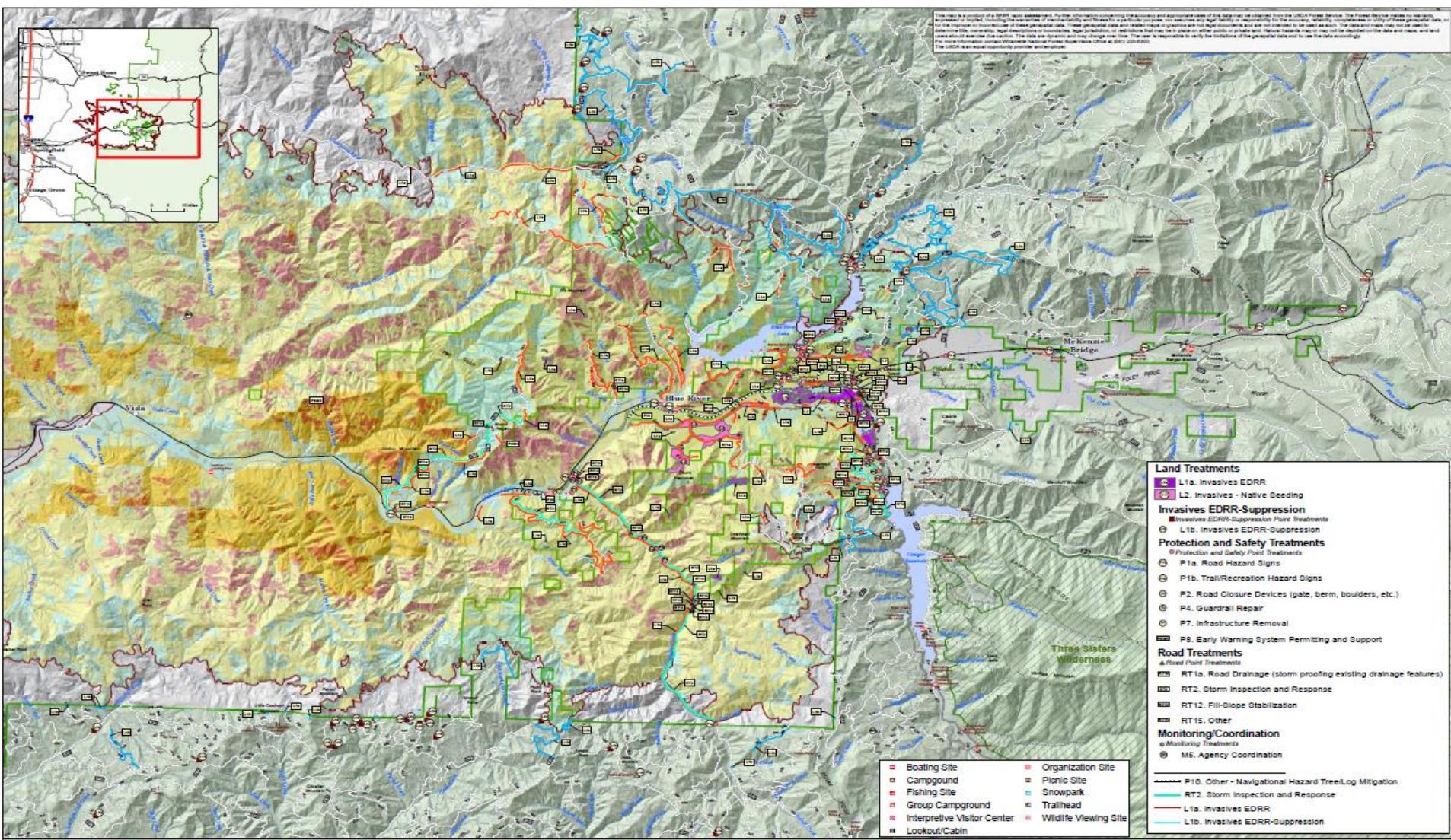
Limit actions to values with unacceptable risks!

Treatments/Response Strategies

Proposed to Address only those

Values with Unacceptable Risks

Treatment Map



BAER Burned Area Emergency Response
Holiday Farm BAER
Treatment Recommendations
 Willamette National Forest

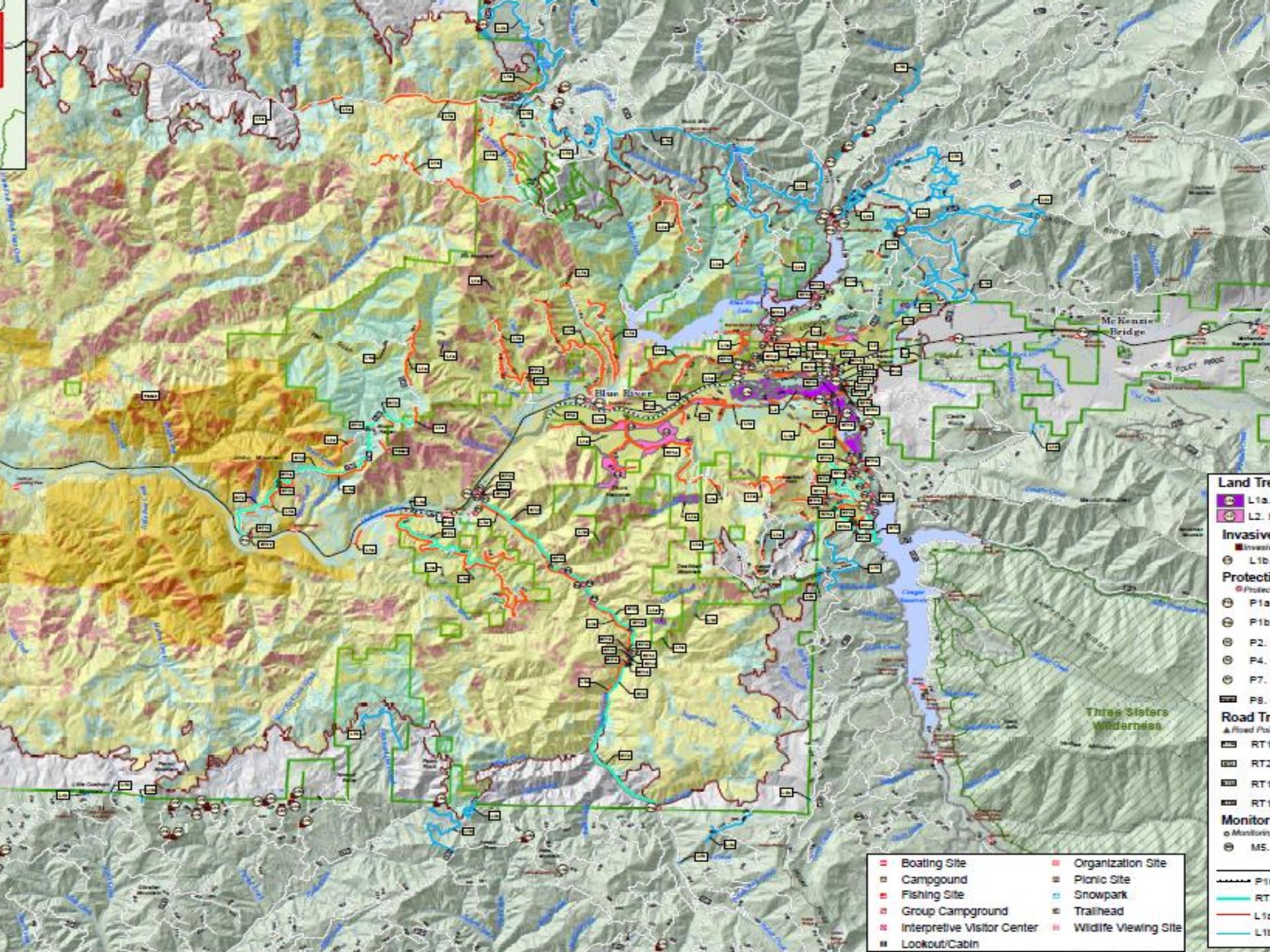


Date: 10/16/2020



1:42,000

Coordinate System: NAD 1983 UTM 10S
 Projection: Albers
 Datum: North American 1983



Summary of Proposed Treatments

Land Treatments

- Invasives-EDRR/Seeding

Roads and Trails

- Road drainage, Storm inspection response, fill slope stabilization, bridge curb and concrete repair

Protection/Safety

- Road hazard signs, recreation hazard signs, road closure devices, guardrail repair, early warning system, navigational hazard mitigation



Step 5 – Implement the Strategy

- Immediate: USGS, NWS, eTART, ACOE and BLM coordination
- Signage and engineering contracts this fall-storm inspection and response and storm proofing is a priority
- Delta CG and Old Grove TH closure for hazard tree risks
- Boater safety signage, surveys, coordination, PAO
- EDRR next spring/summer
- Cultural surveys next spring
- Wildlife seasonal timing restriction recommended

Timing is Critical!



Questions and Comments



Photo Credit – Johan Hogervorst

