



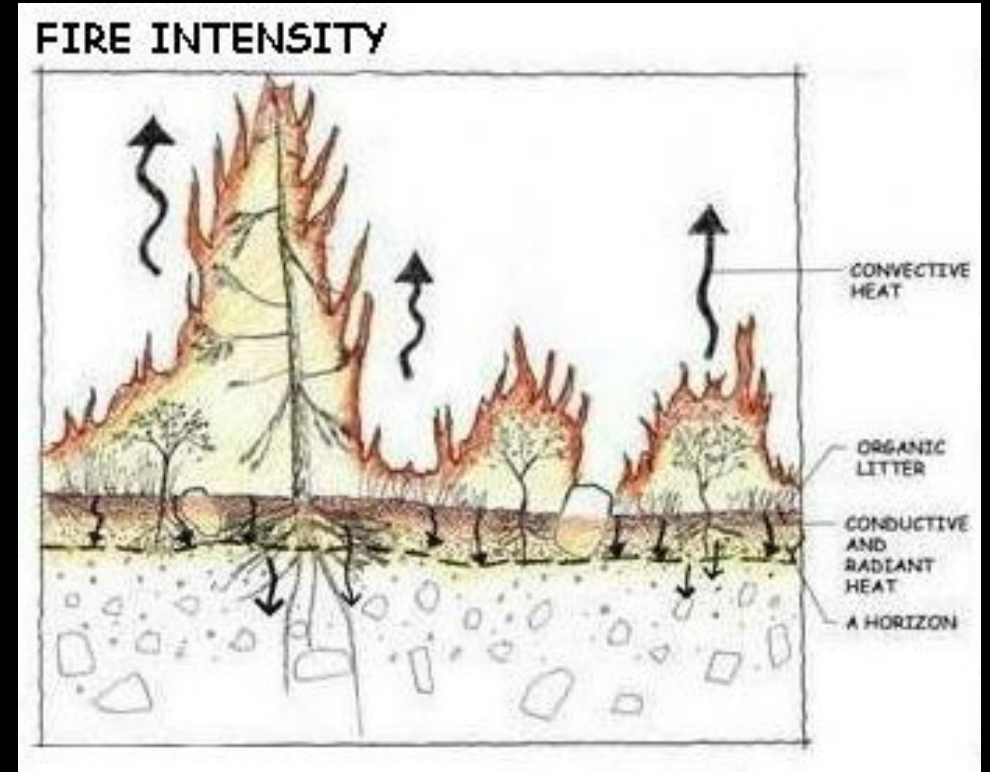
Post Fire Watershed Response

May 27, 2021

Liz Schnackenberg, Routt National Forest

Fire Intensity vs Soil Burn Severity

Fire intensity = energy or heat release during the consumption of organic matter.



Does not always indicate fire effects on soils.

The background image shows a landscape after a forest fire. On the left, a dense forest of charred, blackened tree trunks stands against a backdrop of smoke or ash. On the right, the ground is covered in a layer of light-colored ash and charred debris, with some unburned trees visible in the distance. A large, white diamond shape is superimposed over the center of the image, containing the text.

High Burn Intensity
and Soil Burn Severity



High Soil
Burn Severity,
Low Burn
Intensity



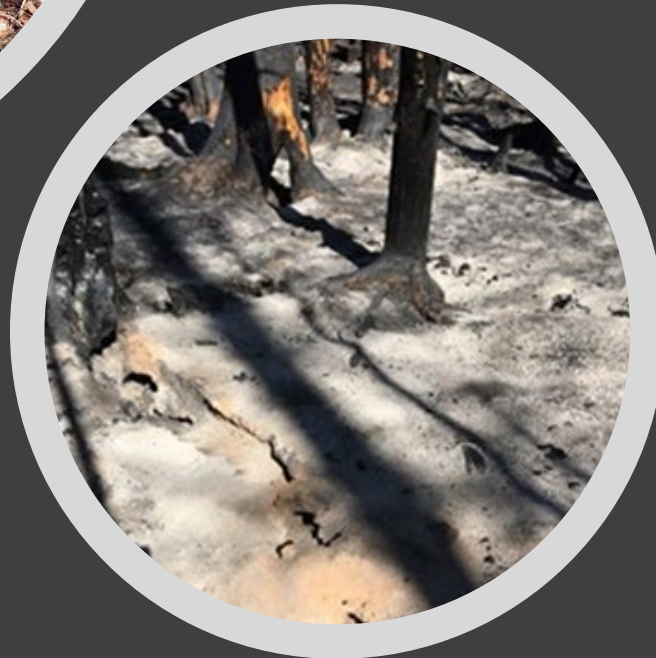
Roots, Soil Structure and Water Repellency



Low- good groundcover, roots and soil structure intact

Assessing Soil Burn Severity

- Soil Burn Severity determines
 - Flood risk
 - Rates of erosion
 - Vegetative recovery
 - Geologic response
 - Threats to downstream values

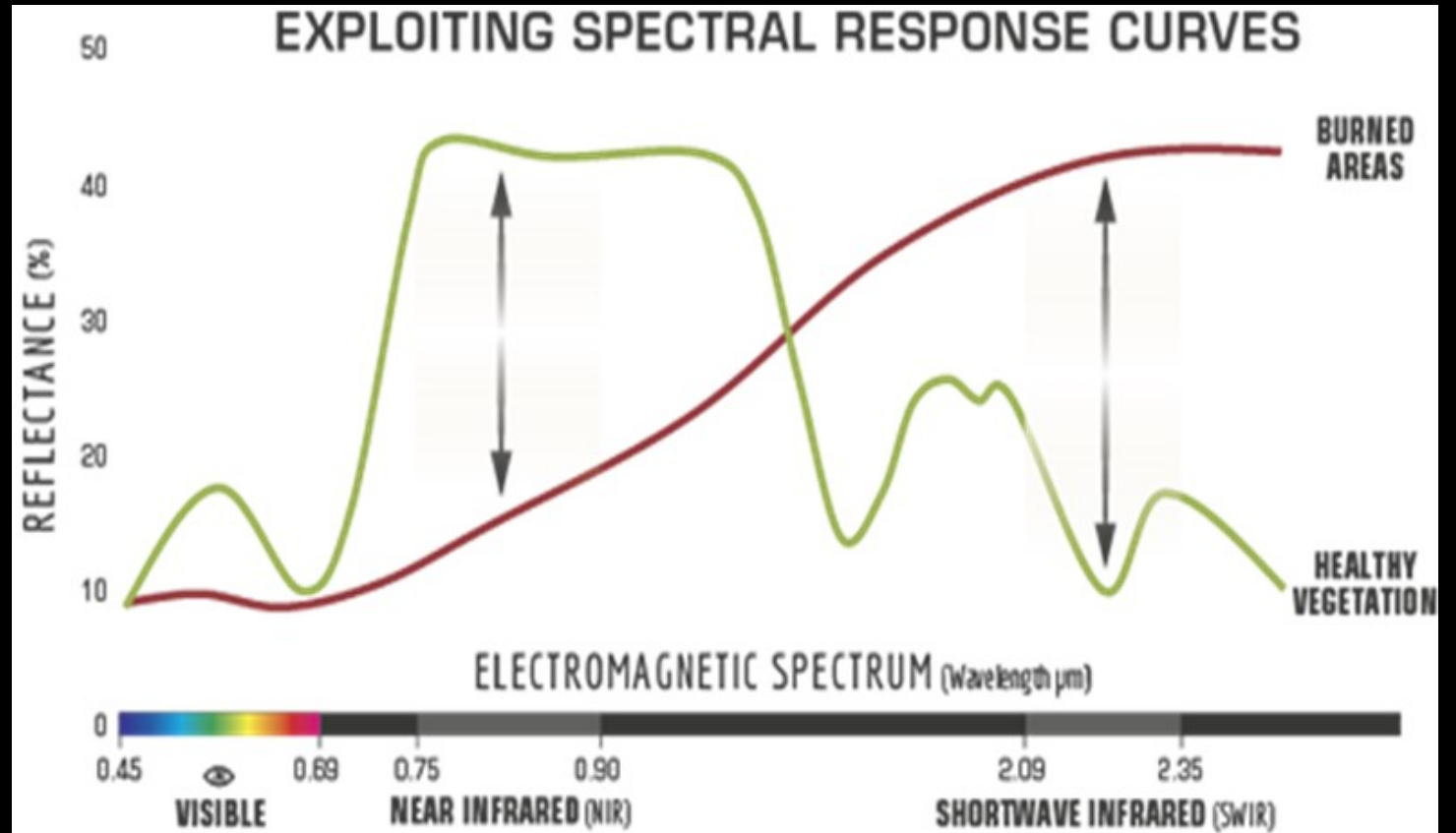


High- no groundcover, roots and soil structure lost

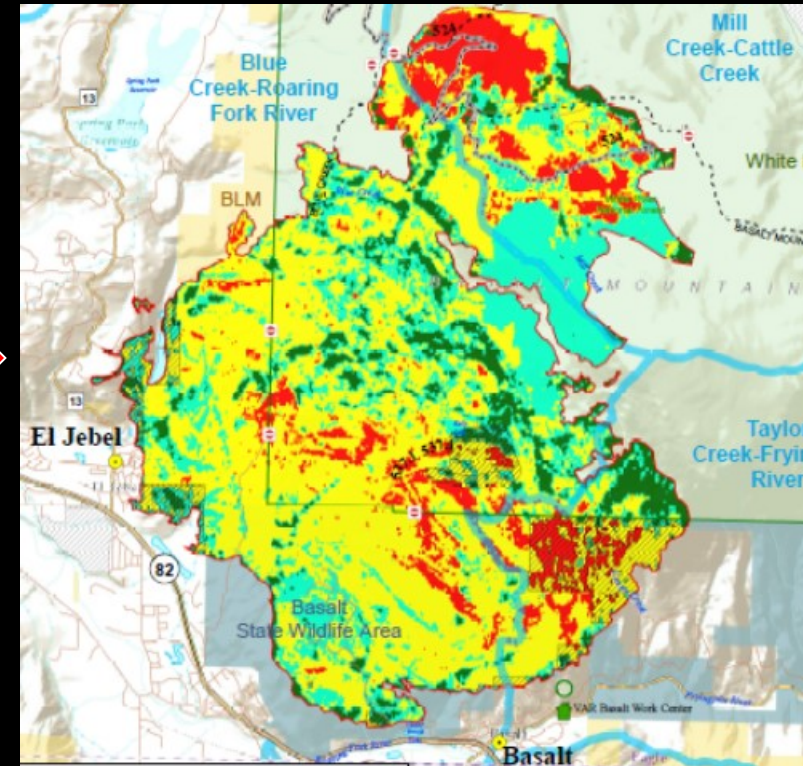
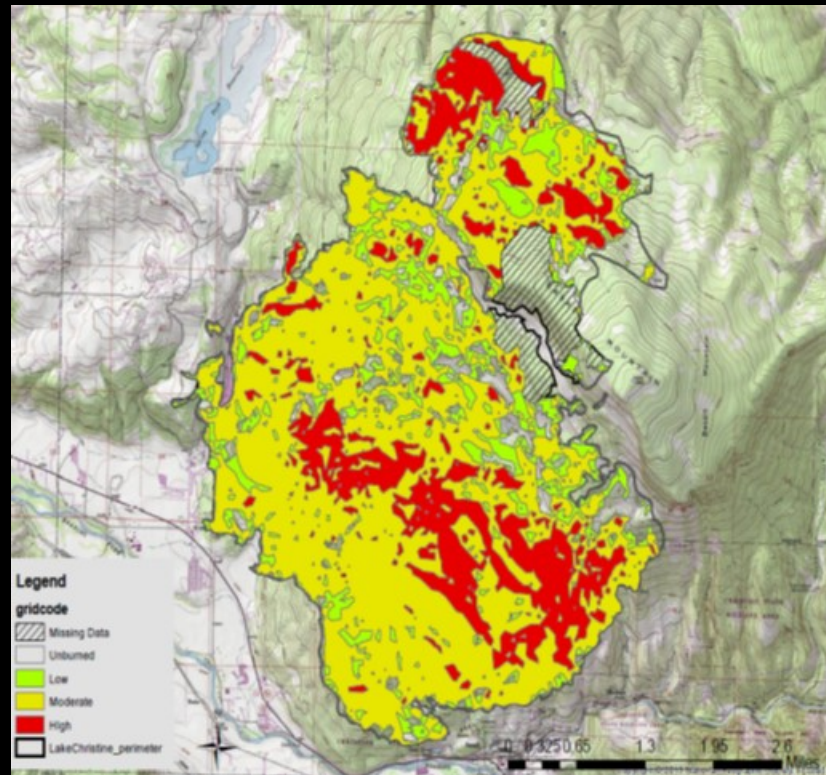


Mapping Soil Burn Severity— Satellite Imagery

- Start with Burn Area Reflectance Classification (BARC)
 - Compares near and mid infrared reflectance values

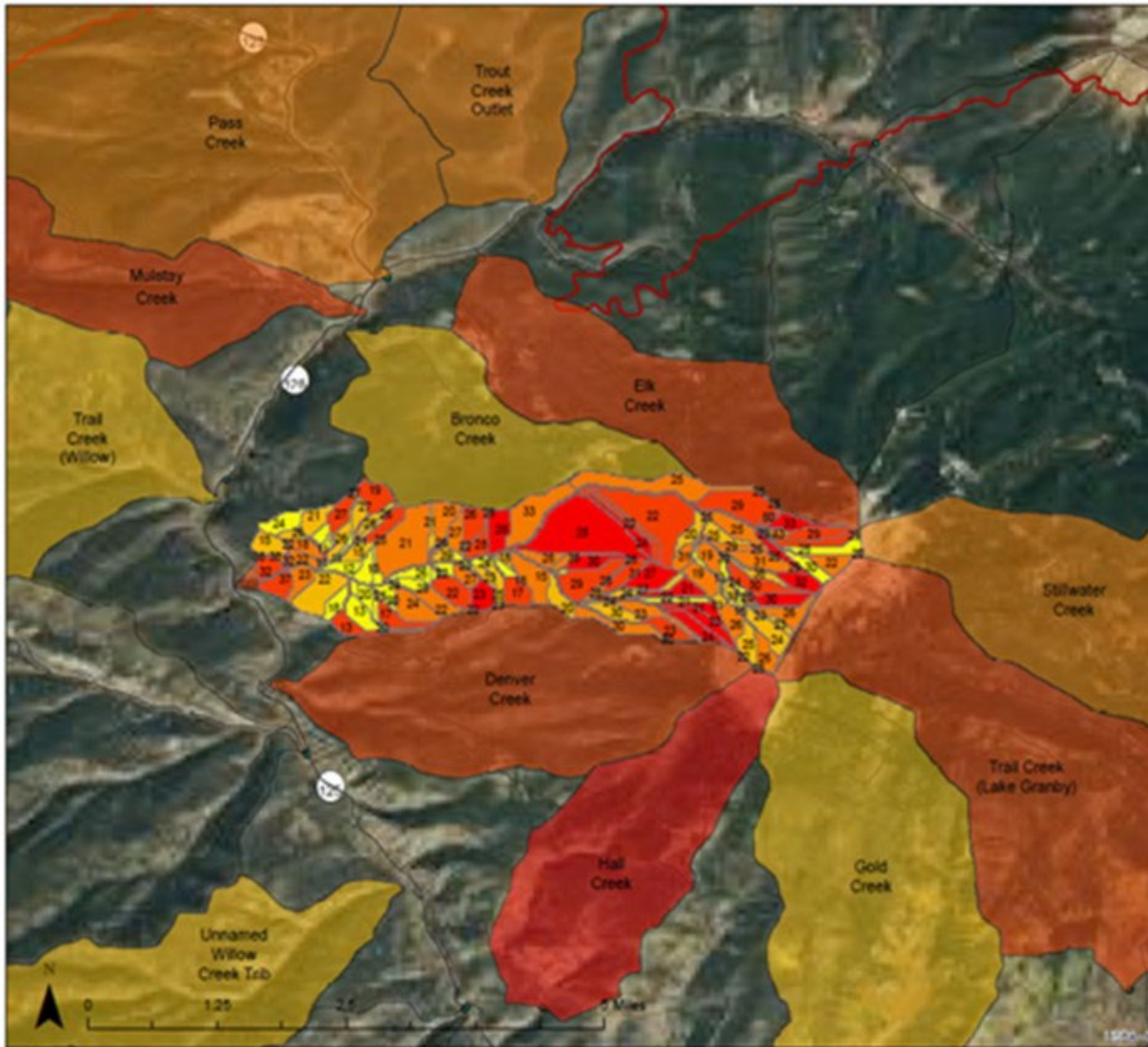


BARC → Soil Burn Severity



SBS Amount and Pattern





Soil Erosion Modelling

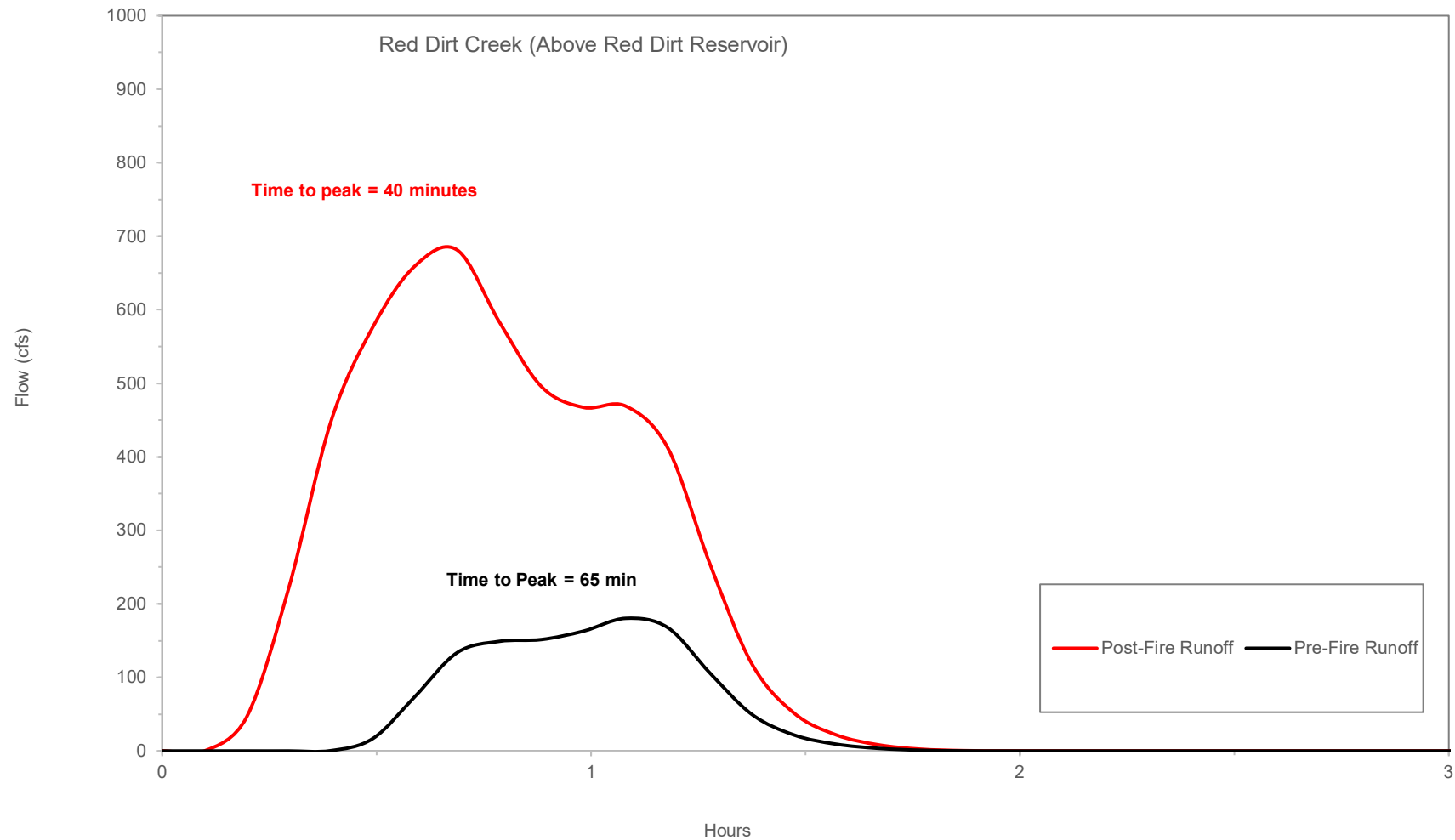
Hydrologic Modelling

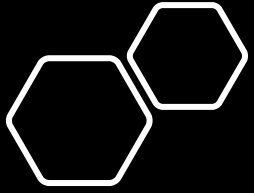
- Snowmelt runoff
 - Reduced Evapotranspiration
 - Increased channel erosion
- Summer thunderstorms
 - High intensity
 - Surface runoff and erosion
 - Clear water modelled



Storm Event

10 year, 1 hour Thunderstorm Event (0.85")



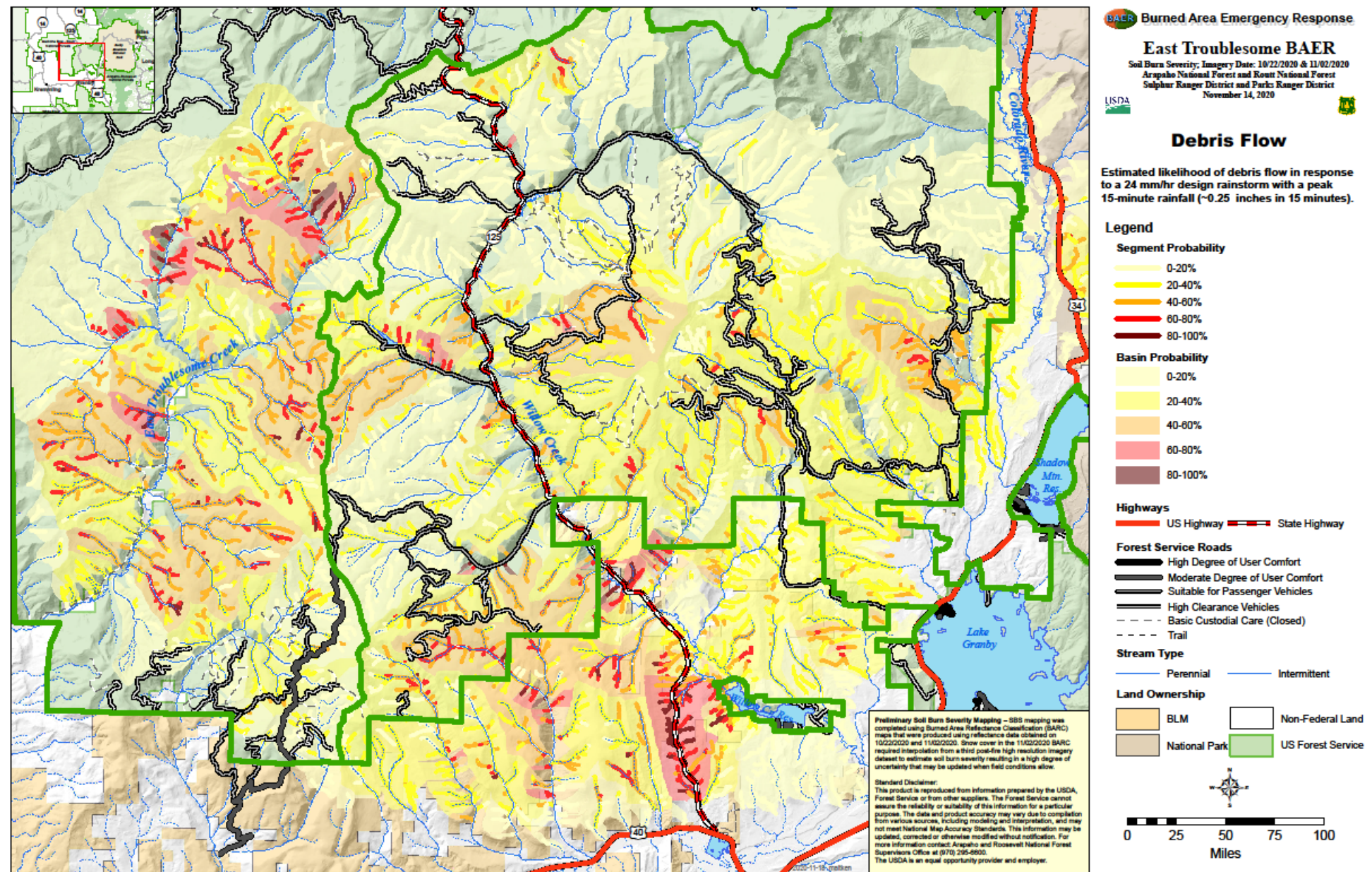


Channel Form and Flood Flows

- Valley Confinement
- Floodplain Access



USGS debris flow potential



PLEASE FOLKS,
be extra careful
this year!



Remember - Only

PREVENT FOR

Questions/
Comments?