ECOLOGICAL DISTURBANCE: FIRE, FLOOD & DROUGHT
BACKGROUND AND DESIRED OUTCOMES

WHAT ARE ECOLOGICAL DISTURBANCES?
Ecological disturbances are natural ecosystem processes that change resource availability, substrate availability, or the physical environment. Disturbances like fire and flood are natural processes that seem devastating to human values but provide many ecological benefits to plants, fish and wildlife.

WHY DO THEY MATTER?
Past human land use and the human disturbance of climate change are changing natural disturbance regimes. Ecological disturbances like floods, droughts, and wildfires are becoming more and more common in Colorado. It is important to address these ecosystem processes now.

WHAT CAN WE DO?
It is necessary for OSMP to mitigate the risks of these processes to people while still allowing for their environmental benefits. For example, these disturbances help with pest management and soil enrichment.

DID YOU KNOW!
- Colorado wildfire season now lasts over 7 months
- Catastrophic flooding in 2013 cost OSMP ~10 million dollars
- More than 2/3 of Colorado is now in a state of drought

DRAFT DESIRED OUTCOMES:

A
The risk of catastrophic wildfires is significantly reduced, and fire-prone ecosystems are healthy.

B
In our high quality areas, droughts continue to promote native diversity.

C
Floods improve ecological health while the risk to people or property is reduced.

Share your feedback on these draft outcomes on the board to your right
FIRE AND FOREST CHANGE

Changes in forests over 78 years.

Reference State
- Low intensity surface fires, which rarely killed trees, every 8 to 14 years.
- Low-density of large trees.
- Open tree canopies.

History of Fire Suppression
- Tree encroachment in grasslands.
- High density of small diameter trees.
- Risk of large, high intensity, “stand replacing” wildfires.

Current State
- Restoration
- Tree thinning and prescribed burning used to remove trees, restoring forests to reference conditions.

Did You Know?
- Fire is a natural phenomenon in grasslands, too.
- OSMP uses prescribed fire when possible, and livestock grazing as a surrogate for fire.
- Grazing adds patchiness to the landscape, breaks up accumulating litter layers, limits the spread of woody plants, and prevents the dominance of non-native plants.

SUNSHINE FIRE CASE STUDY
Thanks to thinning in 2014, when a wildfire breaks out in 2017, the fire is low intensity and trees survive.

Note the differences in tree density from left to right. Thinning is used to mimic some of the conditions that would be created by more frequent, less intense wildfire.

Note: 1938 is the year aerial photographs were available, otherwise 1938 has no significance.
This chart shows the change in the average cover of understory native plants over time. Treated (thinned) forest stands are compared to untreated forest stands. The data for this chart was collected from the 25 monitoring plots shown on the Forest Treatment Map, repeatedly measured over 5 years.
OSMP has mapped its progress of treating (thinning) of forest stands. The map also shows locations of previous wildfires and understory monitoring plots.

~75% of stands identified in FEMP have been treated.

Note: Treated stands require follow-up maintenance to sustain restored conditions.

Context Map

Legend:
- OSMP System
- Treatable Forest Stands
  - Untreated
  - Treated
- Untreatable Forest Stands
- Wildfires
- Understory Monitoring

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COMMUNITY FEEDBACK

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1) HAVE WE MISSED ANYTHING IN THE DESIRED OUTCOMES? OR DO YOU HAVE ANY REFINEMENTS?

2) WHAT STRATEGIES WOULD YOU SUGGEST TO ACCOMPLISH THESE OUTCOMES?

3) OTHER COMMENTS: