**PROJECT OBJECTIVE AND APPROACH**

This new project aims to advance understanding of upland, riparian and in-stream nutrient retention and post-fire restoration to enhance clean water supply from burned Colorado watersheds.

**BACKGROUND**

High severity wildfires alter the physical and biological processes that determine how watersheds retain and release nutrients and influence stream water quality. Proximity of the 2002 Hayman Fire and the 2013 High Park Fire to Front Range populations brought the fundamental links between forest conditions, wildfire and water supply into sharp focus and highlighted the challenges of source water protection in watersheds vulnerable to severe wildfire. For example, water quality changes following the High Park Fire compromised water supply to >250,000 homes and agricultural producers.

**WHAT GOES UP... MAY STAY UP**

Lasting nutrient impairment may relate to immediate post-fire changes and upland, riparian and channel locations and their rates of recovery.

**CROSSING THE LINE**

13 years after the Hayman Fire, nitrate concentrations are 2-5 times higher inside the burn compared to portions of the streams outside the burn.

Nitrate levels are 5-12 times more than unburned local streams (0.02 mg L⁻¹) and well above EPA draft levels for least-disturbed streams in this ecoregion (0.01 mg nitrate-N L⁻¹).

**TARGETING SOURCE WATER PROTECTION, ADVANCING WATERSHED RESTORATION & SCIENCE**

Forests and watersheds disturbed by severe wildfire represent a testbed to advance knowledge of ecosystem resilience. The “megafires” of the past decades underscore limitations of current understanding about recovery of water quality and nutrient retention to pre-fire conditions.

**RESTORATION TARGETS**

We will study small catchments to examine the effectiveness of restoring post-fire nutrient retention with upland or riparian plantings. This will help broaden thinking about source water protection and watershed restoration to include ecosystem resilience, forest recovery and nutrient retention.

**CITIZEN SCIENCE**

Monitoring by trained citizen scientists will expand our project’s capacity to survey water quality, aquatic biota, channel and watershed condition more extensively and will strengthen local involvement.