



Post-Fire Lessons Learned & Watershed Resilience

Nov 18, 2021

 DENVER WATER

Denver Water lessons learned: presentation outline

1. Costs and recovery from past fires

- Buffalo Creek fire in 1996 and Hayman fire in 2002

2. Proactive forest and watershed investments

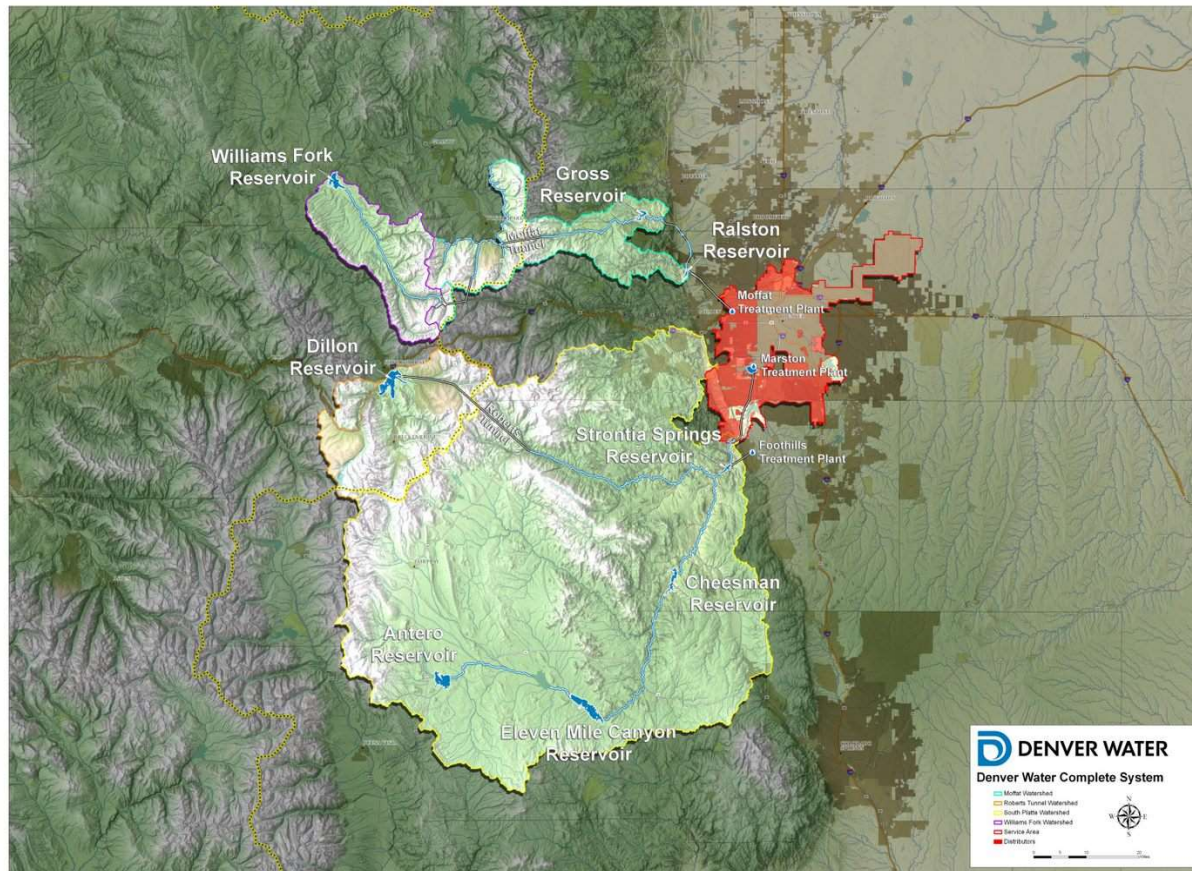
- From Forests to Faucets Partnership

3. 2020 wildfire season

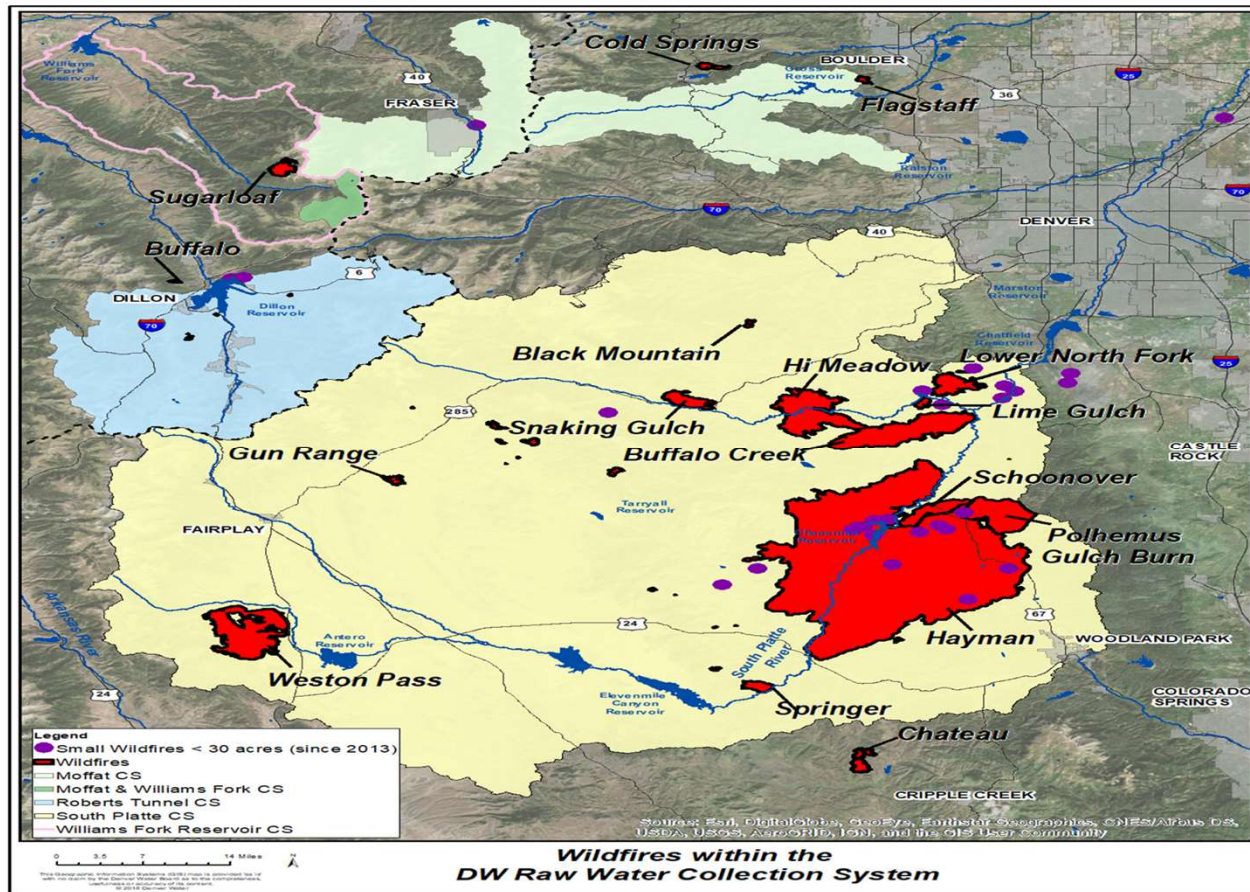
- Williams Fork fire

4. Recommendations, re-cap, and questions

Forested watersheds: where Denver's water supply originates healthy forests = healthy watersheds



Past fires – prior to 2020



Post-fire lessons learned: let's go out in the field!



Buffalo Creek Fire – May 18, 1996



Buffalo Creek post-fire sediment



Post-fire debris and sediment impacts to Strontia Springs



Water quality impacts: turbidity, metals, carbon, nutrients



Hayman Fire 2002

Cost of reacting: \$28M and still recovering today



Post-fire recovery: project implementation

1. **Upstream watershed sediment management projects**
 - Sediment traps, straw bales, seeding, mulching
2. **Maintenance of sediment traps**
 - Cost of dredging sediment traps
3. **Cost of dredging Strontia Springs Reservoir - \$18.5M**
 - Still in recovery today
4. **Long-term strategy for proactive forest and watershed investments**

Upstream sediment management: sediment traps



Upstream sediment management: sediment trap maintenance



Long-term strategy: watershed health investments



Drinking Water Treatability

*Provide high quality
water at an affordable
rate*



Infrastructure Protection

*Protect collection
system, watershed
assets, and access to
assets*



Community & Environmental Stewardship

*Foster partnerships to
sustain healthy and
resilient watersheds*

From Forests to Faucets Partnership

1. Partners include Denver Water, US Forest Service, Natural Resources Conservation Service, and Colorado State Forest Service
2. \$66M investment since 2010, of which Denver Water committed \$33M
3. Goal to improve the health and resiliency of forests in watersheds that are critical for water supply for the Denver Metro area
4. Denver Water Lands Agreement with Colorado State Forest Service

From Forests to Faucets project examples



Before: 2007 White River National Forest in Summit County

From Forests to Faucets project examples



After: 283 acres treatment in 2013

From Forests to Faucets project examples



Before: 2009 White River National Forest in Summit County

From Forests to Faucets project examples



After: 98 acres treatment in 2013

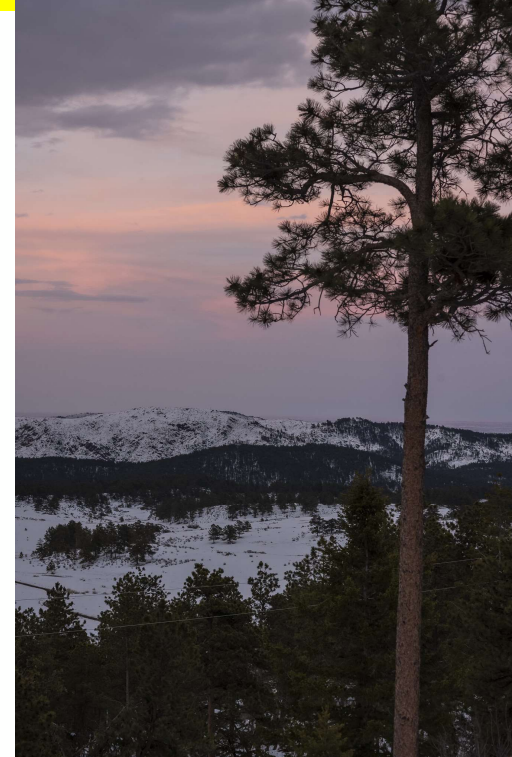
Buffalo Mountain Fire: \$1 Billion saved



Success story: North Fork Complex fire in 2020 and 64A fire in 2018



What Does “Forest Health” Mean? Ponderosa Pine vs. Lodgepole Pine



Ponderosa Pine Photos: 1)Heavens Restoration Project in Jefferson County. Courtesy of CO State Forest Service.
2)My fav pondo pine, Storm Mountain.

What Does “Forest Health” Mean? Ponderosa Pine vs. Lodgepole Pine



Lodgepole Pine Photos: White River National Forest in Summit County. Courtesy of US Forest Service.

Colorado Forests are Fire Adapted Ecosystems But lots of values at risk (water, recreation, communities, wildlife)



What Forest Health Isn't: Overcrowding and Lack of Diversity (species, age, height)





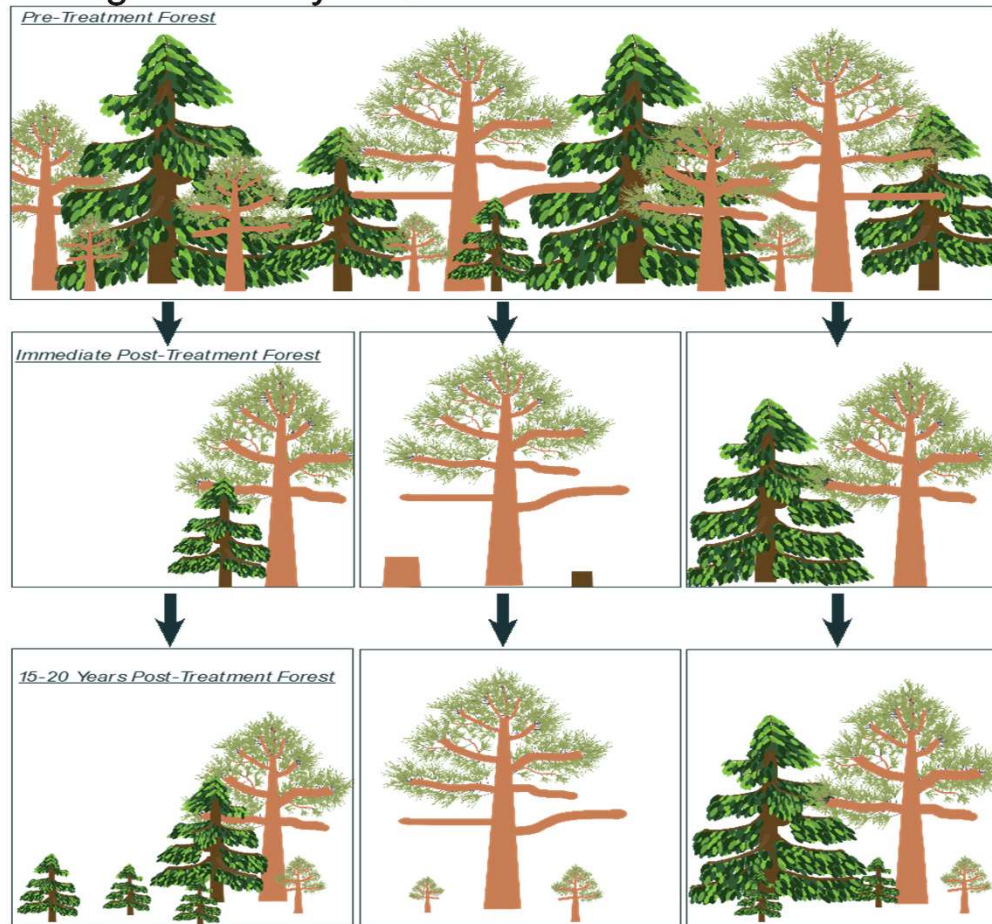
Cheesman Reservoir
1900

Cheesman Reservoir
2002



Restoring Ecologically Departed Forests: “Forest Treatments”

Image courtesy of Colorado Forest Restoration Institute

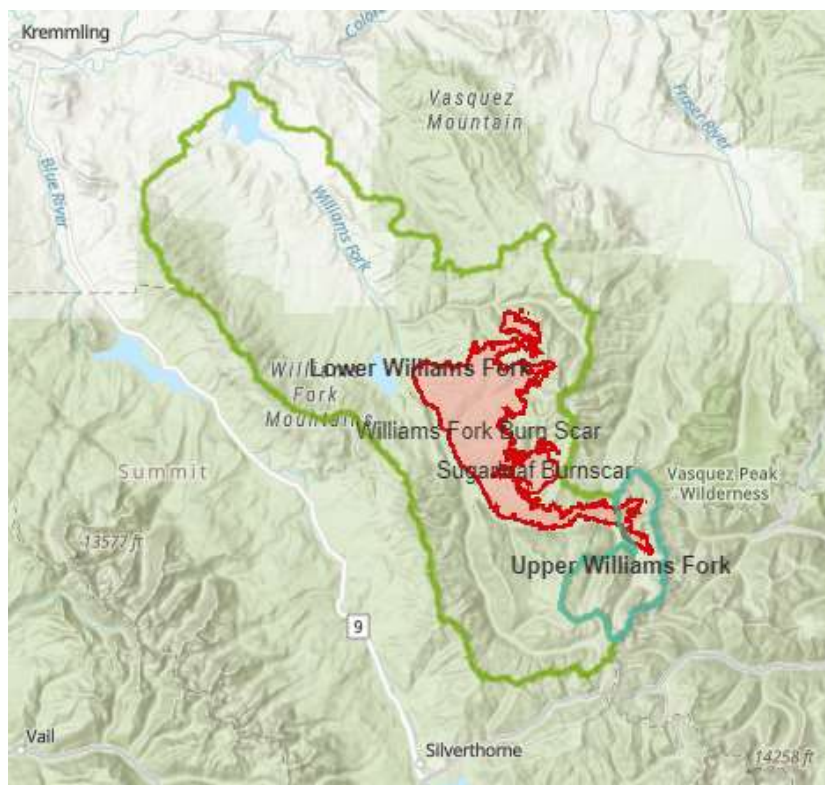


Innovative Technology and County Engagement

TAP Story and Video: <https://www.denverwater.org/tap/big-tree-cutting-machine-put-to-the-test-on-steep-slopes-around-breckenridge>



Williams Fork Fire



- Started Aug 14, 2020 and contained on Nov 30, 2020
- Burned 14,609 acres.
- Burned through a one-foot snowstorm.
- 8 Incident Management Teams assigned to the fire.
- The Williams Fork Reservoir is located approximately 11 miles downstream of the burn scar.

Implementation

Denver Water Staff

1. Road treatments
2. Storm inspection

Rocky Mountain Youth Corps

1. Log erosion barriers
2. Hazard tree removal
3. Rock lining culverts
4. Slash removal around structures



Post-Fire Recommendations and Opportunities

1. **Recovery is long-term and likely on-going, therefore sustainable investments needed**
 - Phases of Emergency Management Cycle: Pre-fire Mitigation, Response, Recovery
2. **Capacity and funding constraints - opportunities for collaboration**
 - Knowing the right opportunities and existing groups: State Forest Action Plans, State Water Plans, USEPA/NRCS Source Water Protection Programs, County Conservation Districts, County Emergency Management Offices
 - Bridging the gap between all the phases of the emergency management cycle
3. **Water Utility and Watershed Networks: Western Urban Water Coalition, Healthy Headwaters Alliance, American Water Works Association, American Water Resources Association**

Contact Info: Please reach out!

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Check out TAP for info on Denver Water's forest and watershed investments:

denverwater.org/TAP