

Science Brief



Photo: Bob Wick, Bureau of Land Management

Forest Health and Water Resources

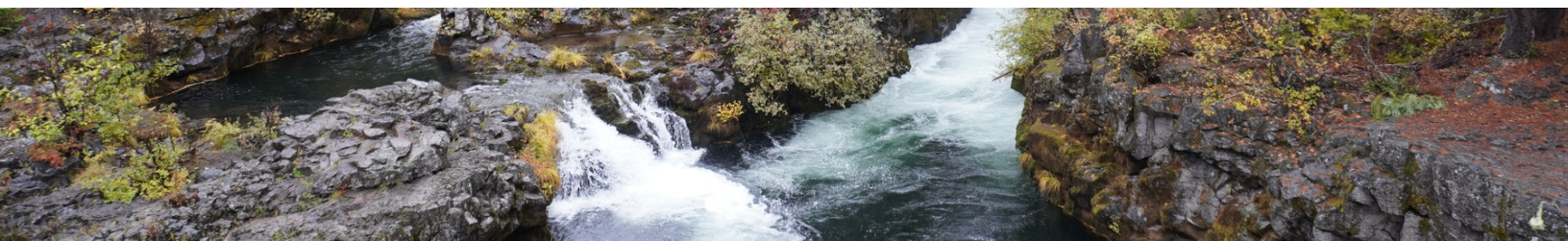
Severe wildfires threaten water resources in many regions. Proactive forest management can improve water quality, protect built infrastructure, and in some locations enhance water supply.

➤ Forests & water resources are connected

- Forest health is a key factor in water supply reliability,¹ with **50% of water supply in the US originating in forested watersheds on average.**²
- Trees reduce excessive runoff and erosion from precipitation by providing surface area for water to land and evaporate and soil conditions that support infiltration.³
- By creating critical natural infrastructure for water resources, well-managed forests can provide "higher quality water, with less sediment and fewer pollutants" than water from poorly managed catchments.⁴
- The economic value provided by healthy watersheds has been chronically unrecognized and underestimated.¹

➤ Wildfires threaten water resources

- Legacy fire exclusion in the US has led to overgrown forests that are far departed from their historic conditions, with more and smaller trees.
- With climate change and increasing numbers of people in the forest, these higher fuel loads have led to elevated wildfire risk.^{4,5}
- **Severe, high-intensity wildfires alter basin hydrology and damage water resources infrastructure,**⁶ which can have serious implications for water resources planning and management.
- Wildfires can cause drinking water contamination by spreading bacteria, heavy metals, and volatile organic compounds in public and private water systems.⁷





➤ *Forest management can protect water quality & enhance water supply*

- Strategically managing forests for ecological health, including fuel reduction treatments, has a co-benefit of protecting water supply.
- Removing small-diameter trees and understory vegetation also decreases water use by plants, which under some conditions enhances water supply⁸ and groundwater recharge.⁹
- From a water quality perspective, even treating a small portion of a watershed can provide water quality benefits that outweigh the costs of treatments if a severe wildfire should occur.¹⁰
- **Environmental and economic benefits are not uniform**, as these impacts depend on the forest type, region, and climatic setting - requiring site-specific assessments.^{8,9,11}

➤ *Environmental and economic implications of wildfire*

- After severe wildfires in 1996 and 2002, Denver Water spent \$26 million to dredge 1 million cubic meters of sediment from a reservoir that supplied 80% of water for its 1.4 million customers.¹² The agency now invests in proactive watershed management to mitigate wildfire risk for source protection.
- Severe wildfires in 2003 burned 376,000+ acres in San Diego County, leading to an estimated \$47 million in watershed protection costs including erosion and flood control.¹³
- Investments in forests as watershed protection are growing as utilities recognize that the benefits of forest restoration can significantly outweigh the costs of fuel reduction.¹⁴

The water resource benefits of forest restoration are unique to each forest.

Reach out to learn about the benefits for a specific forest at
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