

The Value of Protecting Open Spaces: Resiliency

THE HEALTHY LANDS AND HEALTHY ECONOMIES INITIATIVE

CASE STUDY



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SONOMA COUNTY

CONTEXT

Investing in the conservation and stewardship of healthy lands in Sonoma County generates tremendous value for local and regional communities, ranging from water supply to local food to public health. In addition to the benefits provided by healthy lands, these proactive investments support community resilience in the face of climate change and increasingly costly natural disasters such as wildfire, floods, and drought.

Wildfire, floods, and drought are related through their impacts to – and dependency on – the health of the landscape. For example, the warmer drier conditions associated with a drought increase the probability of wildfire, and also affect vegetation and its ability to stabilize soils and absorb water during storm events, increasing flood risk. Drought conditions also lead to greater tree mortality and insect infestations, increasing the deadwood fuel load available during wildfires. In turn, post-wildfire soils can become hydrophobic, leading to impacts on local water supply, and a greater likelihood of flooding or debris flows following rainfall events. By some measures, Sonoma County is impacted by flooding more than any other community in California. Since 1978, Sonoma County has recorded more than **\$90 million** in National Flood Insurance Program (NFIP) flood claims, more than any other community in the state. Further, many of the damages are due to repetitive loss properties: the 2016 Sonoma County Hazard Mitigation Plan reported that 827 properties were associated with 2,674 claims between 1978 and 2010.

Though wildfires, floods, and droughts have always been part of the Californian landscape, increased populations and infrastructure (particularly in floodplains and the wildland-urban interface) have led to greater impacts to lives and property associated with such events. Further, research indicates that climate change will lead to more dramatic shifts between extreme wet and extreme dry weather, which will

increase the frequency of severe floods and droughts, and create more favorable conditions for wildfires to occur. For example, atmospheric rivers (e.g., the “Pineapple Express”), which send a narrow band of warm, concentrated water vapor to the west coast of the U.S., have been responsible for virtually all major historical floods in California. This is just one phenomenon projected to become more severe in a changing climate.

While conserving and maintaining healthy landscapes cannot prevent floods, wildfire, or drought, these actions – along with prudent land use planning – can help to reduce the frequency and severity of natural disasters. As a result, potential impacts to other ecosystem benefits, such as water supply, water quality, recreation, and habitat, will also be reduced. In short, land conservation is an effective strategy for supporting ecosystem services, reducing damage to property and infrastructure, and helping to save lives.

The Federal Emergency Management Agency (FEMA) recognizes the value of investing in the conservation and stewardship of healthy landscapes for mitigating the impacts of floods, wildfires, and droughts, as reflected by recent policy updates in 2012 and 2016, and has begun to place greater emphasis on proactive investments before disasters occur (“Pre-Disaster Mitigation”). This has made it easier for state and local entities to access FEMA mitigation funding for land conservation (especially in floodplains) and other nature-based solutions, such as post-wildfire restoration of forested lands, aquifer storage and recovery, wetland and riparian restoration.





LAND CONSERVATION ENHANCES RESILIENCY

Example: OPEN SPACE MITIGATES FLOOD RISK

St. Louis County, Missouri, is subject to frequent and severe floods. In the past 25 years, the county has experienced six federally declared flood disasters. To mitigate this hazard, the County invested in the protection of a large greenway, encompassing 9,000 acres along the Meramec River. St. Louis County acquired and conserved this land with flood protection and water quality improvements as the principal stated goal. An analysis conducted by Resources for the Future found that the greenway provides **\$7.7 million** in avoided flood damages, per year, and more than **\$22 million** in property value uplift for buildings adjacent to the greenway, showing the benefits of this investment outweighed the costs. By investing in conservation, St. Louis County was able to effectively mitigate flood risk while creating a desirable, sustainable, public asset.

Example: INVESTING IN NATURAL FLOOD PROTECTION

Lenoir County, North Carolina, received \$30 million from FEMA's Hazard Mitigation Grant Program to improve flood resilience near the city of Kinston, NC. A portion of the funds were used to acquire homes along the Neuse River that were at high risk for future flood damage, providing willing homeowners with financial help to get out of harm's way, while conserving valuable floodplain lands in the process. FEMA has calculated that every dollar used to acquire high risk homes returns \$6 in avoided damage costs. By this measure FEMA's \$30 million investment in Lenoir County will return an estimated **\$180 million** in avoided costs. These properties were converted to open space, and today the greenway provides natural flood protection, as well as multi-use recreational opportunities for the community. The value of these investments was further highlighted during Hurricane Florence in 2018, which caused the Neuse River to reach its 3rd highest crest height in history. Though further research is needed, it is likely that many of these conserved areas flooded during the hurricane, and if so, avoided damage to the structures that could have been there, while also providing valuable floodwater storage.

Example: HEALTHY FORESTS REDUCE FIRE RISK

Active forest management and restoration has demonstrated efficacy in reducing fire risk to nearby communities. Research conducted on a forest in Oregon found that when forests are actively managed (e.g. thinning, surface fuel removal, etc.) they reduce burn risk to nearby properties by **25%-50%**. Even actively managing just 20% of the forested area demonstrated reduced fire risk. This research demonstrates that creating a healthy forest landscape can effectively reduce fire risk to homes and communities. Economic studies show that the benefits of forest management can far exceed the costs. A 2006 analysis of forest management costs and found that every dollar invested in forest management returned more than \$2-3 in benefits through disaster risk reduction and regional economic development. Similarly, a 2014 study in the Mokelumne Watershed showed that every dollar spent on fuel treatments would have \$2-3 in economic benefits, including reduced damages to structures, avoided fire suppression and cleanup costs, and the sale of timber resulting from the fuel treatment activities.



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Sonoma County Ag + Open Space permanently protects the diverse agricultural, natural resource and scenic open space lands of Sonoma County for future generations. We are responsible for the perpetual protection of over 116,000 acres of land throughout our region. These agricultural and open space lands are protected through a quarter-cent sales tax approved by voters in 1990 and reauthorized in 2006. For more information, please visit www.sonomaopenspace.org.



THE HEALTHY LANDS AND HEALTHY ECONOMIES INITIATIVE

The Healthy Lands and Healthy Economies Initiative documents the economic value and community benefits of natural and working landscapes. This research helps to show that Sonoma County's investments in land conservation pay real dividends, now and into the future. This Initiative would not have been possible without contributions from the Gordon and Betty Moore Foundation, the S. D. Bechtel, Jr. Foundation, and the California State Coastal Conservancy.

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MORE INFORMATION: Ager, A. Vaillant, N., Finney, M. (2009) A comparison of landscape fuel treatment strategies to mitigate wildland fire risk and in the urban interface and preserve old forest structure. Forest and Ecology Management Available at: www.bit.ly/2OeorH5

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