



Watershed Investment Programs Updates From the Field April 2015

I. Introduction

Carpe Diem West's report *Watershed Investment Programs in the American West* (November 2011) provided information on existing watershed investment programs across the West and identified communities and watersheds that could be fertile ground for new programs. It discussed some fundamental questions that merited careful consideration by policy makers, water utilities and public land managers as these programs develop and expand in the future.

This briefing paper updates the 2011 report. It looks at six key headwaters investment and restoration programs, presents some lessons learned and opportunities going forward, and includes a list of current programs in the American West.

II. Background

Across the American West, communities and water utility managers have a growing understanding of the urgent need to protect and restore the headwaters of their water supply in the time of a rapidly changing climate.

This has led to the implementation of a number of watershed investment initiatives, each one reflecting the values and needs of the individual communities.



“Of course, we're never going to be able to treat everything we need to treat. We can sit on our hands and do nothing or we can try to get smarter by doing this work on the ground.

Western Utility Water Manager

III. Overview: Lessons Learned

Overall lessons learned from Carpe Diem West Healthy Headwaters leadership include:

- ▶ Make the connections between forest health and vitality of communities, recreation, economy, water supply
- ▶ It's a much smarter business move to invest now than later
- ▶ Public-private partnerships are a critical ingredient to any solution set

More specific lessons include:

Don't wait for the feds.

The delays in the Four Forest Restoration Initiative (4-FRI) federal NEPA process led Salt River Project to start work on other NEPA-ready projects and to launch the Northern Arizona Forest Fund.

Carrots work better than sticks.

The McKenzie River provides the sole source of drinking water for the City of Eugene, Oregon. With general agreement that stronger actions were needed to protect water quality, the Eugene City Council moved to impose regulations on agricultural operations in the McKenzie River Watershed in 2010. At the Council meeting, hundreds of farmers and anti-regulation supporters loudly voiced their dissent and the Council backed down from their original plan. This in turn led to the creation of the utility's Voluntary Incentives Program, which provides various monetary incentives, paid for by the utility, for upstream landowners to limit agriculture runoff into the McKenzie and protect stream banks.



“We could just continue to pound on our congressman and senators and the Forest Service for more federal money to fund the treatment. The end result of that is just a lot of yelling and screaming and not a lot gets done... There's not enough money in the Treasury for the work that needs to be done.

**Paul Summerfelt
Wildland Fire Management Officer,
Flagstaff**

Your customers know what's at stake, and are willing to pitch in.

Utilities tend to underestimate the willingness of ratepayers to contribute to headwaters programs. The City of Santa Fe found that 82% of ratepayers were willing to pay 65 cents per month to protect the City's water supply from the risk of catastrophic wildfire. A recent survey, conducted by the University of New Mexico, of water users in the Albuquerque area indicates similar levels of support. Flagstaff's \$10 million bond initiative to restore the health of their forests was passed by 74% of voters.

Speak to your customers in language they understand.

Ratepayers better understand the benefits of watershed investment when it's framed in terms of "water source protection" instead of "watershed restoration." Examples from Carpe Diem West's Healthy Headwaters communities demonstrate that when the value of protecting watersheds, and avoiding future costs, is effectively communicated, water users and utility decision makers are more likely to invest.

Look to the business community for new partners.

Many businesses rely on healthy watersheds, whether directly or indirectly, and understand the importance of investing in them. Obvious partners are large water users, recreation and tourism businesses, and the beverage industry.

III. Defining Success

Each community or utility measures success in its own way. The challenge with quantifying the impact of these programs is that there are limited metrics to point to and long-term success is difficult to define. But that doesn't mean that there aren't ways to measure the progress of these programs. For many communities or utilities, success is currently defined as:

- ▶ We got the bond passed
- ▶ Our restoration projects are underway
- ▶ Our local collaboration is now in agreement on where to start
- ▶ Our NEPA process is on track
- ▶ We're now communicating with our community on a regular basis

IV. Program Examples

Forest-to-Faucets: Denver Water & USFS Rocky Mountain Region

In 2002, following the largest forest fire in the Colorado's history, heavy rains sent more than a million cubic yards of ash and soil downhill and into Denver Water's Strontia Springs Reservoir, a critical link in the water supply for 1.3 million people. To date, cleanup and water treatment from that single fire has cost Denver Water more than \$40 million. This experience led to a sea change in the way the utility thinks about its water supply.

In 2010, Denver Water and the US Forest Service announced the [Forest-to-Faucet Partnership](#), agreeing to jointly fund five years of restoration work in watersheds critical to Denver's water supply. The \$33 million tab was split equally between the United States Forest Service Rocky Mountain Region and Denver Water (from their operations budget).



The 2010 agreement called for fire suppression and restoration work in 38,000 acres in five priority watersheds. By the end of 2014, approximately 28,000 acres had been treated in the designated “zones of concern.” These acres represent only a small percentage of the forests that need restoration in the region and treatment areas have focused primarily on protecting infrastructure at lower elevations.

The utility currently estimates that within the next two years they will have treated a total of 46,000 acres. This acreage increase comes from mostly work on private lands, with the additional funds needed coming from various state programs and local partnerships.

With the 2010 agreement with the USFS coming to an end, it is highly unlikely that the USFS will again provide a similar level of funding. Denver Water is now doing what so many other communities are — initiating a collaborative approach to engage multiple state and local community partners, piecing together funding sources for smaller pilot projects.

Northern Arizona Forest Fund

The economic impacts of catastrophic wildfire in Arizona are well documented, with figures often totaling hundreds of millions of dollars for a single wildfire. For example, a full cost accounting of the Rodeo-Chediski Fire, one of Arizona's largest wildfires on record, estimated the direct and indirect costs of wildfire suppression and recovery to be more than \$308 million. Phoenix has already experienced the impact of sedimentation and water treatment from upstream fires in its delivery and treatment systems.



Salt River Project (SRP) has become increasingly concerned about the impact of these wildfires and post-fire flooding events on both its water supply and electric transmission line reliability. SRP is engaged in efforts to improve the health of the watershed forests, and as such participates in the **4-FRI** collaboration. However, with final approval and implementation still not in place for this massive program, SRP decided to move ahead and initiate other NEPA-ready watershed improvement projects.

Launched in late 2014, the **Northern Arizona Forest Fund** (NAFF) is a partnership between Salt River Project and the National Forest Foundation. The purpose of the Fund is to raise contributions from private sources to pay for already-NEPA-approved watershed improvement projects. These are projects are “shovel-ready” and limited only by funding. SRP is focusing its fundraising efforts on customers and other partners that would directly benefit from improved watershed conditions and water supply reliability. Contributions to the NAFF are collected by the National Forest Foundation and awarded to local non-profit stewardship organizations, local contractors, and the US Forest Service to implement high-priority projects on the Apache-Sitgreaves, Coconino, Kaibab, Prescott, and Tonto National Forests. The first projects underway are in Upper Beaver Creek (near Flagstaff) and Oak Creek (near Sedona). Work on these two projects begins in 2015.

The NAFF's projects are focused on reducing wildfire risk, improving streams and wetlands, enhancing wildlife habitat, restoring native plants, and limiting erosion and sediment into streams, rivers, and reservoirs. The NAFF projects will also create jobs and provide volunteer opportunities in communities through partnerships with local conservation and stewardship groups. To date, approximately \$500,000 has been raised, from SRP funds (operations budget), local businesses and one private foundation.

Eugene Water & Electric Board - Voluntary Incentives Program

Eugene's 200,000 residents depend completely on the McKenzie River for their drinking water. Though three-quarters of the McKenzie's watershed is in public ownership, most of the mid-river banks are privately owned, devoted largely to farms and forest industries. These lands are at high risk of flooding, erosion, increased water temperature, agricultural run off and development. The Eugene Water & Electric Board (EWEB) developed a Drinking Water Protection Plan that included two goals: (1) help farms become more economically viable so that the land stays in production and is not sold off for development; and (2) encourage reduced use of pesticides and nitrates.

EWEB's [Voluntary Incentives Program](#) (VIP) was launched as a pilot in 2013. The goal of the program is to protect the McKenzie River Watershed as a healthy source of drinking water for the residents of the City of Eugene. The VIP does this by compensating landowners along the McKenzie River for management practices that benefit water quality and the overall sustainability of the watershed. Along with compensating existing good land stewards, these market incentives also entice more landowners to restore the condition of their land so they can participate in the program.

EWEB has been highly successful in engaging the first "early adopter" landowners, along with establishing a collaboration of local agencies and the US Forest Service to support the pilot. In addition, EWEB has leveraged the science and resources of the two local universities.

Funding for the pilot program (to be completed in June 2015) came from a \$150,000 grant from the Oregon Watershed Enhancement Board, and \$200,000 from the utility (operations budget).



This program helped stave off increases in, and potentially reduced EWEB's raw water treatment budget, and avoid future capital costs for new treatment processes to deal with algal blooms and toxins from polluted runoff, rising water temperatures, and sediment loads associated with more extreme weather events. EWEB estimates it has saved its ratepayers between \$60 and \$130 million in future treatment costs so far.

As noted in the *Lessons Learned*, above, EWEB has found that instead of implementing more government regulations, by engaging the landowners in the protection of the watershed and Eugene's program has a much higher probability of success.

EWEB will evaluate the pilot phase of the VIP this summer, make the adjustments needed to roll out the full program in 2016. The fall, EWEB ask the City Council to approve a specific line-item rate increase to fund the VIP, and will begin seeking funding from government grants, local businesses and other watershed users. The funding for this full program will cover 8,200 acres of riparian forestlands in the McKenzie and its tributaries.

City of Flagstaff, Arizona

The 2010 Schultz Fire burned 15,000 acres just outside of Flagstaff, and led to post-fire flooding that devastated neighborhoods. The recovery work cost between \$133 and \$147 million, according to a [full cost accounting](#) by Ecology Research Institute at Northern Arizona University.

In spring of 2013, Flagstaff voters approved a [\\$10 million bond](#) (by 74%) to fund thinning and prescribed burns outside of city limits, on state and federal land. Bond money will go to fund treatment in the San Francisco Peaks area bordering Flagstaff, where a fire like the Schulz Fire could cause billions of dollars in damage to the city, as well as Mormon Mountain, where a fire would likely push ash and debris into Flagstaff's drinking water supply.



The 2014 Flagstaff Watershed Cost Avoidance study by NAU's Rural Policy Institute estimates the economic impact of an uncharacteristic stand-replacing wildfire and subsequent flooding in the Flagstaff project areas would be between \$573 million and \$1.2 billion.

Restoration of 15,000 acres in priority watersheds and forests is expected to be completed over the next 5-10 years. The final EIS/Record of Decision is expected by Fall 2015. Small scale (100-400 acres) work on prior-approved federal lands, and on state and private lands has begun.

In addition to the City's \$10 million bond commitment, through either cash contributions or in-kind services, various partners (the USFS, state forest, private contributors) have provided

over \$2 million to the forest restoration work to date. The bulk of this additional investment has come from the USFS, but ten other partners have also contributed to the project. Two grant awards from Arizona State Forestry, totaling \$200,000, were received to offset costs to treat Observatory Mesa.

The City's current focus is on: project planning with the USFS, Navajo Nation and northern Arizona tribes; the EIS process, community outreach; developing monitoring protocols; and, engaging other potential contributors. The final EIS is currently on schedule to be completed this fall, with projects on National Forests lands to begin in 2016.

City of Santa Fe, New Mexico

Forty percent of the municipal water supply for Santa Fe's 80,000 residents comes from the Santa Fe River, which flows from the Sangre de Cristo Mountains just east of town. Most of the river's watershed lies in the Santa Fe National Forest, a landscape at high risk for catastrophic wildfires.

In response to the threat of wildfire, the City of Santa Fe launched the [Santa Fe Municipal Watershed Project](#) in 2002 in partnership with the US Forest Service to treat over 5,500 acres of forest. Recognizing the need for a long-term solution, the City formed a collaborative planning group with the USFS, the Santa Fe Watershed Association and The Nature Conservancy. The group was awarded a State of New Mexico Forest Service Collaborative Forest Landscape Program grant to develop a watershed management plan.



In 2009, the resulting 20-year Santa Fe Municipal Watershed Plan established the method and plan for forest treatments, the protocol for water quality and quantity monitoring, promoted public awareness and outreach, and recommended establishing a permanent funding source financed by rate payers for ongoing watershed protection.

The goals for treating the Santa Fe River watershed are to protect the City's water supply from the impacts of severe wildfire in the watershed and to restore a more natural and healthy forest ecosystem. Over 5,500 acres of forest have been treated in the non-wilderness area

around the City of Santa Fe's reservoirs. The forest treatment methods include mechanical cutting of smaller diameter trees to restore tree density to natural fire regime levels, slash pile burning, and broadcast burning.

Financial resources for the Watershed Management Plan have come from the Forest Service's New Mexico Collaborative Forest Restoration Program, the New Mexico Finance Authority Water Trust Board (\$1 million), and a congressional earmark (\$7 million). Ongoing support for the program is financed through water rates and cost-sharing with the Forest Service.

A 2011 poll conducted by the Nature Conservancy and the Watershed Association found that 82% of ratepayers were willing to pay a charge of 65 cents per month to protect the City's water supply from the risk of catastrophic wildfire. With the community on board, rate increases took effect in 2013 and provide \$220,000 annually for forest restoration through Santa Fe's Watershed Investment Program.

The City of Santa Fe is currently conducting an Environmental Assessment, looking at expanding forest treatment to 2,000 acres upstream of the City's reservoirs. This portion of the watershed transitions into wilderness area where treatment is restricted to broadcast burning. The City will also update the collection agreement with the US Forest Service to include treatment of the upstream acreage.

City of Aurora, CO - Hayman Restoration Partnership



In 2002, the Hayman fire — the largest in the Colorado's history — roared across the rivers, streams and forests of the South Platte watershed in the Rocky Mountains above Denver. After the fire, the rains came and the mountains started to slide away, loading up rivers and reservoirs with over a million cubic feet of ash and soil. Watersheds were devastated, fish and plants disappeared, and the water supply for 1.3 million people living downstream in Denver and surrounding communities was threatened. (See Forest to Faucet program, above.)

The [Hayman Restoration Partnership](#) was launched in 2009, seven years after the fire. The partnership has provided funding and volunteer hours for tree planting, stream restoration, and forest restoration, including thinning and prescribed burns in the South Platte watershed.

The National Forest Foundation and the City of Aurora brought together Vail Resorts, Coca-Cola, the Gates Family Foundation, the US Forest Service, and many other public and private partners including the Coalition for the Upper South Platte, Rocky Mountain Field Institute, and Mile High Youth Corps. These partnerships have leveraged more than \$4 million since inception.

The goal of the Restoration Partnership is to slow the spread of sediment into waterways and reservoirs and repair local forest characteristics to reduce the likelihood of high severity fire in the future. Today, the partnership is the largest wildfire restoration program in the country. The results are impressive: one million trees planted; fish returning to restored streams; and 17,000 acres reseeded. Hundreds of volunteers, more than 450 youth corps members, and several nonprofit partners have reduced sediment to rivers and streams by 800 tons.

The Hayman Restoration Partnership is a great example of a public-private partnership in action. Businesses that rely on clean water and healthy forests, directly or indirectly, are beginning to understand that investing in their watersheds is a smart risk management strategy.

[About Carpe Diem West](#) | [About Healthy Headwaters Program](#)

V. Western Watershed Investment Programs: Summary Table

Program Name (Location)	Number Of Users	Fee Amount	Average Fee Per Household	% Of Average Bill	Rate Design	Separate Fee On Bill?	Budget Allocation/ Revenue Generation	Year Introduced	How The Program Was Adopted
Ashland Forest Resiliency Stewardship Project (Ashland, OR)	20,000	No fee. Included in city budget.	N/A	N/A	N/A	N	\$175,000 per year	2013	City Council
Aurora Water (Aurora, CO)	300,000	No fee. Included in city budget.	N/A	N/A	N/A	N	\$500,000 over two years	2011	City Council
Bull Run Watershed Habitat Conservation Plan (Portland, OR)	900,000	No fee. Included in city and USFS budget.	N/A	N/A	N/A	N	\$500,000 per year	2007	Congress (1996 Bull Run Mgmt Act)
Cedar River Watershed Habitat Conservation Plan (Seattle, WA)	1,400,000	No fee. Part of utility budget.	N/A	N/A	N/A	N	> \$50m over 20 years	N/A	City Council
Clackamas River Water Providers Source Water Protection Program (Clackamas County, OR)	400,000	Varies based on individual member agency.	N/A	N/A	Percentage of finished water production of each member agency.	N/A	Approximately \$500,000 per year	2007	Inter- Governmental Agreement
Conserve to Enhance (Tucson, AZ)	535,000	No fee. Voluntary checkbox on bill.	N/A	N/A	N/A	N/A	\$39,561 to date	2012	Non-profit
Flagstaff Watershed Protection Project (Flagstaff, AZ)	64,000	No Fee. Bond Measure.	N/A	N/A	N/A	N/A	\$10m	2013	Voters

Program Name (Location) Continued	Number Of Users	Fee Amount	Average Fee Per Household	% Of Average Bill	Rate Design	Separate Fee On Bill?	Budget Allocation/ Revenue Generation	Year Introduced	How The Program Was Adopted
Forest Stewardship Fund (Treasured Landscape Campaigns - Alaska and Oregon)	N/A	Voluntary \$1 per room per night or per raft trip, round up campground fee – matched 50% by National Forest Fund	N/A	N/A	N/A	N/A	\$60,000 per year before matching	2010	Non-profit
Forest to Faucets (Denver, CO)	1,300,000	\$0.04 per 1,000 gallons.	\$0.33 per bill	+1%	Volumetric Rate	N/A	\$3.3m per year over 5 years	2012- 2013	Utility and USFS partnership
Green River Watershed Management Plan (Tacoma, WA)	300,000	No fee. Included in Tacoma Water budget.	N/A	N/A	N/A	N	N/A	2006	Utility
Lake Whatcom Watershed Land Acquisition and Preservation Program (Bellingham, WA)	88,000	\$5 per month + \$0.64 per CCF	N/A	N/A	Base rate + volumetric rate	Y	\$25.3m since 2001	2001	City Council
McKenzie Watershed Drinking Water Source Protection Plan (Eugene, OR)	200,000	To be determined.	N/A	N/A	N/A	N	\$200,000 - \$250,000 per year	2013	Utility
Northern Arizona Forest Fund (Phoenix Area, AZ)	N/A	No Fee.	N/A	N/A	N/A	N	\$500,000 to date	2014	Utility

Program Name (Location) Continued	Number Of Users	Fee Amount	Average Fee Per Household	% Of Average Bill	Rate Design	Separate Fee On Bill?	Budget Allocation/ Revenue Generation	Year Introduced	How The Program Was Adopted
Salt Lake City Watershed Management Plan (Salt Lake City, UT)	400,000	\$1.50 per meter per month.	\$1.50 per month	+3.75%	Fixed Fee	N	\$1.5m per year	1988	City Council
San Antonio Source Water Protection Program (San Antonio, TX)	1,300,000	1/8-cent sales tax over five years (2005-2010).	N/A	N/A	N/A	N	\$45m (2005), \$90m cap (2010)	2005, 2010	Voters
Ski Conservation Fund (Nationwide)	N/A	Voluntary \$1 per room per night – Matched 50% by National Forest Fund	N/A	N/A	N/A	N/A	\$400,000 per year before matching	2006	Non-profit
Vail Resorts (Vail, CO)	N/A	No fee.	N/A	N/A	N/A	N/A	\$750,000	2009	Private business
Water Source Protection Program (Santa Fe, NM)	32,000	\$0.13 per 1,000 gallons per month.	\$0.65 per month	+1.6%	Volumetric Rate	N	\$200,000 per year	N/A	City Council
Watershed and Environmental Improvement Program (San Francisco, CA)	2,500,000	No fee. Included in San Francisco PUC budget.	N/A	N/A	N/A	N	\$50m over 10 years	2005	Utility
Watershed Management (LosAngeles, CA)	666,000	Included in Los Angeles DWP budget.	N/A	N/A	N/A	N	N/A	N/A	Utility and City Council