Developing the Economy by Restoring the Feather River

In 1985, Pacific Gas and Electric (PG&E) had a sediment problem in two reservoirs, Rock Creek and Cresta. These reservoirs are on the Feather River, which has perhaps one of the worst erosion problems in the Sierra Nevada.[44] Sediment had reduced the capacities of these reservoirs by 46% and 56%, respectively; it also interfered with control gate operation and increased turbine wear.[45]

At first PG&E proposed to dredge and dispose of the sediment at a cost of $7 million. Several objections were raised to this plan: it was expensive, it created a disposal problem, it didn't address upstream erosion, and it generated economic benefits mostly for non-local firms.

At the time, the Plumas County economy was hurting. The annual unemployment rate stood at 14%, per capita income was only three-quarters of the state level, and economic diversity was low.

When Leah Wills, who worked for Plumas Corporation (a private, non-profit economic development agency for Plumas County) heard about the plans to dredge, she approached County Supervisor John Schramel with an alternative. "Why not address the source of the erosion through upstream restoration?" she asked. "Why not create local jobs and income instead?"

Schramel and Wills found kindred spirits in local representatives of the Forest Service, California Department of Fish and Game, California Department of Forestry, a local resource conservation district, and Plumas County. Together they organized the Feather River Coordinated Resource Management (CRM) group. Today the CRM is a dynamic coalition of 21 entities pledged to restore watershed function across the 3,222 square mile watershed.[46]

One of the first projects conducted by the CRM was on private ranchland where, after years of human activities, Red Clover Creek had cut a 10-foot deep channel with vertical, eroding banks. The project exemplified what have become distinguishing features of the Feather River CRM:

Collaborative Process. The project was voluntary and initiated by the landowner. Because it brought together people who typically were in conflict, the CRM set ground rules that encouraged people to express diverse opinions and discouraged personal attacks.

Pooled Resources and Expertise. A wide variety of individuals and agencies supported the Red Clover Creek project, including the landowner who donated rock, PG&E which contributed $111,500, and the US Forest Service which helped design the project, blasted rock, and donated pine seedlings.

In addition to on-the-ground projects, the CRM also sponsored studies to develop a common understanding of the erosion problems on the Feather River. These studies helped target restoration efforts where they could yield the most benefits. For example, studies found that:

64% of the stream channels are degraded in the East Branch of the North Fork of the Feather River.

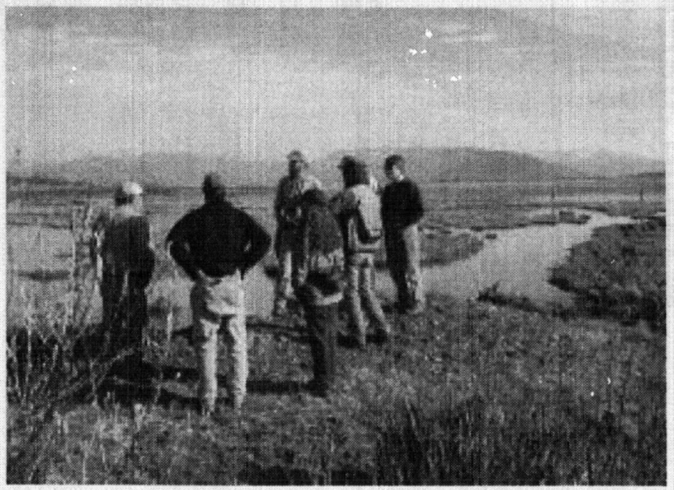
Nearly 80% of the sediment delivered to the Rock Creek Reservoir is caused by erosion from road cuts and stream banks.

Today on Red Clover Creek, you'll find cows up to their knees in green grass—even after a long, dry summer. Because the meadow groundwater table has risen significantly, more productive rangeland species have replaced sagebrush. Ducks wheel through the air and dabble in the flood.

In sixteen years, the CRM has accomplished similar miracles on nearly 60 watershed projects covering more than 14 miles of stream and 4,000 riparian acres. Funding and plans are in place to double these achievements within the next two years. Rainbow trout have returned to streams they'd been absent from for over 30 years. In some projects, waterfowl numbers are up by 650%.

Thanks to the CRM's ability to leverage partners and resources, PG&E's early $1.1 million investment is only one-ninth of the investment in watershed restoration so far. Sediment deposition in Rock Creek and Cresta reservoirs is abating and research suggests that upstream restoration can eventually cut sedimentation rates by half.[47]

The Plumas County economy benefits from the CRM's activities in many ways. Restoration projects have brought nearly $10 million into the economy and created 94 full or part-time jobs. New firms have opened to take advantage of the opportunities created by stream restoration. A local heavy equipment contractor now specializes in restoration work; a nursery grows native plants; another firm monitors water quality. And, by demonstrating the benefits of cooperation, the CRM increased trust throughout the community and catalyzed other community building efforts.



Feather River Coordinated Resource Management Group members re-visit projects regularly to learn how they perform over time.

Science education in Plumas County also advanced because of the CRM. Over 165 high school students have been enlisted to collect monitoring data, and have gained hands-on experience applying scientific principles. The Feather River Community College launched an innovative water resource management program, which has trained 420 students to be water resource technicians.

People living below the PG&E reservoirs also benefit from the upstream restoration. Because restoration increases the capacity of the land to hold water, research indicates it could decrease peak floods by 15 percent in the long-run. For similar reasons, the amount of water supplied to the California State Water Project could increase due to the delay in release of naturally stored water.[48]

The Feather River CRM has shown that investment in natural resources builds wealth in the community. As Leah Wills says, "if we take care of our resource base, it will take care of us the same way any entrepreneur's capital pays dividends for good management."

For more information, check out the website at *www.feather-river-crm.org/*, or contact Jim Wilcox or Leslie Mink at the Plumas Corporation, 530-283-3739.

HIGHLIGHTED CASE STUDY

Collins Companies and the Natural Step

The Collins Companies had almost completed the process of certifying that its forests were managed according to the principles and criteria of the Forest Stewardship Council when it decided to examine the environmental effects of every aspect of its business practices. To that end, Collins embraced the concepts of The Natural Step (TNS), which it calls the "Journey to Sustainability (JTS)."

The Natural Step, founded in 1989 by the Swedish cancer researcher and physician, Dr. Karl-Henrik Robért, encourages individuals and businesses to conserve natural resources by moving away from materials handling and manufacturing practices that spread toxins. Founded on four basic scientific principles, The Natural Step asks businesses to examine each action in light of four system conditions:

Does the action reduce the use of finite mineral resources?

Does the action reduce the use of long-lived synthetic products or molecules?

Does it preserve or increase natural diversity and capacity of ecocycles?

Does it reduce the consumption of energy and other resources?

Collins Companies began the TNS

training in 1997 at its composite plant in Klamath Falls, Oregon. The first step was to form a JTS training and coordinating team, which developed training manuals and procedures. All employees at the Klamath Falls plant received basic training on The Natural Step by mid-November 1997.

All ideas for improving business practices at the Klamath Falls plant are welcome, and range from the small to the significant. At one extreme, a no-paper fax system has been installed on a computer network server. At the other, Collins is tracking the economic and environmental impact of its projects. Sanding dust generated when making particleboard is put back into the manufacturing process instead of being thrown away. Not only does this increase the quality of the particleboard, it reduces the use of natural gas to burn the dust. A heat recycling process captures heat from the paint drying process.

In May 2001 Collins announced it received certification for particleboard made from 100% post-industrial waste. The highly regarded Green Cross certification came after a detailed audit of their mill and suppliers to verify that every fiber is, in fact, post-industrial waste.

Since then, the company has saved $5 million by systematically introducing these principles in its other facilities. In Corporate Headquarters in Portland, Oregon, Collins offers complimentary transit passes to all employees who use Portland's regional transit system. At Kane Hardwood in Pennsylvania, conveyer chains in the sawmill are oiled with used motor oil from their forklifts.

Asked how long the Journey To Sustainability will take Collins Companies responds, "It may be never-ending if we are to reach true sustainability. It will, however, be one of the most important, challenging, and rewarding of journeys, as we dedicate ourselves to ensuring that our children have an abundance of natural resources with which to build the future."

For more information about Collins Companies, go to *www.collinswood.com*, or call Jaime Sanz de Santamaria at 800-329-1219.

For more information about The Natural Step, check out their website at *www.naturalstep.org/*, call 415-561-3344, or email *tns@naturalstep.org*.

Biomass Energy Reduces Wildfire Costs

It's a virtual certainty: if you live or work in the Sierra you will experience wildfire sometime in the future. A recent Forest Service analysis of the Sierra concluded that "40 to 60 percent of the foothills zone [could] see fire at least once in the next 100 years."[62]

Probably the best known impacts of wildfire are on natural capital—trees die, sediment chokes rivers, and landscapes can remain denuded for decades.

Less well known are the hardships communities face. The 1998 wildfires in Northeast Florida burned 500,000 acres and cost the tourism industry sales and hotel revenues worth $138 million.[63] More than $100 million in public resources were diverted to fire fighting. Emergency room visits increased by 91% for asthma and 132% for bronchitis. The researchers concluded that the economic impact of the Florida fires "rivals damages from tropical storms and small hurricanes."

Wildfires in the Sierra are an escalating problem because, although firefighters have been successful in controlling the number of acres burned, costs and structure loss continue to rise. Before European settlement between 5.5 and 19 million acres of California burned each year.[64] Fire suppression has allowed forests to become more dense, which makes them more susceptible to insects and disease, which in turn causes trees to die.[65] At the same time, more homes and businesses are built in wildlands every year. The collision between mounting fuel loads and more structures in wildlands means wildfires are becoming more costly and presenting greater threats to lives, property and resources.

Research shows that lowering flammable material in forests to healthy levels effectively reduces wildfire damage.[66] Removing these materials also reduces the costs of firefighting and damage to resources. One study compared two 1,000 acre plots burned by wildfire.[67] In the first plot, which was not treated before wildfire hit, the fire cost $1,100 per acre in lost trees and fire suppression. In the second plot, in which flammable material was previously reduced to healthy levels, flames dropped to the ground and burned lightly without

need for suppression. Here the wildfire cost $165 per acre in lost trees and advance treatment. That is a savings of $935 per acre.

The challenge is that Californians don't agree how or where to lower flammable material in Sierran forests. Methods range from applying herbicides, chipping, logging, prescribed burning, and grazing with sheep or goats. Some say that areas close to communities are the only ones that need treatment. Others say that, to be effective, treatments have to be over much larger areas.

The cost of reducing flammable materials doesn't help people reach consensus—$328 million by one estimate.[68] However allowing fuels to accumulate also has a cost: California taxpayers spend $70.5 million per year to fight large wildfires, a figure that is increasing and does not include taxpayer money spent by local and federal agencies.[69]

Some people are exploring biomass energy as the least-cost alternative to solving the wildfire problem. Instead of putting the excess flammable material into the air, on the ground or into landfills, biomass energy turns waste into a good, and thereby offsets costs and creates jobs.

Biomass energy offers other benefits beyond saving money. First and foremost: cleaner air. By burning this material in a biomass plant instead of in the open, particulate matter pollution is reduced by 99%.[70] Studies show particulate air pollution causes illness, especially among infants and children, resulting in costly hospitalization and death, months or even years too soon.[71]

Biomass energy also frees up limited landfill space—an increasingly expensive resource.

Many models of biomass energy exist. For example:

- **In Vermont, schools save money by using wood chips for heat instead of electricity. See *www.state.vt.us/psd/ee/ee2.htm*.**
- **In Humboldt County, the Hoopa Valley Indian Tribe uses a biomass energy plant to heat and power a commercial greenhouse that grows Douglas-fir seedlings. See *www.gocpc.com/ and click on "CPC In the News"***
- **In Nevada County, the Sierra Economic Development District is spearheading a project to install a small scale biomass energy plant on Washington Ridge at the California Department of Forestry and Fire Protection Youth Camp. This project will demonstrate sustainable removal and use of flammable forest materials and various other wood waste fuels. Contact Betty Riley at (530) 823-4703.**
- **Near Jamestown, CA the Pacific Ultrapower plant generates 22 megawatts using 600 tons per day of material that would otherwise be put into landfills or burned in the open. Since going on-line in 1987, the plant has run on a variety of wood waste fuels including prunings from almond plantations. construction debris from San Jose, and wood chips from Tuolumne County forests. Contact Chris Trott, Fiber Procurement Manager, at (209) 984-4660.**

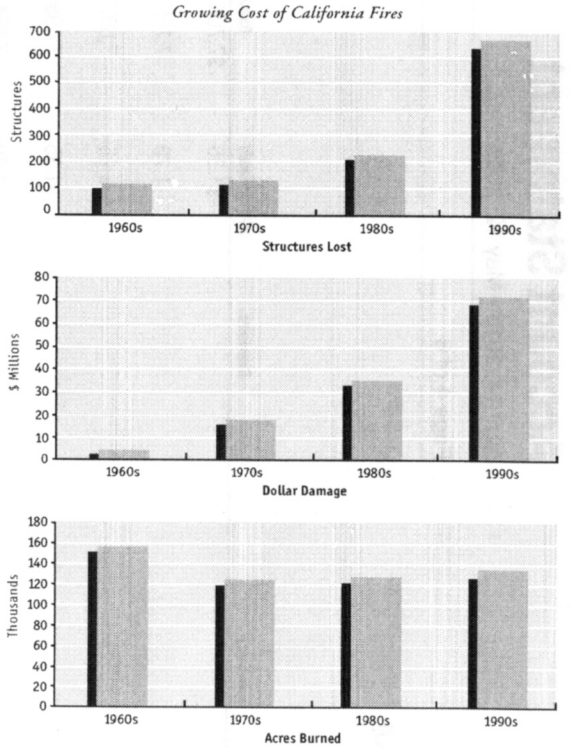
Unfortunately, Trott says that building a biomass energy plant today is difficult given energy market conditions and long-term uncertainty. "It won't happen until people recognize the environmental benefits the industry provides," Trott says, "and incorporate those benefits into economic incentives."

A growing body of evidence shows that biomass energy can build social, natural and financial capital in rural areas. Here are some sources:

California Fire Plan, *http://frap.cdf.ca.gov/fire plan/*.

Greg Morris, *The Value of the Benefits of U.S. Biomass Power*, (Golden, CO: National Renewable Energy Laboratory Report no. NREL/SR-570-27541, 1999); available from *www.eren.doe.gov/biopower/bplib/library/valuebenefitbiomasspower.pdf*.

R. Neil Sampson, Megan S. Smith, and Sara B. Gann, *Western Forest Health and Biomass Energy Potential*, (Alexandria, VA: The Sampson Group, 2001).



Although California wildfires burned fewer acres in the 1990s than in the 1960s, the number of structures lost increased six-fold and dollar damage increased seventeen-fold.