

Engaging Communities in Post-Fire Restoration: Forest Treatments and Community-Agency Relations after the Cerro Grande Fire

Robert L. Ryan and Elisabeth M. Hamin
Department of Landscape Architecture and Regional Planning
University of Massachusetts-Amherst
Amherst, MA (rlryan@larp.umass.edu) (emhamin@larp.umass.edu)

Introduction

A wildfire is dramatic, crisis-laden, and when located near residential or business areas, very public. How managers act during a wildfire to reduce its severity is clearly critical. But forest managers also know that what happens next—how the forest is restored and post-fire community relations are managed—has just as significant long-term repercussions. In this study we asked two critically important questions: first, how do members of the nearby public perceive the treatments their forest received in post-fire restoration; and second, what steps did the Forest Service take that were successful in working with the community in the post-fire restoration period, and what additional actions could improve community relations? Our results help managers:

- Prioritize rehabilitation projects in the wildland-urban interface.
- Successfully engage communities and volunteers in rehabilitation and restoration.
- Improve agency-community relationships.
- Assist the community in recovering from fire-related distress and associated social and economic disruption.

The conclusions, presented below, are based on interviews and focus groups conducted in Los Alamos, New Mexico, after the Cerro Grande fire of 2000. For reasons described later, the Cerro Grande fire rehabilitation was unique. Research results from this site illustrate a relatively ideal situation in terms of funding and community support from which lessons can be drawn for areas with more typical limited funding, support, and agency resources. Details on this fire, our methods, and the larger study of which this is a part are described toward the end of the paper.



Photo credit: Robert Ryan

Forest thinning after devastating wildfires appears to have much more community support than prefire.

Key Findings

Understanding the public's likely response to rehabilitation efforts has several benefits for improving management. First, this crucial post-fire period provides a window for significantly improving community-agency relations. After a major wildfire, in many instances the community perceives the firefighters as heroes. In fact, the fire puts the agency at the front and center of the public's attention when it is more typically far in the background. The goodwill and publicity that surround post-fire efforts provide the ideal opportunity for the agency to build stronger partnerships with local residents and other stakeholder groups. The public still looks to the agency for leadership and technical advice when it comes to issues of post-fire recovery. When the public scrutiny after a major wildfire is negative, such as when local residents have lost homes or the fire began with agency actions, post-fire management is critical in reducing conflict. Appropriate forest treatments can only be determined in light of the management objectives for that particular area of the forest, and those objectives are determined in part by the local community's needs, desires, and aesthetic preferences.

As our study illustrates, an agency can take some relatively minor steps to respond to local issues and thus improve resident-agency relations. Specific findings can be summarized as the following:

- **Clear communication will help develop community support for actions the agency deems necessary.**
 - The key to successful post-fire rehabilitation from the community's perspective is for managers to quickly communicate the Burned Area Emergency Rehabilitation (BAER) team's plans and continue to communicate longer term restoration efforts to the community.
 - Communication should be a two-way process, with agency personnel also learning from local residents and leaseholders.
 - Community members need a clear agency contact person, preferably someone they already know and trust.
- **Agency managers should support volunteer efforts in the post-fire forest restoration.** These efforts not only help the forest, they also help the community heal from the trauma of the fire. A good use of volunteer energy is to restore the community's "much loved spots," such as close-in trails or swimming areas.
- **Most residents viewed the question of best restoration and rehabilitation treatments as a question for science and Forest Service expertise; however, on some items the public had clear opinions:**
 - Hazard trees near trails and public areas should be taken down.
 - Aerial mulch is effective; aerial seeding less so.

- Forest thinning gained much popularity after the fire.
 - Prescribed burning lost popularity (although this may be peculiar to this fire).
 - **Overall, there was general support for forest restoration near the urban interface but much less so in the backcountry, although this varied a great deal.**
 - **Wildfires can have positive agency-community effects. Public trust in and collaboration with the Forest Service may actually increase, and interagency collaboration may also increase.**
- Results from the Cerro Grande fire indicate that, from the community's perspective, in many regards Forest Service personnel did an excellent job in working with the community and with treating the affected forest. It is heartening to know that for many people, their respect for and trust in the Forest Service actually seems to have increased as a result of the handling of the post-fire rehabilitation and forest restoration.

Detailed Findings

Based on our Los Alamos results, managers can take some clear steps to strengthen the effectiveness of post-fire rehabilitation efforts. We group these into two categories: (1) working with the community and (2) rehabilitation and restoration treatments.

Working with the Community

Clear communication will help develop community support for actions the agency deems necessary. *The key to successful post-fire rehabilitation from the community's perspective is for managers to communicate the BAER team's plans as well as longer term restoration efforts to the community.*

Important information a fire-stricken community needs to know:

- *Goals for rehabilitation:* Are the key issues prevention of erosion, flood control, or other items? Knowing the reasons for actions helps develop support for the agency's responses.
- *Post-fire threats:* The connection between wildfires, erosion, and flooding is not obvious to most residents. Many people will need to be quickly persuaded of the often-critical nature of post-fire threats to build community support for the rehabilitation actions needed to prevent them. The public also needs to know how long the threat of post-fire flooding is imminent.
- *Reasons for timing:* All managers know that certain actions have to be staged to support other activities, but this is not so obvious to members of the public. Information about timing is particularly important when some desired community actions, such as re-opening hiking trails, take longer than people would like.

- *Outcomes of rehabilitation efforts:* Over the long term, residents want reporting on how the forest has recovered, and whether their volunteer activities have yielded fruit. Publicity in newspapers and other local venues keeps the community informed about the state of the forest.



Photo credit: Robert Ryan

Early treatment should focus on a community's "special places," such as removing hazard trees along trails so they can re-open safely and quickly.

Communication should go two ways. Managers should use the local knowledge of leaseholders, large landowners, and affected businesses in preparing post-fire plans and in cooperating on post-fire restoration research. Abutters, other local residents, and public lands leaseholders, such as ranchers and outback outfitters, have day-to-day contact with the land and may have very specific and long-term knowledge about the forest lands. Many are delighted to assist agency personnel with observations, test plots, and other labor-intensive observations. Ranchers in particular, given their investments in structures and equipment on their leased lands, feel strongly about having their perspectives included in rehabilitation planning.

Community members need a clear agency contact person, preferably someone they already know and trust. Undertaking this information exchange in the extremely hectic post-fire environment is challenging for existing agency personnel. An approach used in Los Alamos that was extremely well received was to bring in a BAER team leader who coordinated with local volunteer leaders. In Los Alamos, this position lasted longer than the traditional 1-year commitment, which added consistency to the complicated rehabilitation process. This provides one clear person for volunteer leaders to go to with questions and ideas, and for help in organizing volunteer efforts. The volunteer leaders, in turn, acted as the liaison to the community. Study participants suggested that, if possible, the agency contact should be a resident with strong local ties and a solid reputation. The benefit of having a known person to whom residents easily relate is important considering the community trauma, where stability, familiarity, and responsiveness are critical parts of the healing process. A clear contact person would also free up the existing agency personnel to deal more effectively with the forest rehabilitation work and other agencies.

Volunteer efforts in post-fire restoration not only help the forest, they also help the community heal from the trauma of the fire. Encouraging and supporting local volunteer efforts in forest rehabilitation is a critical part of the recovery process, although not necessarily for the obvious reasons. Almost all respondents noted that volunteer efforts had as much to do with community healing as

with actually helping the forest. In Los Alamos, as in many communities, local residents have very strong attachments to the forest and chose this location because of its proximity to the national forest resources. Their love for their “special places” is quite strong, and seeing these places so changed was very difficult for them. Being able to reach out and help, to reestablish a sense of control, in these special places was intensely therapeutic for residents. Thus, even when volunteer efforts do not appear critically important to agency personnel in rehabilitation work, they should be encouraged and supported.

To make the most of volunteer efforts, agency personnel can direct volunteer work to the community’s “most loved” spots—trails, riparian corridors, and forest land near neighborhoods. More intensive treatments can be focused on these more heavily used areas to increase the rate of restoration and provide the most community benefit. This work is often more important to volunteers than total acres restored or other such measures. Volunteer work does require management from agency personnel, because the sites for labor must be appropriately located, easily accessible, and staged so that hazard trees and other direct threats are removed before volunteers enter the area. In Los Alamos, the agency provided tools and materials, including helicoptering-in straw mulch and other materials, while community members organized the volunteers. Local residents seemed to particularly like planting trees and schoolchildren enjoyed making and throwing seedballs.

Volunteer efforts are clearly easier to generate where there is an existing relationship between interest groups (such as recreationalists and forest friends) and the agency. We also acknowledge that such efforts are easier to organize in some locations than in others. Los Alamos has an unusually high level of volunteerism and social capacity, and thus it was in a position to have existing organized groups ready to work. In other locations with less existing social network capacity, more agency energy may be required to organize volunteer efforts.

Volunteers also can serve important roles in educating other communities at risk. An interesting use of volunteer leaders was as emissaries to other fire-prone communities or those that had recently had a fire. Residents rated very highly the effect of a presentation by officials and residents from Oakland, California, which had also experienced a wildland-urban interface fire. They spoke of how much more convincing it was to hear from residents (“survivors”) than from another official. A further role for such groups would be to take their message about the likelihood of uncontrolled fire to fire-prone communities that are not responding well to efforts to thin and otherwise reduce fire risk.

Forest rehabilitation can be an opportunity for network building. A number of interviewees and focus group respondents in our study commented that after the fire there was much more collaboration between agencies, the community, and neighboring Native American pueblos. Topics that often appear to require coordination include forest treatments across jurisdictions, rebuilding of infrastructure, and

educating of local residents about creating more defensible space around their homes. The process of coordinating across jurisdictions is challenging but can result in longer term collaboration on similar and other items. Post-fire partnerships are easier to implement when they build on existing relationships and agreements.

Rehabilitation and Restoration Treatments

Restore forests in the urban interface: leave the backcountry to nature. A strong finding from focus groups and interview respondents addressed the question of whether the Forest Service should try to restore the forest at all. The answer: it depends. The majority of respondents felt it was critical to undertake restoration in the wildland-urban interface and especially important to undertake any actions necessary to mitigate post-fire threats, such as flooding and erosion. In the backcountry, most felt it was right to leave nature to its own processes. For familiar sites, people could evaluate whether they thought a particular treatment had worked, but in general, most respondents seemed to feel that Forest Service experts should decide which treatments to use.

Hazard trees near trails and public areas should be taken down, and the public should help decide which areas get treated first. One item upon which most respondents had strong opinions was the issue of whether or not to fell hazard trees. While most Forest Service policy includes cutting down imminently hazardous trees along trails after a fire, our study found fairly strong consensus that most dead, burned trees along trails should definitely be taken down, so that trails could re-open safely and quickly. This finding emphasizes the need to focus early treatments on the community's "special places." When areas that had previously been an important part of people's recreation were closed for extended times, residents became quite annoyed. Many reported ignoring closure signs, and others said they took their own chain saws in to remove hazard trees along trails on the public lands. Managers are likely to find community relations much better if they work with community members to determine important areas to open quickly and then take the actions necessary to make those safe.

Most respondents support salvage logging, preferably without new logging roads. The overall question of whether to salvage log burned areas had less consensus, although a majority supported salvage logging. Typical comments reported seeing the burned standing trees as "wasteful" and logging these trees as preferable to logging off unburned forest areas. The standing trees were viewed as ugly "match sticks," reminders of the fire that people would rather not see. A caveat to this is that support for logging was much lower in nonroaded areas, with a great deal of concern that salvage logging would require extensive and difficult-to-repair roads. Thus, managers might consider helicopter or logging with horses in roadless areas. A small number of local residents felt that the snags are a part of the natural ecological cycle and should be left to fall.

Residents had distinct views on specific treatments:

- Straw mulch was perceived to have been highly effective in soil protection and regeneration, with or without seeding.
- Aerial seeding alone was not perceived as very effective, considering the rugged topography of the burn area. In areas where seeded grasses did take hold, they were popular, because they provided quick recovery and an aesthetically pleasing view.
- Some respondents noted that whatever would bring back the birds and animals is what should be done; as the loss of connection to these species in hikes was much bemoaned.

Because of the peculiarities of this fire and the generous funding for rehabilitation and restoration, a great deal of infrastructure work was undertaken by the county in coordination with the Forest Service. Residents felt the scope of check dams and other flood control structures was out of proportion to the need for them; at this point residents just want the reconstruction of roads and other facilities to be over.

People's support for long-term forest restoration projects, including forest thinning, was much higher after the fire than before it. Many residents said they now welcomed thinning, but would have argued against it before. The post-fire period thus presents a window of opportunity for managers to highlight the need to also treat nonburned areas that need hazard mitigation. One exception is within heavily burned areas, where thinning of the few standing green trees was very unpopular. While many respondents supported thinning near the urban interface, they also felt that thinning in the wildlands was much less necessary. However, managers need to be aware that even after a fire, local residents are sensitive to the amount of trees that are removed, especially near their homes. Communicating with those who live near thinning projects is critical before work begins.

The use of prescribed fire to reduce hazards was extremely controversial, as can be expected given that the Cerro Grande fire began as a prescribed burn. A few people still supported this as a tool, but most did not, and generally it will be many years before prescribed burns are widely accepted. A first step is to successfully burn the brushpiles left from forest thinning. As noted by one local agency employee: "Fire is a natural part of this system and the only way we're going to get out of this mess is to put the fire back into the system one way or another. This is our first step. If we have 10 bonfires [of cleared brush and trees] successfully without burning down a house, then you know, 2 or 3 years from now we can put fire on the ground."

Study Area

This report is most relevant for fires that occur in the urban-wildland interface and that directly affect people's homes, businesses, and the adjacent public lands they use for recreation. The Cerro Grande fire rehabilitation was unique. Research results from this site illustrate an almost ideal situation in terms of funding and community support, from which lessons can be drawn for areas with more typical limited funding, support, and agency resources. Each wildfire is different, as is each agency and its surrounding community, and the choice of the best restoration treatments must respond to the ecology of the area and the particulars of the fire.

The Cerro Grande Fire of 2000 began as a prescribed fire set by the National Park Service staff at Bandelier National Monument. Unfortunately, strong spring winds, on top of severe drought conditions, fanned the flames into the largest and most costly wildfire in New Mexico's history. The fire burned across the foothills of the rugged Jemez Mountains, almost encircling the town of Los Alamos and the adjacent Los Alamos National Laboratory. Los Alamos is home to highly educated, well-paid people who work at the lab. The entire population of Los Alamos, approximately 11,000 people, was evacuated in a matter of hours, as was the adjacent community of White Rock a few days later (Goette 2004). Ultimately, the fire burned approximately 48,000 acres and 231 structures, leaving more than 350 families homeless primarily in the neighborhoods that abut the Santa Fe National Forest. Because of the drought conditions and the high fuel load of the forest, this fire was especially intense over much of the burned area. In addition to burning Federal land at the national laboratory and Bandelier National Monument, the fire burned sections of two adjacent Native American lands at San Ildefonso and Santa Clara Pueblos. As described by many of our interviewees, the fire left Los Alamos physically and emotionally devastated.

Restoration and Rehabilitation Activities for the Cerro Grande Fire

Since the fire was started by the Federal government, a special act of Congress called the Cerro Grande Fire Assistance Act generously funded the restoration and rehabilitation: \$650 million to the town of Los Alamos, \$342 million to Los Alamos National Laboratory, \$105 million to the USDA Forest Service to rehabilitate the forest to mitigate downstream effects of flooding from the burned area. Since the fire burned thousands of acres upstream of the Los Alamos lab, there was strong concern about flooding of both lab facilities as well as movement of potentially radioactive soils from canyon bottoms. In addition, several canyons dividing the town of Los Alamos had strong potential for causing major floods to roads and nearby homes.

By many standards, the circumstances surrounding the Cerro Grande Fire create a unique example of post-fire recovery. The large sums of money available for emergency rehabilitation, coupled with the threat of radioactive contaminant transport into nearby streams from Los Alamos National Laboratory lands, created extensive and often elaborate post-fire rehabilitation techniques to deal with the imminent threat of flooding. The most severely burned area was aerially seeded with a mix of annual and perennial grasses. Contour felling was done on 1,000 acres and aerial hydromulch was used on 1,200 acres of especially sensitive areas. Hand-mulching, raking, and seeding were done with organized work crews on 3,000 acres of the burn area (BAER 2000). Additional post-fire activities included long-term forest restoration projects that have thinned large areas of Federal and county forest land in Los Alamos. Consequently, this post-fire rehabilitation effort gave us the opportunity to study the public's responses to a wide variety of rehabilitation techniques that might not be found on smaller, more isolated wildfires that received less rehabilitation funding.

Volunteer Activities for the Cerro Grande Fire

In addition to efforts by the government agencies, the Cerro Grande Fire post-fire recovery was unique in the extensive volunteer effort. In the 4 years since the fire, more than 55,000 volunteer hours were devoted to restoring the burn area, including trail rebuilding, tree planting, seeding, and mulching (Volunteer Task Force 2004a). The volunteer leaders from Los Alamos have made presentations to other wildfire devastated communities to help them organize their community volunteer efforts. More than 2,000 area homeowners participated in a voluntary defensible space program in which foresters hired by the county evaluated private property and implemented defensible space recommendations, such as tree and brush removal at no cost to the private owners.

Local school teachers have incorporated fire ecology and restoration work as part of the curriculum. This ecology curriculum has been used throughout the region and has become a national model for teaching forest ecology (Volunteer Task Force 2004b).

Methods

For the overall study, we selected three case study sites of urban-wildland interface fires in the Western United States.¹ Our three sites are Los Alamos, New Mexico, with the Cerro Grande Fire; Durango, Colorado with the Missionary Ridge Fire; and Arnold, California area with the Darby Fire. For this paper,

¹ Case studies were chosen where the fire had clear impact on nearby residential areas, those with varying levels of public participation and volunteerism, and those that had different ecologies and treatment regimes applied. Fires had to have been major, and to have occurred between 2 and 5 years ago, thus allowing treatments to have a chance to grow without overtaxing the memories of our respondents.

we report results only from the Cerro Grande Fire, because our research on the other two sites is still ongoing. The scope of this study begins with the BAER team emergency forest rehabilitation efforts, usually undertaken in the first year after a wildfire. The study also focused on forest restoration, the long-term work occurring beyond the timeframe or authority of the BAER teams, including forest thinning.²

For Cerro Grande we conducted interviews with 15 representatives from the Forest Service, local government, environmental and recreation groups, industry, and Native American pueblos, in late winter of 2005. In March 2005 we conducted two focus groups,³ one primarily with residents abutting the fire and one primarily with recreationalists and volunteers who planted trees, cleared trails, and otherwise undertook post-fire restoration work. Focus group respondents were questioned on how the agency had handled community-agency relations; they were shown pictures of various forest treatments (such as seeding, mulching, and thinning) in close-in parts of their forest and asked their opinion on how those had worked out. Focus groups were taped and transcribed, and results were categorized into themes. Combining the focus group findings with the stakeholder interviews provided triangulation on information and actions. Unless otherwise noted, the results reported here as representing “residents” come from the focus groups.

References

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² We did not take the strict USDA Forest Service definitions for these terms with the public, because the post-fire work is often perceived as a uniform work effort by the federal government instead of separate efforts. The main distinction was work done in areas where the majority of trees were burned as compared to other “green” forest areas that appeared unharmed and where trees are being thinned.

³ A focus group is a meeting with between 8 and 15 people who share some characteristic or experience to talk about their view of a situation. The leaders (in this case, the authors) pose a few open-ended questions and then elicit responses from all group members. Participants also interact with each other to question, clarify, muddy, and otherwise extend other participants’ responses. These focus groups were taped, transcribed word for word, and analyzed for themes.