Chapter 8:

The Hazard of New Fortunes:

Outlet, Cerro Grande, and the Twenty-First Century

The National Park Service could be forgiven for thinking that its efforts to institute fire management during the last twenty-five years of the twentieth century were cursed. After Yellowstone in 1988, NPS efforts to mitigate fire and to plan for its management throughout the national park system met with great success during the next decade. The Service evaluated its response to fire, designed new mechanisms to bring practice and ideology into a coherent relationship, and invested resources in internal responses and in interagency planning, resource acquisition, and deployment. By the late 1990s, fire managers felt they could view their very complex field with a little more ease. The development of a national fire planning and management structure – the new standards the NPS successfully implemented and the remarkable biological renewal of Yellowstone – combined to give the Service's fire management greater credibility with the public than it had ever before enjoyed.

Ironically, the urban fires of the 1990s, especially the Oakland-Berkeley Hills fire in 1991, actually improved the Service's status. Mike Davis's *Ecology of Fear: Los Angeles and the Imagination of Disaster,* reached No. 1 on *The New York Times* bestseller list and sparked a controversy over whether communities that built in hazardous fire areas merited the response of public services. One chapter, entitled "The Case for Letting Malibu Burn," spurred particular animosity even as it directed much of the rancor about fire away from the National Park Service. Davis argued that communities that allowed home construction in what were clearly hazardous locations deserved to face fire without the deployment of external resources, shifting the debate over practice from federal agencies to cities and counties.[1] For a moment, Americans seemed poised to enter a dialogue about the responsibility of communities for the fires they encountered.

The phenomenon that historian Lincoln Bramwell called "wilderburbs"– communities that emerged at the nexus of rural and wild land and urban expansion to enjoy the amenities of each–combined with Davis's work to ignite a debate about the siting of new communities in the post-urban West. Federal agencies removed fallen trees and underbrush on more than 2.2 million acres in 1999 alone to limit the chances of fires. Still, more than 200 million acres historically prone to frequent fire carried the heavy underbrush associated with suppression. The result was dangerous and left not only federal land managers, but also officials at the state, county, and even local levels in a

[1] Mike Davis, *Ecology of Fear: Los Angeles and the Imagination of Disaster* (New York: Metropolitan Books, 1998), 93-148.

difficult situation.[2] Urban and suburban sprawl had become endemic nation-wide; in the West it encroached on national park areas and added a range of new problems for their managers. Much of the region lacked adequate mechanisms to regulate suburban planning. As a result, communities grew nearly everywhere, adding not only the threat of accidental or intentional fires from nearby populations to the problems of park managers, but also the possibility that such communities, located without much more than a nod to safety from wild fire, might very well serve as conduits for the inevitable fires in a region's drier sections. Even as the National Park Service grappled with urban parks such as Golden Gate National Recreation Area, urbanization and its attendant sprawl encroached on previously remote or distant national park areas in the West and throughout the nation.

By the mid-1990s, the National Park Service had achieved the respect of the fire community as well as many accolades for its approach to fire management. The common federal fire policy of 1995 signaled the further ascent of the NPS and its ideas and values to a position nearly parallel to that of the Forest Service. The NPS model of fire management, begun in the 1960s, had become the currency of federal fire policy. The importance of the NPS philosophy became solidified when other federal agencies recruited NPS fire personnel for their agencies, a reversal of a 60-year trend of personnel movement from the Forest Service to nearly every other federal land management agency that had dominated fire management since the NPS hired John Coffman in the late 1920s. The desirability of National Park Service personnel to other agencies further illustrated the thirty-year leadership of the NPS in fire management.

At the same time, a long series of drought years in the West that began in the mid-1990s contributed to a critical change in regional fire patterns. The growing problem of fires that existed near wilderburbs shifted the fire focus back toward conventional historical models of suppression. Damage to property and threats to human life remained situations where immediate suppression was the sole management alternative. By 2000, the Forest Service had regained an important measure of its earlier position. Many of the major fires were on its lands, and its holdings included many of the places where wild land and urban growth coexisted so uneasily. In effect, the sheer volume of fire pushed the Forest Service back toward center stage, where actions superseded ideas for the first time in a generation.

As spring turned to summer in 2000, a pair of nearly simultaneous escaped prescribed fires on national park lands illustrated the gravity of the changes occurring in fire management, as well as the fundamentally tenuous nature of all existing strategies to manage, combat, or regulate fire. The emphasis on prescribed burning that characterized the period after the new national fire plan in 1995 yielded tremendous benefits for the NPS, but contained parallel risks. The acceleration of prescribed burning programs treated considerable acreage, but as always, a great deal of land experienced no such management. The reasons varied; in some cases, prescribed burning was deemed too dangerous because of the proximity of communities, facilities, and other development. In far more instances, the resources were insufficient, the time to undertake such a program too short, or the conditions were deemed too unsuitable. The NPS treated as much land as

[2] Lincoln Bramwell, "Wilderburbs: The Rise of Rural Development in the Rocky Mountain West, 1960-2000," (Ph.d. diss., University of New Mexico, Prospectus, 2003); David Carle, *Burning Questions: America's Fight with Nature's Fire* (Westport, CT: Praeger Press, 2002), 225-26.

it could and planned for more, all the while recognizing the inherent risk in any program that allowed fire in any way. With the ongoing drought and some simple bad fortune, risk came to the forefront in May 2000.

On the north rim of the Grand Canyon, where the connection between wild land fire and urban expansion was at best remote, the Outlet Fire near North Rim Village on the North Rim in April and May 2000 illustrated one of the fundamental problems with introducing fire. By 2000, Grand Canyon had engaged in a prescribed burning program for almost two decades. A fire management plan, approved in 1992, had been revised in 1993, 1994, and 1995. These reviews looked at program successes and identified areas of concern. A 1997 NPS review team identified a particular long-standing problem in the North Rim forests, an accumulation of litter such as fallen trees, branches, and shed leaves and needles. Combined with an invasion of spruce and fir thickets that provided fuel ladders that could lead to enormously destructive crown fires, this set up a potentially dangerous situation. The problem first had been recognized on the North Rim in 1981 by Regional Plant/Fire Ecologist Kathleen Davis and reiterated during the 1990s. The 1997 review team recommended the development of a landscape-level prescribed burning program for the North Rim forests.[3]

The team of experienced fire managers who undertook the 1997 review– Steve Botti, Jim Douglas, Steve Tryon, and Wally Josephson – recognized the North Rim as an example of the problems of fuel load accumulation that vexed so much western wild land and remained the subject of powerful debates in the professional and scholarly fire community. Its members recognized that the existing prescribed burning program on the North Rim had only achieved some of its stated goals. The suppression of two prescribed burns that escaped, the Mathes and the Northwest III fires, along with concerns about smoke that marred visitors' experience, led to what the review team described as a "conservative approach" to the reintroduction of fire as a management tool at the park. Yet, the team found Grand Canyon more willing to be aggressive in its response than it had been in the past.[4] The review opened the way for a more aggressive prescribed burn policy.

An appropriate strategy for the introduction of prescribed fire provided the park with a philosophical choice. The Grand Canyon had been thoroughly studied by a range of scientists, and different schools of thought offered their own remedies for the North Rim problems. Headed by Professor W. Wallace Covington of Northern Arizona University, an experienced fire scholar who focused his research on the Grand Canyon, some researchers believed that because of the particular circumstances of the North Rim – the heavily loaded Ponderosa Pine-mixed conifer forest – it required mechanical thinning of the biomass before introducing prescribed fire. In deference to this research, the review team suggested that "testing the truth of this hypothesis should be a central component of the park's fire management program over the next five to ten years." The advantages were obvious: reduced risk to land and people; an opportunity to have a

[3] Steve Botti, Jim Douglas, Steve Tryon, and Wally Josephson, "Trip Report: North Rim of the Grand Canyon Fire Management Program Review, August 12-14, 1997," Grand Canyon, 1; Regional Plant/Fire Ecologist, Division of Natural Resource Management, Western Region to Regional Director, Western Region, October 23, 1981, Grand Canyon Fire Collection, Grand Canyon National Park.

[4] Botti, Douglas, Tryon, and Josephson, "Trip Report: North Rim of the Grand Canyon Fire Management Program Review, August 12-14, 1997," 1-2.

prescribed fire regime mirror natural fire as opposed to serve as a replacement for its absence, opportunities to assist local residents with timber sales and other economic advantages of such cutting; and the avoidance of the social and political fallout that typically accompanied smoke emissions. The disadvantages included the social consequences of the removal of as much as 90 percent of the North Rim's forests, with visitors in particular expected to balk at what they would certainly see as a denuded landscape; the problems such logging might cause for wilderness designation and wilderness study areas; the threat of severe wildfire before the thinning could take place and the attendant problem of burning the slash that remained; as well as the consequences of the many stumps that would be visible to the traveling public that held a decidedly different view of what a national park should look like. The review also presented the problem of cost. Even with timber sales and slash logging, the expense might be prohibitive.[5]

After weighing the conditions of the situation and possible solutions, the team made clear recommendations for a more aggressive prescribed burn policy. Team members wrote in their report, "It appears that a greatly expanded program to use fire as a management tool offers the best hope for preventing catastrophic wildfire and restoring the natural ecosystem in the long run." Resources were available for hazardous fuel reduction and Grand Canyon had begun to use them to carry out large-scale burns when weather and other conditions permitted. The team also recommended using nearly every "tool in the toolbox" – mechanical thinning, planned ignitions in key areas, and the ideas of Covington and other scholars about the impact of fire on native plants. Broad-based and innovative, the park adopted the report's ideas in a 1998 revision of its fire plan.[6]

In accordance with that plan, on April 25, 2000, Grand Canyon ignited the Outlet prescribed burn, an area at about 8,400 feet, in a region of mixed conifer and Piñon-Juniper complex just west of the developed area on the North Rim. The goals of the prescribed burn were to perpetuate natural processes and reduce hazardous fuels. On April 27, another fire, on the Tiyo Sub-unit, had an incomplete ignition that resulted in a "dirty burn," but despite predications to the contrary, it remained inside its prescription area. On May 8, firing began on the east side of the Widforss Sub-unit on the Outlet Fire. The burn proceeded in accordance with expectations until the next day. A wind came up on May 9 and an undetected spot fire on the Widforss Sub-unit grew until it exceeded the parameters of its prescription. This threatening situation drew scrutiny from park officials, and later that day, when weather experts predicted strong winds for the next day, Grand Canyon Superintendent Robert L. Arnberger declared both the Tiyo and

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[5] Ibid, 2-4; W. W Covington and M.M. Moore, "Post-Settlement Changes in Natural Disturbance Regimes: Implications for Restoration of Old-Growth Ponderosa Pine Ecosystems in Old-Growth Forests in the Southwest and Rocky Mountain Region," *Proceedings of the Symposium*, March 9-13, 1992, Portal, Arizona, USDA Forest Service General Technical Report RM-213 (Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO), 81-99; W. W. Covington and M.M. Moore. "Southwestern Ponderosa Forest Structure and Resource Conditions: Changes since Euro-American Settlement," *Journal of Forestry* 92 1 (1994): 39-47; W. W. Covington and S. Sackett, "Soil Mineral Nitrogen Changes Following Prescribed Burning in Ponderosa Pine," *Forest Ecology and Management* 54 (1994), 175-191; W. W. Covington, R.L. Everett, R.W. Steele, L.I. Irwin, T.A. Daer, and A.N.D. Auclair, "Historical and Anticipated Changes in Forest Ecosystems of the Inland West of the United States," *Journal of Sustainable Forestry*, 4 2 (1994).

[6] Ibid., 6-9; Outlet Prescribed Fire April 2000, 14-23; Fire Behavior Modeling for Outlet Prescribed Fire Project, 41-49, Grand Canyon, Fire Collection, Grand Canyon National Park.

Outlet as wildfires. He alerted the Type II Northern Arizona Incident Management Team, headed by Incident Commander Larry Anderson, and asked it to be ready to take over fire suppression efforts.[7]

On May 10, the velocity of the winds dramatically rose, changing Grand Canyon's response to the Outlet Fire. Gusts reached sixty miles per hour, and by 2:30 p.m., the park was evacuating the North Rim of the Grand Canyon. After a difficult night, when snags and fallen green trees blocked roads and fire crews were forced to bed down in the open to avoid hazards such as falling trees, transfer of command to an incident management team began at a 7:00 a.m. meeting. By May 11, the fire was estimated to cover between 1,500 and 2,000 acres, but much of the burning land was close to the developed areas at North Rim Village. This had potentially severe consequences. At the Nankoweap trailhead, visitors were stranded beyond the fire and hemmed in by downed trees, adding a search and rescue dimension to the obligations of the incident management team when it took charge of the fire.[8]

The single largest problem the incident management team faced was a shortage of suppression resources at Grand Canyon. Fire-fighting personnel were in short supply, with only two Interagency Hotshot Crews and two Type II crews available. "A couple of Class 6 engines, 3 prescribed fire modules, and a helicopter that couldn't fly in the high winds" were all the resources available, Al Hendricks of the Northern Arizona Incident Team wrote. "Suppression resources on the fire were meager." The fire had grown much larger by the time the Type II team took charge, with aerial observation indicating it had reached 7,000 acres. Plans to call in a Type I team gained momentum, with input from the Washington office of the National Park Service. The Type II team established a camp on the Kaibab National Forest, just outside the park boundary. The winds died down on May 12 and 13, and the arrival of the Northern Rockies Type I incident team headed by Steve Frye and its personnel helped provide the workpower to initiate suppression. "We can fight this fire aggressively," Frye told the press, "but we first do it safely and with sensitivity to the area's natural and cultural resources." By Saturday May 13, when the Type I team took control of the fire, a full complement of suppression resources became available.[9]

During the next week, suppression remained the sole mode of response. Stronger winds and low humidity aided the fire's growth on May 14, but 800 firefighters continued to dig handlines, providing 20 percent containment. High winds the following day contributed to continued erratic fire behavior. Although the blaze did not cross any established control lines that day, the park reported containment at 43 percent. On May 16, the fire grew to 13,350 acres, even as the total force fighting it reached 914. Favorable weather conditions on May 17-18 helped crews start to gain control of the fire,

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[7] Al Hendricks, "Outlet Fire Incident Narrative," May 2000, Grand Canyon, 1; National Park Service News Release, "Outlet Fire and Grand Canyon National Park," May 12, 2000, Grand Canyon Fire Collection, Grand Canyon National Park.

[8] Al Hendricks, "Outlet Fire Incident Narrative," May 2000, Grand Canyon National Park, 1; National Park Service News Release, "Outlet Fire and Grand Canyon National Park," May 12, 2000, Grand Canyon Fire Collection, Grand Canyon National Park.

[9] Al Hendricks, "Outlet Fire Incident Narrative, May 2000, Grand Canyon, 3-4; National Park Service News Release, "Outlet Fire and Grand Canyon National Park," May 13, 2000; National Park Service News Release, "Outlet Fire and Grand Canyon National Park," May 15, 2000, Grand Canyon, Fire Collection, Grand Canyon National Park.

and with sixteen miles of handlines completed and as many as six left to dig, the fire was reported to be 56 percent contained. Superintendent Arnberger expressed his support and gratitude for the work of the fire crews. On May 19, he declared that the North Rim would reopen to visitors on Monday, May 22. By Sunday night, Incident Commander Steve Frye could report total containment of the Outlet Fire.[10]

After the incident, the assessment of the fire showed little culpability on the part of Grand Canyon. An investigative team, led by co-chairs William F. Paleck, superintendent of North Cascades National Park and Forest Supervisor Rodd Richardson of the Bitterroot National Forest and committee members Bill Clark, the Idaho state fire management officer of the Bureau of Land Management, Bill Wallis, Colorado state fire management officer of the BLM, Ron Hamilton of the Forest Service, Stephen G. Jakala, fire management officer at Voyageurs National Park, Greg Harmon of the National Weather Service, and Tom Pittenger of Grand Canyon National Park, generally praised NPS preparation and handling of the fire. The "overall competence, professionalism, and accomplishments" of the Grand Canyon Prescribed Fire program was unassailable in the investigation team's assessment. The problems it identified – that fire leadership was, in the words of the report, "spread too thin for too long," and that the plan did not contain enough contingency triggers in case of escalation – were minor. "The prescribed burn program at Grand Canyon National Park is fundamentally sound," the report concluded. "Continuation and even expansion of current program levels is absolutely necessary to safeguard the park from the effects of nearly 100 years of fire exclusion."[11]

The Outlet Fire was dramatic and its small size and disproportionate impact served to illustrate the growing dilemma of the twenty-first century American West, where the wide-open spaces were increasingly dotted with people. Using fire in the proximity of people – whether visitors to the North Rim, gateway communities, or suburban development in general – affected the way in which federal agencies, including the National Park Service, could conceive of its use. The effects of ecological restoration and the introduction of fire had to be deftly balanced with those of adjacent communities and travelers, concessioners, and others. Even the most adroit calculation could spiral out of control, as the Outlet Fire on the North Rim of the Grand Canyon showed.

At the same time, the review of the team's actions highlighted the ways in which the problems with fire were inherent and random. The Outlet Fire could have happened anywhere at any time; it resulted not from bad planning or decision-making, the review committee concluded, but from changing natural conditions. Unlike earlier fires where critics pointed to flawed policy or mistakes in implementation, at Outlet the NPS made no significant errors in planning or operations. Fire management included risk; the assessment of that risk was more a political and cultural question than an ecological one.

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[10] National Park Service News Release, "Suppression Continues on the Outlet Fire," May 13, 2000; National Park Service News Release, "Outlet Fire and Grand Canyon National Park," May 15, 2000; Northern Rockies Incident Management Team, "Predicted High Winds Cause Concern on the Outlet Fire," May 16, 2000; Northern Rockies Incident Management Team, "Outlet Fire Update, May 17, 2000;" Northern Rockies Incident Management Team, "Outlet Fire Update, May 18, 2000;" Northern Rockies Incident Management Team, "Outlet Fire Update, May 19, 2000;" Northern Rockies Incident Management Team, "Outlet Fire Update, May 21, 2000," Grand Canyon.

[11] William F. Paleck, Rodd Richardson, Bill Clark, Bill Wallis, Ron Hamilton, Stephen G. Jakala, Greg Harmon, and Tom Pittenger, "Outlet Prescribed Fire Project, Grand Canyon National Park, Investigative Report, May 2000," http://www.nps.gov/grca/fire/outlet/report.

Critics might chafe that in an era of constant weather surveillance, such a wind as the one that caused the outbreak should be predictable, especially during the late spring, the review said. Typically, this was the season of the largest fires in the region, and critics reminded the NPS that no one else was conducting burn operations at the time. Still, National Park Service officials retorted, any time the NPS introduced fire, no matter how valuable that fire might be, the potential for its escape existed as well as an attendant array of problems that had little to do with the ecological value of fire.

At about the same time, a second prescribed fire escaped its control lines. It occurred in precisely the kind of area that demanded an answer to the questions that the response to the Outlet Fire successfully skirted. Located on the Pajarito Plateau about forty miles from Santa Fe, New Mexico, the federal government established Los Alamos during World War II as a secret community where research into splitting the atom and the development of an atomic bomb took place. In this way and in almost every other social, cultural, or economic matrix, Los Alamos was atypical of western communities. Its level of education, demography, and economic structure could not be replicated in the interior West, nor was there anywhere else as exclusively dependent on Ph.D.-level research between the Sierra Nevada and the Mississippi River.[12] Despite this tremendous difference from the world around it, Los Alamos was entirely typical in other ways. In its location amid a stunning environment, urban growth, and proximity to a heavily visited national park area, it served as a bellwether of the problems the National Park Service faced with the growing number of communities near its parks and the threat of fire.

The Los Alamos area had been the scene of a number of fires that were frightening more because of their impact potential than their size. La Mesa in 1977 had been the first of significance since the siting of the Manhattan Project that built the atomic bomb in the 1940s; later outbreaks in 1996 and 1998 – the Dome and Oso fires – illustrated that the long-standing practice of excluding fire in the vicinity had created a terrifying prospect: a heavily fuel-laden region with an urban area at its core. Studies by ecologist Craig D. Allen and dendrochronologist Tom Swetnam suggested that the last thorough burn on the location of Los Alamos took place in 1881 whereas throughout the eighteenth and nineteenth centuries, significant fires occurred about every six months. When grazing began in earnest in the late nineteenth century, fires had diminished; in the aftermath, the practice of exclusion guaranteed dense forest with a great deal of understory – conditions ripe for severe fires. What made the situation even more dangerous was the proximity of the town of Los Alamos and the Los Alamos National Laboratory, where significant experimentation with weaponry still took place and where the U.S. government had stored radioactive and explosive materials. Although everyone knew that Los Alamos housed weapons research and contained an array of dangerous compounds and chemicals, national security constraints restricted information. Firefighters had little idea of what they might encounter.[13]

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[12] Hal K. Rothman, *On Rims and Ridges: The Los Alamos Area Since 1880* (Lincoln: University of Nebraska Press, 1992); James Kunetka, *City of Fire: Los Alamos and the Birth of the Atomic Age, 1943-1945*, rev. ed. (Albuquerque: University of New Mexico Press, 1979).

[13] Craig Allen, "Panel Discussion: Cerro Grande Fire," First National Congress on Fire Ecology, Prevention, and Management, San Diego, CA, December 1, 2000; Craig D. Allen, R. Touchan, and Thomas Swetnam, "Landscape-Scale Fire History Studies Support Fire Management Action at Bandelier," *Park Science*, 15 3 (1995), 18-19.

When NPS officials from Bandelier National Monument authorized a prescribed fire for Upper Frijoles Creek drainage on April 19, 2000, they could not have anticipated that the fire would be the catalyst for another reevaluation of fire in the national park system. Park officials selected the Upper Frijoles drainage units 1 and 5 for the burn. An earlier effort to burn unit 1 in 1993 had not achieved desired results, but in accordance with the park's fire management plan, efforts to burn these areas continued. The 1993 fire had only minimally diminished the load of 34.4 tons per acre before the burn, to 29 tons per acre, a 16 percent reduction. The primary purpose of the 2000 burn was to reduce hazard fuels in the units. A three-part approach was approved. The park needed dry conditions to achieve its goals everywhere but in the high-elevation grasslands. The planned first phase was to burn the upper area that included the grasslands; the second phase was to burn the timbered areas and the drier, south-facing slopes throughout the area. Managers planned to delay the third phase until the wettest areas of the units were dry enough to burn.[14]

Bandelier's prescribed fire initially seemed to be an ordinary event. After a May 4 amendment to the plan, which excluded private property on the Valle Grande from the project, the burn boss, Mike Powell, made the appropriate notifications and conducted the required briefings. The holding boss called for the spot weather forecast. At 7:20 p.m. on May 4, crews ignited a test fire atop Cerro Grande in the Jemez Mountains in the westernmost part of the park. By 8 p.m., the test fire was completed and officials deemed it within prescribed parameters. By 10 p.m., crews completed the ignition process on the northeast edge of the fire area. At 11:15 p.m., ignition of the northwest area began. [15]

By the early morning of May 5, the Cerro Grande Prescribed Fire had begun to spread beyond the boundaries of its prescription. At 1 a.m., crews reached the upper saddle and spent ninety minutes bringing the fire back into the saddle from the knob. Ninety minutes later, the fire seemed under control, and the burn boss and crews stopped to rest. At 3 a.m., the burn boss asked for help from a Type III team with a helicopter and a twenty-person hand crew, and requested Bandelier Engine 91 to come on duty at 5:30 am. Although it was not customary to order helicopters for prescribed burns, Bandelier's fire management officer and the zone dispatcher agreed that the resources, ordered for a wild fire burning in the Santa Fe National Forest, would be diverted to the prescribed burn on national park land.[16] Although this was a little unusual, officials believed the burn still seemed manageable with little more than typical resources.

By 10 a.m., conditions seemed more threatening. Wind changes initially created some spotting within the designated area, and slopover, firefighting terminology for when a wildfire crosses a control line, on the upper east part of the fireline caused some concerns. The crew on the northeast side reported difficulty in containing the fire within the designated boundaries. Managers requested water drops and extra firefighters. At 10:30 a.m., a helicopter dropped two people off on the northeast side of the fire and departed to pick up the bucket and begin water drops. At 11 a.m., the Type I hand crew

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[14] Fire Investigation Team, National Interagency Fire Center, "Cerro Grande Prescribed Fire, May 4-8, 2000, Investigation Report, May 18, 2000," (Boise, ID: National Interagency Fire Center, 2000), 9-11.

[15] Ibid. 10.

[16] Ibid., 11; State of Florida, Bureau of Land Management, U.S. Forest Service, and White Mountain Apache Tribe, *Cerro Grande Prescribed Fire: Independent Review Board Report* (Washington, D.C.: National Park Service, 2000), 1-15; National Park Service, *Board of Inquiry, Cerro Grande Prescribed Fire, Final Report, February 26, 2001* (Washington, D.C.: National Park Service, 2001), 42-52.

arrived, with five of its members heading to the west line, while the remaining thirteen went to the troubled northeast side. An air tanker was requested for the slopover, and it arrived at 12:55 p.m. Five minutes later, Powell converted the prescribed fire to a wildland fire, changing his status from burn boss to incident commander.[17]

During the subsequent thirty-six hours, the regional fire apparatus responded to the new situation. Paul Gleason, an experienced NPS fire manager, took over as Incident Commander, and he briefed park management on the renamed Cerro Grande Fire. He, Bandelier's fire management officer, and the chief of resource management designed a Wildland Fire Situation Analysis (WFSA), which Superintendent Roy Weaver approved on the evening of May 5. Gleason made several critical tactical decisions. He saw the problems the hotshot crew faced on the underslung line, when a hand crew or bulldozer constructs a fireline horizontally across a slope below a fire, which had to be scraped and cut beneath overhead trees, some with dead limbs. He decided that crossing the face of the mountain was too dangerous. "I gave to the park superintendent, as my preferred alternative, to go indirect, down to Route 4," he recalled in a panel discussion about the fire. Crews improved the existing fire lines and blacklined with drip torches, utilizing a portion of burned acreage, "the black," as part of the fire line they constructed. The strategy had been set.[18]

At first, it seemed to work. A National Weather Service spot forecast at 11:55 p.m. on May 5 called for a fire weather watch the following day, but with the resources available, Bandelier managers believed preparations seemed an adequate response to the rapidly changing situation. Spot fires outside the designated boundary were contained on May 6, and blacklining continued. A meeting between the park and representatives of the Los Alamos National Laboratory, the U.S. Forest Service, and Los Alamos County addressed suppression strategy and tactics in the WFSA.[19]

As late as 11:00 a.m. on May 7, most spot fires appeared to be contained and the day began with optimism. At 2:30 a.m., the fire was tied to its anchor point at Route 4. Bandelier's next objective was to bring the blacklining fire across from east to west, but the wind blew downslope, exactly the wrong direction for such a goal. Even though Frijoles Canyon, choked with fuel according to one description, sat across the road, fire managers felt compelled to wait. The situation still seemed manageable. Just as officials felt that they had contained the fire, west winds dramatically increased and the fire spread into the adjacent Santa Fe National Forest. By noon, the fire had spread south of Route 4 into the Upper Frijoles Canyon drainage, burning with an intensity that made it impossible for the crews to attack it. The blaze turned into a crown fire, sending embers flying ahead that created spotting and crowning east of the prescribed fire zone. As this fire broke containment, a Type I incident management team was ordered. At 12:40 p.m., Gleason ordered the evacuation of Graduation Flats and American Springs; shortly after, all agencies in the area closed roads on their lands and evacuation procedures began.[20]

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[17] Fire Investigation Team, National Interagency Fire Center, "Cerro Grande Prescribed Fire, May 4-8, 2000, Investigation Report, May 18, 2000," 12.

[18] Carle, *Burning Questions*, 229.

[19] Fire Investigation Team, National Interagency Fire Center, "Cerro Grande Prescribed Fire, May 4-8, 2000, Investigation Report, May 18, 2000," 12-13.

[20] Carle, *Burning Questions*, 230; Fire Investigation Team, National Interagency Fire Center, "Cerro Grande Prescribed Fire," May 4-8, 2000, Investigation Report, May 18, 2000, 13.

By 3 p.m., the situation had turned even more dangerous. East of the burn, watchers reported spot fires with the potential to threaten the town of Los Alamos and the laboratory installations. Even as two Type I crews successfully worked to contain the fires in Frijoles Canyon, a spot fire to the east of the prescribed burn area had grown to 100 acres and it had spotted an additional quarter of a mile up the road. In response, fire managers decided to burn sections between State Route 501 and the Camp May Road, Forest Road 1, in an effort to protect the town and the Los Alamos laboratory. Fire conditions were changing and so was the need for the response.[21]

That evening, the fire rapidly spiraled out of control. Even though crews contained the Frijoles Canyon spot fire, conditions rapidly worsened. A Type I team took charge of the fire at 6 a.m. on May 8, even as the fire ran across the east side of the mountain with flames of 100-150 feet in length. On May 9, the *Los Alamos Monitor*, the local newspaper, trumpeted a headline that read: "Wildfire! Worse Fears Become Reality for Los Alamos." As the fire gained momentum, New Mexico Governor Gary Johnson ordered the evacuation of Los Alamos. Between 5 p.m. on May 10 and early Thursday morning May 11, fires burned across more than 20,000 acres. Two-hundred-and-thirty-nine homes were destroyed in Los Alamos. The fire then moved north in the direction of the San Ildefonso and Santa Clara Pueblo lands adjacent to the Los Alamos installation. Sixty-mile-per-hour winds made the fire devastating and dangerous. Before it was over, it destroyed thirty-nine Los Alamos National Laboratory office trailers and sheds. In a stroke of fortune, no radiation escaped nor was any toxic material released. By the time the fire was brought under control in early June, more than 400 families had been displaced, estimated damage costs exceeded $1 billion, and the idea of prescribed burning faced another enormous challenge.[22]

The Cerro Grande fire was hardly new in the annals of NPS fire management, but in terms of impact, it was the worst prescribed burn to go awry. While earlier prescribed burns had escaped or caused damage, the scope and scale of Cerro Grande's damage far exceeded any prior escape. Worse, to the public and the press, Cerro Grande looked like a mistake in judgment. Sentiments in the nearby communities become intensely negative. Many openly excoriated the NPS. A few chose not to place blame. Among those who had seen their homes burn either in person or on television, a number remained sanguine about the result. Louis Jalbert, a waste handler at the Los Alamos National Laboratory who lost not only his family's home, but lived next door to his in-laws, whose home was also destroyed in the fire, felt that the fire was an "act of nature in a tinderbox." Expressing no bitterness as he talked to the *Los Alamos Monitor*, Jalbert still believed that prescribed burns were good policy.[23]

Jalbert held a minority view. Most of the people affected by the fire were not so charitable toward the National Park Service. They felt that their trust had been abused, their safety compromised, and their lives put in danger to serve what they regarded as obscure purposes. Their view of the NPS and its fire program was harsh, and even the attempts at apology from the NPS were rebuked. "Based on what we knew at the time

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[21] Fire Investigation Team, National Interagency Fire Center, "Cerro Grande Prescribed Fire, May 4-8, 2000, Investigation Report," May 18, 2000, 13.

[22] Carle, *Burning Questions*, 231-32; Gil Reavill, "Meltdown in Los Alamos," *Maxim* (October 2000).

[23] Sarah Meyer, "Victims Return to Scene of Disaster," *Los Alamos Monitor* (May 16, 2000), 1.

and what we believed needed to be done," Superintendent Roy Weaver of Bandelier National Monument told the *Monitor*, he made the decision to start the fire. The results had been devastating and people "had a right to be frustrated and angry." The Los Alamos public articulated both anger and frustration in myriad ways.[24]

The official response came quickly. On May 11, Secretary of the Interior Bruce Babbitt and Secretary of Agriculture Dan Glickman suspended all federal prescribed burning west of the 100th meridian, the line running from North Dakota through Texas, for thirty days. Babbitt formed an interagency fire team to examine the circumstances of the burn. One week later, on May 18, 2000, the investigation report was complete. It was devastating to the NPS fire program. Investigators determined that the prescribed fire plan was not adequate for the circumstances. The complexity rating process for the Cerro Grande area had been flawed. It did not follow the NPS rating system, nor had it been accurately rated. Later reports discerned that the fire management rating posted on the Internet when the Cerro Grande prescribed burn was planned was incorrect. The danger presented by the conditions at the time of the fire was not adequately understood, in the estimation of the investigation team, nor was interagency cooperation sufficient to assure a useful fire rating system. The investigators recommended that federal agencies should jointly develop interagency complexity rating standards by geographic region rather than to try to implement agency-wide standards. The review also determined the prescribed fire plan did not receive thorough review before approval by Superintendent Roy Weaver, and the prescribed fire planner did not receive sufficient support or oversight for the task of developing a plan for the prescribed fire.[25]

The press response further deepened the problems for the National Park Service. The juxtaposition of plutonium and other radioactive materials with an intentionally ignited prescribed burn spurred many to the limits of journalistic license. "An out-of-control wildfire. A nuke factory with enough plutonium to wipe out the entire Southwest. A handful of exhausted firefighters," the headline in *Maxim* magazine read in an overstated version of a widely asked question. "Just how close did we come to annihilation?"[26]

The Cerro Grande fire represented the first time critics could point to clear NPS management mistakes as the cause of a major fire. Unlike Yellowstone in 1988 – when lightning was the genesis of the fires and the question of the nature of response led to the spread of fire, at Cerro Grande – the NPS simply erred. The prescribed fire had been set in less than optimal conditions, the Service lacked both adequate procedures and protocols for fire management, and the timing of the prescribed burn turned out to be poorly chosen. The attendant destruction of homes and Los Alamos National Laboratory structures compounded the problem. Not only did the initial decision reflect poorly on NPS judgment, the circumstances in which it occurred, near not only a town of more than 10,000 people, but adjacent to the remarkable and potentially devastating research facilities in Los Alamos made what might only have been an untimely decision look

[24] Ibid.

[25] Barry T. Hill, "Fire Management: Lessons Learned From the Cerro Grande (Los Alamos) Fire, Statement before the Committee on Energy and Natural Resources, United States Senate," July 20, 2000, 1-15, Bandelier National Monument Files, Y-14; "Report Opposes Firing Workers for Los Alamos Blaze," *USA Today* (June 20, 2001).

[26] Reavill, "Meltdown in Los Alamos.".

unwise if not downright irresponsible. The fire represented another watershed, one more way that politics and public relations grappled with science as the dominant mode of preparation and reaction to fire.

Cerro Grande set off more than immediate recriminations. The instantaneous reintroduction of suppression was the beginning of another rethinking not only of the NPS's fire policy, but of agencies throughout the federal system. Even more, the board of inquiry determined that of the four people with primary responsibility who remained in the National Park Service after the fire, three required more training. Whether intended as an indictment or not, such a judgment had the effect of calling into question NPS professionalism. While fire experts could feel that the judgment was easy after the fact, ongoing public acknowledgment of shortcomings did little to help NPS morale or solve the problems of fire management.[27]

The blame mounted until Bandelier Superintendent Roy Weaver spoke out nearly one year after the blaze. Although Weaver had been blamed for the fire – vilified, castigated, and threatened with the loss of his pension in its aftermath – he was quiet until April 2001, when he publicly spoke out in defense of the staff of Bandelier National Monument. The board of inquiry's final report exonerated Weaver, but he believed the report did not go far enough. In the former superintendent's view, Bandelier had been "unfairly scapegoated" for the fire, he told reporter Keith Easthouse. Not only had the park not been warned of impending high winds on May 7 as had been reported, the federal report on the fire was so hastily completed that it did not give a fair accounting of the incident or its suppression. "I don't want to deny our responsibility for igniting the prescribed fire," Weaver avowed. "But we did it with a plan that seemed valid and workable. Things happened that we couldn't or didn't anticipate. And that we couldn't control."[28]

This admission was as candid as it was clear. Simply put, fire could not easily be made to conform to bureaucratic measurements. It was always a risk, always a danger, whether it burned or it was suppressed. All the planning in the world could not obviate a disastrous change in weather or geographic conditions. Even the board of inquiry, critical in its stance toward the fire response team, recognized the limits of human response. "While the Board did find errors in judgment," the report read, "it also finds that the planning and implementation actions of the principals were not arbitrary, capricious, or unreasonable in light of the information they had prior to the burn and were in compliance with DO-18, RM-18, and other applicable sections of the National Wildland fire policy."[29] This tacit admission of limits in human response resulted from a century of experience.

By the middle of the first decade of the twenty-first century, little had been settled about the direction of fire policy in the United States. It was clear that fire had a role in the management of national parklands; even more telling, national park lands still enjoyed the special treatment they had always been accorded. The Healthy Forest Restoration Act of 2003 exempted the NPS from the timber cutting expected to reduce the impact of fire on national forest, Bureau of Land Management, and other federal

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[27] Board of Inquiry, "Cerro Grande Prescribed Fire Final Report," 49.

[28] Keith Easthouse, "Park Service Unfairly Scapegoated for Los Alamos Fire," *Forest Magazine* (April 5, 2001); Board of Inquiry, "Cerro Grande Prescribed Fire Final Report," 46.

[29] Board of Inquiry, "Cerro Grande Prescribed Fire Final Report," 49.

lands.[30] Once again, the National Park Service's unique mission separated it from other federal agencies. While timber cutting could and did take place on NPS lands in limited ways, the purpose was decidedly different from the commercial extractive obligations of the legislation. As a result, although the new national fire plan in 2000 demanded a different response from the NPS, the Service could and did hew to a line more consistent with its overall mission and objectives.

At the same time, fire again took center stage. After Cerro Grande, a series of fires on federal lands further illustrated the problems of the existing regime. During 2002, two "monster fires," in Pyne's words, Hayman and Rodeo-Chediski, were the worst on record in Colorado and Arizona. The Biscuit fire in Oregon the same year was easily that state's worst since the nineteenth century. In 2003, southern California's mountains went up in flames. Fires burned across more than 740,000 acres, with twenty-two fatalities and more than 3,000 structures consumed. A new era seemed to dawn, what Pyne in a dramatic and even overblown phrase called "a crash in nature's economy as profound as in the stock market." The terms for fire management had to change throughout the federal system, but deciding what would replace the existing structure remained a complex process.[31]

Even in the aftermath of Cero Grande, the National Park Service carved its own course in fire management. Once the NPS had followed other federal agencies; after 1968, it led. Yet, because of the difference in its mission and its objectives, particularly after the importance of resource management that was codified in the Redwood National Park Expansion Act of 1978, the NPS retained both the integrity and flexibility to administer its lands in accordance with its objectives. The result simultaneously kept the NPS within the fold of federal fire management while leaving enough room to manage its assets in accordance with the "preserve and make available for public enjoyment" tension that existed at the core of the NPS mission statement.

By the twenty-first century, the National Park Service had come far from its origins in fire suppression, reaching a position of respect as a fire management organization. A century earlier, fire management at places such as Yellowstone National Park had been what the U.S. Cavalry determined it to be – often vain efforts at suppression accomplished with whatever resources were at hand. By 2000, a multi-faceted bureaucracy oversaw fire management throughout the scattered dominion of the National Park Service. The NPS participated in interagency fire efforts, keeping a staff of forty-one at the National Interagency Fire Center in Boise, Idaho. In 2003, the NPS invested $123,741,000 in fire management and another $1,564,331,000 in Operation of National Park System (ONPS) funding. It managed 53,351,361 acres with the potential to burn among its more than 84 million acre domain. It had 434 permanent firefighters, seven regional management fire officers, two Type I Hot Shot crews and one smokejumping crew, as well as nine fire use modules. The NPS owned 155 fire engines, fourteen water/foam tenders, and nine fire helicopters. In 2003, the NPS spent $21,191,000 to treat 22,523 acres of Wildland-Urban Interface lands laden with hazardous fuels. The Service spent an additional $20,084,000 to treat another 115,104

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[30] Congress, House, *Healthy Forests Restoration Act of 2003,* 108th Cong., 1st sess., HR 1904, 3 December 2003.

[31] Stephen J. Pyne, *Tending Fire: Coping with America's Wildfires,*" (Washington, D.C.: Island Press, 2004), 1-3.

acres containing hazardous fuels. This remarkable investment of funds and personnel created a comprehensive fire management program unequaled in the history of the National Park Service.[32]

The change in attention paid to fire management reflected not only the changes in the National Park Service, but those of the twentieth century as well. The goals and standards of early fire suppression evolved into a management process measured by the highest scientific standards and aimed at achieving goals that were inconceivable at the 1916 inception of the NPS. The Army's initial emphasis on suppression in Yellowstone had been replaced by a systematic management structure that reflected improved technologies and better communications and the cutting edge of ecological science as well as specific NPS values. The greatest issues arose at the intersection of politics and scientific management, when either the ideals of policy were not applied with the clarity with which they were conceived or when even the best of policy fell short in a situation where wind-blown fire overwhelmed the structures and limitations of management. A longstanding policy of suppression made much land particularly vulnerable to the high fuel loads that drove fire of greater magnitude than would have occurred if a more natural regime had continued. Such situations became more common as people encroached on land with a propensity to burn even as the NPS and countless other federal agencies scrambled to treat the effects of nearly a century of fire suppression.

Twice national parks have led a national move to manage fires. In the first instance, when the U.S. Cavalry arrived at Yellowstone, the national parks became the incubator of the idea of national fire management, the place where the experiment to attempt to suppress fire in a systematic way took place. In the second instance, in the late 1960s, the NPS introduced the idea of using fire as tool, an idea that the Forest Service had buried in its enthusiasm for suppression early in the century. In this revolution in culture and practice, an overturning of an existing value system that paralleled a similar larger revolution in the United States, the NPS took the lead among federal agencies. Despite the difference in the NPS's mission, its values spread to its peer agencies and rewrote the rules of fire management.

By the early twenty-first century, the second heroic age of fire management was passing. The leaders who devised and instituted policies to use fire and then grappled with its consequences began to retire, supplanted by a generation that had never known a complete suppression regime or regarded fire as an enemy. As the people who had introduced fire to the national parks as a tool left the scene, they ceded the ground to this new cadre, who necessarily took the prerogative of using fire for granted. This simple change was a manifestation of the triumph of the fire management regime, testimony to its ability to overwhelm the model of suppression that preceded it.

Yet, the National Park Service's fire issues remained apart from those of other federal agencies at a time when interagency cooperation was not only desirable but an essential condition for an adequate response to fire. The unique mission of NPS among federal agencies, its mandate to preserve as well as use, made the particulars of its fire management more difficult. The Service contributed to interagency efforts in the same proportions as did other agencies, but used those resources in different and sometimes more complex ways. Its ability to implement fires to transform landscapes backward in

[32] NPS Wildland Fire Fact Sheet, April 9, 2004, http://www.nps.gov/fire/download/uti_abo_wildlandfirefact.pdf.

time under the aegis of its resource management program allowed the NPS a measure of flexibility that advocates of the use of fire in other agencies envied.

In a larger setting, this advantage was negated. The western fire scene was "the sum of all we have done and not done over the past century; not only the logging, the grazing, and the road building, but the biosphere reserves, the wilderness areas, the recreational sites; the loss of old species, the invasion of new," Pyne wrote in his 2004 summary of a career studying fire, *Tending Fire*. "The fires suppressed, the fires no longer set; the whole rearranged biota of the public domain," he continued. "There is a good case to be made that policy of any sort can not function under that legacy." Under such circumstances, the success of any fire policy might demand a faith in it that it did not merit. "Fire's story is not wholly ours to narrate," Pyne reminded his readers, and federal fire managers faced that fact in the early years of the twenty-first century.[33]

For the National Park Service, the dilemma remained: how to get the right fires in the right places and keep the wrong fires out of the wrong areas. More complicated than either all-out suppression or prescribed fire in all its forms as implemented before 2000, this concern required even more of the National Park Service than any preceding philosophy. The Service's mission simultaneously complicated its response to fire and shielded it from the sometimes narrow constraints in which other federal agencies functioned. Yet, after Outlet and Cerro Grande, the world would be different. After more than a century of dealing with fire in national parks, another new era began. In the twenty-first century, the National Park Service would again have to redefine the boundaries of its fire management strategy.

[33] Pyne, *Tending Fire*, 11-12.

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Oral Interviews

Agee, James
Allen, Craig D.
Barbee, Robert
Cella, Brad.
Cook, James
Christensen, Norm
Gale, Rick
Kilgore, Bruce
Linn, Robert (email)
Lissoway, John
McKibben, Kevin
Pyne, Stephen J.
Van Wagtendonk, Jan

Oral interviews can be found at the National Park Service, Harper's Ferry Center archive.