Arapaho and Roosevelt National Forests
and
Pawnee National Grassland

Monitoring and Evaluation Report of the

1997 Revision of the Land and Resource Management Plan

for

Fiscal Year 2013

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Forest Certification

The 1997 Revision of the Land and Resource Management Plan (Forest Plan) provided goals and objectives to direct the future of resource management of the Forests and Grassland. The Forests and Grassland have completed the sixteenth season of implementing plan goals and objectives. Lessons learned from these sixteen years of monitoring and evaluation point how to better conduct interdisciplinary resource management and monitoring and evaluation of plan implementation by Forest and Grassland personnel. Monitoring and evaluation carried out by the Monitoring and Evaluation Team has resulted in no significant problems or reasons for change to the Revised Forest Management Plan at this time.

RON J. ARCHULETA
Acting Forest Supervisor

Introduction

Location and History

The Arapaho and Roosevelt National Forests (ARNF) include 1.9 million acres of public land in the Rocky Mountains and foothills of north central Colorado. Boundaries extend north to the Wyoming border and south of Mt. Evans and Interstate-70. These two National Forests include lands on both sides of the Continental Divide. Topography on the forests varies from rolling hills to snow covered mountain peaks over 14,000' in elevation.

President Theodore Roosevelt established the Arapaho National Forest on July 1, 1908. It is named after the Native American tribe that occupied the region for summer hunting. Roosevelt National Forest originally began as a part of the Medicine Bow Forest Reserve, created in 1897. In 1910 portions of this reserve were renamed Colorado National Forest. Finally, in 1932 the Forest was renamed by President Herbert Hoover to honor President Theodore Roosevelt, the person who was the most responsible for its creation.

The Pawnee National Grassland (PNG) includes 214,000 acres of primarily short-grass prairie in two units located approximately 30 miles east of Fort Collins, Colorado. Elevations range from 4,300 ft. on the prairie to 5,500 ft. at the summit of the Pawnee Buttes.

The Pawnee National Grassland was transferred to the US Forest Service from the USDA Soil Conservation Service (SCS) in 1954. The SCS acquired this prairie during the dust bowl days of the 1930's and was charged with its rehabilitation. It was designated a National Grassland in 1960.

The Arapaho and Roosevelt National Forests and Pawnee National Grassland (ARP) are within a one-hour drive of the heavily populated Denver metropolitan area and the other heavily populated areas along the northern Front Range (Boulder, Ft. Collins, Longmont, Loveland and Greeley) and, therefore, are considered to be one of the fourteen Urban National Forests nation-wide. The landownership pattern of the ARP creates special challenges, with approximately 750,000 acres of small private parcels intermixed with federal lands.

Sixteen Years of Forest Plan Implementation

The ARP has made much progress in accomplishing Forest Plan objectives. Actual levels of accomplishment vary by programs due mainly to funding levels. When program budgets were low during these past sixteen years, staffing was reduced and projects were not implemented. The Forest Plan was optimistic in its funding predictions and, therefore, predictions for program objectives (Chapter 1, Forest Plan) were also overly optimistic. Some programs, though under-funded, have benefited from other well-funded projects. For example, the Wildlife Program is typically under-funded and wildlife habitat improvement acreage would have only increased in small increments. Yet, due to the increased funding to treat hazardous fuels, more acreage of wildlife habitat improvement has occurred than allocated program funding would have allowed. In addition, the wildlife program, as have other programs, has been successful in securing funds through both internal and external partnerships.

The Forest Plan was overly optimistic in predicting future Recreation budgets (Base, Experienced or Full) as shown in the S-Tables. Funding has come to the Forest that has gone to accomplishing other priorities than the Forest Plan stated objectives on pages 7 and 8. However, there are many accomplishments in the recreation program since the 1997 Revised Forest Plan was approved. In 2000 the first round of National Visitor Use Monitoring surveys was conducted by the Forest Service. Another survey was conducted in

2005 and the most recent survey for the ARP was completed in Fiscal Year 2010 (FY 2010). The compilations of data for the 2000, 2005 and 2010 surveys shows that the ARP is in the top 5 of the most visited National Forests in the country.

Developed recreation has been somewhat invigorated through the Capital Investment Program since 1998 and more recently included infusions of capital from the Recreation Site Improvement (RSI) funds and funding from the American Recovery and Reinvestment Act (ARRA). In 2007, a Recreation Facility Analysis (RFA) was completed enabling the ARP to align management of facilities with expected budget levels and to reduce costs by proposing elimination of little-used recreation facilities and focusing appropriated and other funds toward reducing deferred maintenance. The RFA directly enabled the ARP to take full advantage of the RSI and ARRA funding that was initiated in 2008 (RSI) and 2009 (ARRA).

Many of the projects from these funds were contracted and initiated in 2010 and many were completed as well. The most recent of the ARP's construction projects for developed sites and facility improvements to have been reconstructed to bring them up to the standard our visitors expect include: Forest toilet vent stack replacements, Forest toilet replacements, Forest water system improvements, Pawnee National Grassland Bird Tour roads, signs and kiosks, Molly Lake, Mt. Margaret, and Lady Moon Trailheads reconstruction by Redfeather Lakes, Rainbow Lakes Campground (CG) reconstruction, Pawnee CG reconstruction, Brainard Lake Recreation Area (BLRA) Portal parking construction and Sourdough Trailhead reconstruction, BLRA day use parking construction, BLRA water system replacement, BLRA welcome/fee booth replacement, and a bridge replacement over the South St. Vrain Creek on the Boulder Ranger District. The Pawnee Buttes Trailhead was reconstructed on the PNG. This included a new parking area, rerouting the trail, adding picnic tables and shelters, restrooms, and interpretive information.

The first ARP campground concession permit holder operated for 11 seasons and concluded their operations at the end of the 2011 summer season. The ARP's second campground permit holder, American Land & Leisure (AL&L), began operation in 2012 and continued during 2013 for the second season of its five-year permit.

Recreation fee collections through the Federal Lands Recreation Enhancement Act of 2004 (REA) allow the ARP to sustain and enhance our more heavily used recreation areas such as Mt. Evans and the Arapaho National Recreation Area. We are able to maintain these areas to high standards and expand interpretation and education programs through partnerships and fee collections. The Dos Chappell Nature Center along the Mt. Evans Road was completed in 2006 and provides the public key information about the surrounding fragile environment as well as provides a top quality interpretive and recreation experience at that destination. A settlement was reached on an ongoing lawsuit over Forest Service implementation of REA at Mt. Evans. On June 26, 2012, the Forest Service and the Plaintiffs signed a settlement agreement to resolve all issues raised in the Plaintiffs' complaint. The Forest Service implemented changes throughout the Mt. Evans 2012 operating season. During the 2013 operating season the ARP continued to implement the terms of the settlement agreement.

Finally, recreation standard amenity fees at the Brainard Lake Recreation Area (BLRA), managed by the Forest concessionaire on the Boulder Ranger District, help offset costs of managing the parking areas, cleaning and pumping toilets, cleaning and trash service for the picnic areas, information booth staffing and some limited trail maintenance for the Mitchell Lake and Long Lake Trailheads. In addition, the 2005 recreation management/development plan for the Brainard Lake Recreation Area was nearing full implementation with construction of the BLRA Portal site, reconstruction of Pawnee Campground and day use area and installation of the arched culvert on the Brainard Lake Road. The ARP resolved an issue over concessionaire non-acceptance of national passes for the standard amenity fees charged at BLRA. Negotiations between the parties resulted in acceptance of the national passes by the concessionaire.

Managing the scenery resource on the Forests during the past 16 years has been a challenge due in a large part to the effects of the mountain pine beetle infestation of mainly our lodgepole pine forests and very large wildland fires. Mortality of the mature lodgepole pine forest began in 1996 on the west side of the Continental Divide and become extraordinarily widespread in the last 10 years. It has moved onto the eastern side of the Divide impacting extensive areas of Larimer County. The spread of the mountain pine beetle has slowed significantly over the last year. For the past three years (and many years into the future), the Forest has focused attention on hazard tree removal along state and county roadways and high priority forest roads. Roadside treatments often include clearcutting and tree removal along roads affecting scenery. The High Park Fire on the Canyon Lakes District affected over 84,000 acres. As a result, the existing condition of the scenery resource in many areas of the ARNF has become incongruous with the Scenic Integrity Objectives described in the Forest Plan. Management activities designed to protect or improve forest health, reduce or mitigate the potential for large-scale, high-intensity wildland fire, or to protect the safety of forest visitors, have created noticeable changes to the scenic landscape both in General Forest Areas and in Developed Recreation Sites. And though the management activity-induced changes to the scenery have not always been met with immediate support from the public, these changes have been consistent with management direction provided in the Forest Plan and have not required any amendments to the Forest Plan.

Due to the increased effects of the mountain pine beetle infestation, surveys for cultural resources have become increasingly difficult. The safety of crews conducting pedestrian inventories in areas of dead and dying lodgepole pine trees has prompted the ARP to negotiate new modifications to our Bark Beetle, Hazard Tree Programmatic Agreement (PA). This PA allows the ARP to use off site mitigation in lieu of pedestrian inventory in areas where the hazard is too great to send in field crews to conduct surveys. This allows the Forest to complete projects without field inventory and still remain in compliance with Section 106 of the National Historic Preservation Act.

The National Fire Plan approval in 2000 led to increased awareness of the increasing wildfire risk to communities and support infrastructure including power lines and water supply. In 2002, the ARP joined with the Pike National Forest, the Colorado State Forest Service, the Forest Service Rocky Mountain Region, and the Forest Service Rocky Mountain Research Station to form the Front Range Fuels Treatment Partnership. The goals of the partnership are to reduce hazardous fuels and restore ecosystem health. In 2004, the partnership in concert with other interested parties helped create the Front Range Fuels Treatment Partnership Roundtable. The Roundtable is a diverse group of stakeholders that strive to build consensus to reduce the risk of wildland fire to communities and to restore lower montane forests. Through increased public and congressional awareness, the ARP is receiving increased funding to treat the buildup of dead trees and dense, overgrown forests. Through this hazardous fuels reduction we will better protect against the devastation of wildfires. Our ranger district personnel are actively working with local communities, county and state governments to plan treatment projects in potential hazardous fuels areas. In Fiscal Year 2013 (Oct 1, 2012 - September 30, 2013) the ARP treated over 8,652 acres of hazardous fuels..

Mountain pine beetle (MPB) populations began increasing west of the Continental Divide (a.k.a. Divide) on the Sulphur Ranger District in the late 1990s. MPB populations reached epidemic levels within the Sulphur Ranger District in the period from 2001 to 2003 and continued to exist at epidemic levels until around 2012 when the epidemic seemed to slow significantly. In 2007 MPB began occurring in larger numbers east of the Divide affecting Boulder and Larimer Counties. By 2008, populations had reached epidemic levels in a number of areas east of the Divide. The MPB infestation, although slowing, continues to grow in northern Larimer County affecting ponderosa pine forests in that area. In 2013, mountain pine beetle activity was detected on 74,000 on the Forest with only 2,000 new acres that had not

been previously affected. The ARP has joined with the Colorado Bark Beetle Cooperative and Northern Front Range Mountain Pine Beetle Working Group (now the Northern Front Range Forest Health Working Group) to collaboratively address issues that have arisen from tree mortality associated with the MPB epidemic. Hazard trees along roads, trails, power lines, and in campgrounds are being addressed through numerous hazard tree removal projects. Nearly all of the highest priority roads have been mitigated. Timber harvest has been an important tool in addressing these issues. The timber program was able to offer and sell 24,418 ccf of timber in FY 2013. Much of this came from the bark beetle impacted areas of the Forest and contributed to create a variety of wood products from traditional lumber to pellets, fence posts, pulp, landscaping materials, and animal bedding. Use of the Front Range Long Term Stewardship Contract allowed for accomplishing most of the sales awarded and stewardship projects completed. The Long Term Stewardship Contract accounted for about 2,738 acres of treatment.

Approximately 1,896 acres of timber stand improvement was accomplished in FY 2013. However, thinning has occurred in many acres of older stands to reduce hazardous fuels. In many cases this activity improves the stand health as well. In stands of lodgepole pine and spruce fir, thinning has been limited to some extent by the need to protect snowshoe hare habitat in an effort to recover the listed lynx. This may limit forest productivity in the future.

Forest vegetation management partnerships have become an increasingly important tool for accomplishing fuels reduction and forest health treatments on the Forest. With the help of the Western Watershed Enhancement Act, a partnership with the Northern Water Conservancy District, Bureau of Reclamation, the Colorado State Forest Service, and the US Forest Service has generated nearly $500,000 of project support in 2013.

The Lands program has met or exceeded most Forest Plan objectives. For encroachment cases the Forest Plan projected that 378 cases on file would be resolved (at base budget levels) in the 10 year period to 2007. Over the past 16 years, 102 cases have been resolved, but some of these were newly discovered in that 16-year period. On average, 10-12 cases are discovered yearly. Many of those encroachment cases are resolved through removal, authorization or land adjustment. The Forest Plan projected that 10,050 acres of lands would be consolidated through ownership adjustment. In the 16-year period, 11,000 acres were consolidated, mostly through exchange. In 2013, the Forest Service acquired an 823 ac property on the Boulder Ranger District and 9 acres in the James Peak Wilderness. Three easements were acquired across private property. The Forest Plan projected that for the first 10 years (1998-2007) of Plan implementation, that 64 special use applications which were on file would be processed. For the most part, those have been processed and authorized or rejected due to the 36 Code of Federal Regulations (CFR) 251 screening process. The ARP continues to receive special use applications at a rate of 25-35 per year, some of which can be processed with little time and effort, but many require extensive environmental analysis (National Environmental Policy Act – NEPA) and several years to bring to conclusion. In 2013, the ARP issued 114 special use authorizations and administered 521 special use permits and easements.

Abandoned mines occur throughout the ARP. In 2013, important progress was made in reducing and rehabilitating physical and environmental hazards from abandoned mines. Several safety closure projects occurred across the forest. These projects were completed through partnerships with federal and state agencies, local governments, community organizations and private landowners.

The soils and water program focuses on projects that will improve watershed condition. Projects funded with direct watershed funding, as well as by other resource areas, including the engineering and abandoned mines programs, accomplished 35 miles of road decommissioning to improve the watershed and wildlife habitat. This included 26 miles of road in the Willow Creek watershed on the Sulphur

Ranger District and 9 miles of road in the Elkhorn Creek watershed on the Canyon Lakes District. Annual fisheries and watershed improvement projects restored 18 miles of stream. In FY 2013 hill-slope stabilization and road drainage improvement projects were implemented on Rollins Pass Road. Road drainage improvements were made on the Boulder Ranger District. Helimulching (totaling 5,200 acres) continued to stabilize the burned slopes on the High Park fire on Canyon Lakes Ranger District. Twelve acres of the Allenbaw allotment were fenced with the aid of volunteers to provide protection for a gully restoration effort that was completed in 2012.

External partners essential to implementing projects include: OHV user groups; Boulder Flycasters; Wildland Restoration Volunteers; Denver Water; the James Creek Watershed Initiative; Colorado Parks and Wildlife and numerous others have obtained hundreds of thousands of dollars in grants for restoration; and many of these partners have provided hundreds of days of volunteer efforts. Design, construction, erosion control and tree planting were all accomplished through cooperation with the volunteers of WRV. In 2013, 1.5 miles of fish habitat in South Boulder Creek within the area affected by the Moffat Tunnel water deliveries was improved by many of these partners. The ARP partnered with Colorado Parks and Wildlife to remove more than 485 nonnative brook trout in more than three miles of Bobtail Creek and 320 brook trout were removed from a 3-mile stretch of Steelman Creek. The nonnative fish were removed to facilitate the persistence of a native cutthroat trout population in the Upper Williams Fork River basin in Grand County on the Sulphur Ranger District.

To better guide our efforts to reconnect stream habitats for aquatic life, road culverts have been systematically inventoried for the Sulphur and Canyon Lakes Districts. This effort started in 2010 and continued through 2012 and now completed has identified road crossings that pose risks to habitat fragmentation and aids in prioritizing and remedying fish passage barriers. Culverts which have acted as barriers to fish passage have been replaced with barrier free culverts on the Clear Creek and Canyon Lakes Districts. In addition, lake habitats were managed cooperatively with Colorado Parks and Wildlife in Lake Granby, Shadow Mountain Reservoir, and Grand Lake through invasive species education and boat inspections to prevent introduction and the potential spread of Quagga/Zebra mussels.

Soil, water, and, air monitoring on the ARP has continued and evolved in response to ongoing and emerging issues. Implementation and effectiveness monitoring, conducted to support vegetation management activities on the Forests and Grassland included prescribed fire monitoring on the Pawnee National Grassland and soil disturbance monitoring for forest fuels reduction treatments, timber sales, and pine beetle treatments on Boulder and Canyon Lakes Ranger Districts. In 2012, the ARP Canyon Lakes Ranger District had the largest wildfire, High Park, in its recorded history of nearly 90,000 acres on both public and private lands. Watershed personnel provided input and guidance for the Burned Area Emergency Response (BAER) team for restoration efforts. Restoration efforts were implemented in 2012 and 2013 and the areas were monitored in 2013 and will continue to be monitored in the future years per the BAER team recommendations. Ongoing air quality monitoring programs, conducted in cooperation with Regional Air Quality personnel and the Rocky Mountain Research Station include ozone sampling at 3 stations across the Forests and Grassland and lake sampling at 8 high elevation lakes within ARNF wilderness areas. 2013 was the 19th year for this lake monitoring.

Smoke monitoring of piles burned in the Tunnel Hill project near Winter Park resulted in valuable information for future air quality assessments. In eight days from November 5th through December 4th, 2013, the Sulphur Ranger District was able to burn a total of 6,660 slash piles on 148 acres. The key components of the "Learning Project" permit were met and included: minimizing the impact of smoke on the public; providing smoke and particulate monitoring; and, conducting appropriate public out-reach. Burning as many as 1,800 piles in a day was achieved without exceeding the National Ambient Air Quality Standard. Results from particulate monitoring showed that it is possible to burn a large number of

slash piles in a short time period, significantly reducing the number of days required to complete the project and lessening the overall impact of smoke on the public, without approaching the 24-hour average PM2.5 pollutant standard threshold.

Rangeland Vegetation Management: In 2013, the mountain districts emerged from drought thanks to later winter snowfall and above average summer rains. Heavy September rains while causing destructive flooding across the Front Range, contributed to an abundance of fall forage regrowth. The September floods impacted many allotments and permittees on the Canyon Lakes Ranger District; damaging fences, roads, trails, water sources and affecting access to allotments.

Pawnee National Grassland implemented new rotational grazing systems on two allotments to improve rangeland conditions. The Grassland also used adaptive management practices to avoid adverse grazing effects on drought-stricken allotments.

The ARP managed176 active grazing allotments on 533,000 acres. In 2013 the ARP administered 125 term grazing permits and authorized 38,718 head months of grazing.

The Grassland has been considered a world class birding destination and in 2010 the 35-mile Pawnee Self-Guided Birding Tour was implemented. The Grassland has been diligently working with its range allotment permittees to improve range condition through better cattle distribution and improved grazing systems. The Grassland staff continued to implement the Black-tailed Prairie Dog Management Plan and continued working with private landowners (ranchers/farmers), grazing permittees, the environmental community, and other agencies during implementation. The PNG is interspersed with numerous roads and "two-tracks". The district staff has been doing extensive travel management planning which has led to improving highly used roads and closing little used roads to improve wildlife and range habitat.

The botany program has had significant growth and accomplishments across the ARP. The Forest and Grassland has identified seven Threatened or Endangered plants, about 40 US Forest Service Region 2 Sensitive plants, and about 100 other rare plants or plant communities of local concern that occur on the ARP or occur nearby that could be impacted by management activities. When encountered during Forest projects, these species are typically avoided or impacts to them are minimized. Proactive surveys have occurred since 2002 for rare plants or for specialized wetland ecosystems called "fens," which are of high biological value in Colorado and often harbor rare plants. In 2007, one species of moonwort (primitive fern-like plant), new to science, was discovered on the Forests. It recently was documented to occur in South Dakota, Wyoming, New Mexico, and Canada. The Forest Botanist is assisting in formally describing this species. A working herbarium housing all of the Forest's plants was completed in 2013. A pollinator garden was established on the Lillifield pipeline on the Pawnee National Grassland as a cooperative effort with PNG employees, the oil and gas industry and the USDA National Resources Conservation Service As part of the native plant materials program, roughly 2,000 pounds of native grass seed was grown by contractors for use in revegetation and restoration projects across the ARP.

Noxious weeds are a problem in some areas on the ARP. To move proactively ahead in reducing this problem, a Forest- and Grassland-wide noxious weed management plan was developed. In 2013, about 6,000 acres of noxious weeds were treated.

The wildlife and fisheries programs have continued to provide recreational and educational opportunities to the public. Interactive educational programs for local schools and communities have continued to have expanded and increased participation each year. In 2013, the "Save the Frogs Day "program continued to take the Forest into local classrooms while the Adventure Backpack program and Christmas bird counts took citizens to the field. The Forest partnered with internal and external partners to improve habitats and

collect data, increasing our biological knowledge and ability to effectively manage for multiple uses. On-the-ground and in-stream habitat improvement projects have enhanced available habitat for a variety of species, including threatened, sensitive, and management indicator species. Increased efforts to survey important habitats and species have led to a better understanding of habitat and species presence. Conservation efforts continued for the federally listed Canada lynx and Preble's Meadow Jumping Mouse (PMJM); trapping of PMJM resulted in captures of mice at two sites and an important lynx linkage area was re-vegetated and directional fencing installed to protect it from winter use damage. across the forest and grassland. Key results from genetic studies of greenback cutthroat trout will shape future management decisions within the next year.

Not enough can be said about the hundreds of volunteers on the ARP. By hiking in the Wildernesses, raft-patrolling on the Poudre River, working on the Continental Divide Trail, maintaining the 100s of miles of summer and winter trails, building trail bridges and water control structures, counting birds, working in our offices, and ad infinitum; these volunteers provide a tremendous service to the public and helped provide services that would otherwise not have been completed due to limited ARP program budgets. Approximately 2,500 volunteers and more than 100 partners/businesses provided approximately 68,500 hours of volunteer work in 2013, valued at over $1.5 million.

In 2003 the Chief of the Forest Service identified unmanaged recreation, and specifically OHV use, as one of the four major threats to sustainable forest health. As a result, on November 9, 2005 the "Travel Management: Designated Routes and Areas for Motor Vehicle Use Rule" (aka Travel Rule) was finalized in the Federal Register. This rule required the Forest Service to designate a system of roads, trails, and areas open to motor vehicle use by season and vehicle type. This designation has been completed via publication of a Motor Vehicle Use Map (MVUM), which has been printed for each of our Ranger Districts and updated as often as necessary. After the MVUM's have been printed, it is a violation of Forest Service regulations to use or possess a motor vehicle anywhere not designated on the MVUM.

Forest Closure Order No. UFC-01-13 (Urban Front Country Occupancy & Use, approved on 6-30-13) prohibits "using a motor vehicle off of National Forest system roads except snowmobiles operating on at least six inches of snow" and "using any type of vehicle on any National Forest system road or trail except those vehicles that are allowed by signing on that road and trail." The order also lists, by Ranger District, specific roads and trails closed to motorized vehicle travel, year-round and seasonally. Districts are implementing the above closure order, as well as implementing the MVUM and planning for any needed additional closures and opportunities for motorized travel. The order is nullified for motorized travel designations when each District published its first MVUM.

Limited recreation management and law enforcement funding have maintained only minimal Forest Service employee presence on the Forests and the Grassland. This puts an undue burden on our few law enforcement officers who are required to cover 700,000 acres per officer and respond to over 850 incidents per year. While the public is being underserved because not many ARP personnel are "in-the-woods" to answer visitors' questions or to protect public land resources through enforcement of regulations, some progress was made in our General Forest Areas (GFA) by emphasizing efforts to provide uniformed Forest Service presence in the field during critical high-use periods.

The roads infrastructure program and accomplishments were similar to those in previous years. The ARP is in year 2 of a five year cycle (2013-2017) to inventory all level 3-5 roads. Base funding decreased in fiscal year 2013, however, the Forest received supplemental funding to assist in hazard tree removal and fuels reduction. Emphasis in 2013 was again in support of these two programs with approximately 67 miles of high-clearance roads maintained, 343 miles of passenger car roads maintained, 22 miles of high clearance roads reconstructed, and 19 miles of passenger car roads reconstructed. An additional 66 miles

of roads for roadside hazard tree and bark beetle mitigation work were also maintained. Strong partnerships with local counties accounted for an additional 345 of the miles maintained. Other program areas contributed funding for road maintenance for the improvement of watershed conditions. Planning and road decommissioning continued to be part of the yearly program of work with approximately 25 miles of system roads decommissioned and 7 miles of unauthorized routes decommissioned in 2013. Accomplishments totals were affected by the floods of September. The flooding occurred during the height of field season and redirected focus to inventory of damage and initial repairs.

The ARP is working towards making its operations more sustainable. Our Superviosr's Office/Canyon Lakes District building located in Fort Collins joined the City's *ClimateWise* program in early 2013. As a partner in this program, the ARP has committed to reducing its environmental footprint in the Fort Collins community. 2,500 tires were reused in berm construction at the Baker Draw shooting range on the PNG. 385 pounds of recyclable material were collected per employee at the PNG office in Greely. The Boulder Ranger District's office generated 8,200 kilowatt hours of renewable energy through installation of a photovoltaic system. The ARP's fleet now includes 10 hybrid vehicles and one plug-in electric vehicle.

The ARP is utilizing current data and research concerning a changing climate to manage the National Forest System and Grassland lands. Changing management practices were instituted due to the prolonged season of drought. Range specialists worked with range permittees and two grazing associations on the PNG to ensure sustainable forage, which included reducing livestock numbers and shortening seasons in response to drought. National Forests, by growing trees sequester carbon until the trees are removed from the National Forest. The ARP's science-based management protects watersheds, provides clean air and helps act as this carbon sink. However, wildfires such as the very large High Park Fire on the Canyon Lakes District and the mountain pine beetle infestation have caused the live trees to die, resulting in less sequestration, either by trees burning up and releasing their carbon into the atmosphere or removing dead trees from the Forests with fuel reduction activities. In 2013, approximately 1,700 acres of forest were treated to promote restoration of Ponderosa pine and mixed conifer forests.

Earlier in this report we have alluded to a natural event which drastically changed the landscapes on parts of the Canyon Lakes and Boulder Ranger Districts. Unprecedented sustained heavy rains began on September 9 and increased on September 11 when major flooding began on the two districts. The flood was declared a disaster by the President on September 15. It covered more than 609,000 acres of NFS lands and a vast area of private land both within the proclaimed Roosevelt National Forest boundary and east of the boundary. At least 380 miles of 232 roads, 235 miles of 70 trails, 4 bridges, and 42 facilities were damaged (NFS owned). Many roads, trails and recreation areas were left unrecognizable because the original ground cover was washed away to bedrock. The course of several rivers and streams were changed. Damage will take years to address and it is unlikely that all areas, roads, and opportunities will be returned to pre-flood conditions.

The remainder of this report describes Forest Plan monitoring and evaluation. In these sections there is more in-depth information about programs and resources on the Arapaho and Roosevelt National Forests and Pawnee National Grassland.

Monitoring and Evaluation

The 1997 Revised Forest Plan describes a monitoring program to evaluate Forest Plan implementation, which is programmatic and designed to evaluate the conditions on the Forests and Grassland. Monitoring and evaluation are separate, sequential activities required by the National Forest Management Act (NFMA) regulations to determine how well objectives have been met and how closely management standards and guidelines have been applied. Monitoring usually includes data collection and information gathering. Evaluation is the analysis of the data and information and the results are used to determine the need for changes to the Revised Forest Plan or how it is implemented.

To guide this monitoring and evaluation process, Chapter 4 of the Revised Forest Plan lists many monitoring questions presented in two tables. Table 4.1 lists the legally required monitoring per NFMA. This is the sixteenth year of the Revised Forest Plan monitoring and evaluation. The monitoring items that will be addressed in this report are only the ones shown as listed ***Annually*** in the M&E Report column, below, therefore, there are far fewer questions to be addressed of the 11 questions from the table, below. The Revised Forest Plan management emphasis goals and objectives are addressed in the questions found in Table 4.2.

Table 4.1. Minimum Legally Required Monitoring Activities.

Action, Effect or Resource to be Measured	Frequency of Measurements	Precision and Reliability*	M & E Report**
Lands are adequately restocked. 36 CFR 219.12(k)5(i)	Mix of 1st, 3rd & 5th years per FSM 2472.4	A	Annual
Lands not suited for timber production. 36 CFR 219.12(k)5(ii)	Year 10	A	Year 10
Harvest unit size. 36 CFR 219.12(k)5(iii)	Years 5 & 10	B	Years 5 & 10
Control of destructive insects and diseases. 36 CFR 219.12(k)5(iv)	Annual	B	Annual
Population trends of management indicator species in relationship to habitat changes. 36 CFR 219.19(a)(6)	Years 5 & 10	B	Years 5 & 10
Effects of off-road vehicles. 36 CFR 219.21	Annual Review, Analysis years 5 & 10	B	Years 5 & 10

Effects to lands and communities adjacent to or near the National Forest and effects to the Forest from lands managed by government entities. 36 CFR 219.7(f)	Years 5 & 10	B	Years 5 & 10
Comparison of projected & actual outputs and services. 36 CFR 219.12(k)1	Annual	A	Annual
Prescriptions and effects. 36 CFR 219.12(k)2	Years 5 & 10	B	Years 5 & 10
Comparison of estimated and actual costs. 36 CFR 219.12(k)3	Annual	A	Years 5 & 10
Effects of management practices. 36 CFR 219.11(d)	Years 5 & 10	B	Years 5 & 10

*Monitoring methods used are divided into two categories, A and B based on their relative precision and reliability:

- A – Methods are generally well accepted for modeling or measuring the resource. Methods used produce repeatable results and are often statistically valid. Reliability, precision, and accuracy are very good. The cost of conducting these measurements is higher than other methods. Methods are often quantitative.
- B – Methods or measurement tools are based on a variety of techniques. Tools include: project records, communications, on site ocular estimates and less formal measurements such as pace transects, informal visitor surveys, aerial photo interpretation, and other similar types of assessments. Reliability, accuracy, and precision are good but usually less than that of A. Methods may be more qualitative in nature bu6t they still provide valuable information on resource conditions.

**The frequency of measurement and reporting are triggered by regulation as well as anticipated intervals at which gathered data will provide meaningful information.

Below are the responses to our monitoring activities. The long number with the letters "CFR" is the citation to the Code of Federal Regulations which translates Congressional law (in this case, NFMA) into working regulations which the Forest Service can apply to management of its lands.

Lands Are Adequately Restocked - 36 CFR 219.12(k)(5)(i)

This CFR requires a determination of compliance with the standard that lands are adequately restocked as specified in the Forest Plan. Monitoring for compliance is accomplished through surveys the first, third, and fifth years following reforestation treatment. Where natural regeneration is prescribed the first year survey can be a walk-through survey to determine that the timber harvest and/or site preparation activities have produced site conditions conducive to adequate stocking within five years following final harvest. Third year and any subsequent surveys must be fixed plots to determine stocking levels and distribution.

Since inception of the 1997 Forest Plan the silviculture objective has been to achieve natural regeneration success on harvested acres. Surveys have been conducted as required to assure restocking on suitable and available lands receiving a final harvest treatment. For the period of FY 1998 through FY 2010, almost 11,315 acres of natural regeneration was certified as satisfactorily restocked and 207 acres have been planted. The need for regeneration of forested stands has dropped since 2000. The primary reason for this is that reduced levels of timber harvest in the mid to late 1990s created reduced need for stand

regeneration. It is anticipated that the current mountain pine beetle mortality will increase the need for regeneration activities in the future. This would occur primarily in developed recreation sites and in areas impacted by wildfire. Funding regeneration activities that require seedlings grown in nurseries, such as campgrounds, will be a challenge. In 2013, more than 13,000 trees were planted on the Canyon Lakes and Boulder Ranger Districts to jump start the recovery of key recreation areas and enhance species diversity in lodgepole pine stands.

Control Of Destructive Insects And Diseases - 36 CFR 219.12(k)(5)(iv)

This CFR requires a determination that destructive insect and disease organisms do not increase to potentially damaging levels following management activities. The most damaging insect and disease organisms currently occurring on the Forest are mountain pine beetle, *Dendroctonus ponderosae,* and dwarf mistletoe, *Arceuthobium spp.*

In the late 1990's an increase in mountain pine beetle (MPB) activity in lodgepole pine (LPP) stands was noted in the Williams Fork on the Sulphur Ranger District. In 2000-2001 the MPB began to expand rapidly in the Williams Fork and increased activity was noted on other areas of the District especially near Grand Lake. District personnel began analysis to try to improve the resistance of LPP stands to MPB, reduce hazardous fuels associated with the MPB killed trees and salvage MPB killed trees. In addition the District conducted spraying operations in campgrounds to limit MPB caused mortality of LPP. Mountain pine beetle has also infested ponderosa pine where it is mixed with lodgepole pine stands. By 2007 the MPB epidemic had spread throughout LPP on the Sulphur Ranger District. All efforts to improve resistance to MPB have been unsuccessful. Spraying in campgrounds and other recreation facilities continued to protect most trees; however, it has become apparent that this will not be a long-term solution. In FY12, spraying ceased on the Sulphur Ranger District. However, MPB mitigation work still continues at Winter Park Resort. It is hypothesized that the length of the epidemic and the high MPB numbers were primarily responsible for the failure of mitigation techniques.

There are approximately 183,000 acres of LPP on the Sulphur Ranger District (SRD). As of 2008 the epidemic has affected all of those acres. It is estimated that approximately 80 percent of the LPP over 4" in diameter have been killed by the MPB on these acres. It is likely that at least 90% of the LPP over 4" in diameter on the District will eventually be killed by MPB.

Mountain pine beetle impacts on the Canyon Lakes, Boulder, and Clear Creek Ranger Districts east of the Continental Divide continued to increase in 2012, but at a decreasing rate compared to previous years. Most of the increase occurred east of the Divide, especially in Larimer County.

The mountain pine beetle affected limber pine, bristlecone pine and ponderosa pine stands on the Front Range. Mortality has been observed in these species and as the MPB epidemic moves east of the Continental Divide the acres affected are expected to increase. There has also been some mortality of spruce caused by the high MPB population density west of the divide. Although spruce is not a host for MPB it can be attacked and subsequently killed when no suitable LPP are available.

This MPB epidemic is resulting in an altered age structure of LPP stands on the SRD and now east of the Continental Divide. Initially substantial numbers of LPP snags are created. These snags will slowly rot, generally at the base, and the dead trees will fall over in the next 20+ years. The actual rate of snag fall can be influenced by several factors. The regeneration of the forest will also begin. Lodgepole have both serotinous and non-serotinous cones. For seed to be released from serotinous cones a heat source is required. This can either be from a wildland fire or once the trees fall the cones can be sufficiently heated

by radiation from the sun on the ground. Therefore, without intervention, reforestation in areas with serotinous cones will occur over time as the trees fall. Lodgepole pine regenerates well after stand replacement events so it is anticipated that adequate regeneration will occur over time. Timber harvest of the dead trees can speed regeneration by placing the cones near the ground. Also, in areas with existing aspen clone stands, these aspen should be able to expand due to the LPP mortality.

Fire hazard may also be modified to some degree by the mortality caused by the MPB. The year after a tree is attacked by MPB the needles die and turn red. These dead needles do not contain the same level of moisture as do green needles and are more easily ignited by a heat source. The dead needles tend to persist on the trees for several years. Also, not all trees in a stand or watershed are attacked and die at the same time. This is a multi-year event. Therefore, the period of increased flammability can last for a number of years after the initial tree mortalities from MPB. It should be noted that LPP of the size and age being killed by MPB often experiences stand replacing wildland fire. So, it is not that there was not a fire risk prior to the MPB, it is that the effect of the MPB epidemic initially will make it more likely that a stand replacing wildland fire could occur under more moderate conditions. Once the needles fall from a majority of the trees the wildland fire hazard should be reduced for a few years. Then as a majority of the dead trees fall the fire hazard will increase again. Under this situation the type of wildland fire would more likely be a ground fire, which could result in increased damage to soils due to the heavy fuel concentration close to the ground.

Dwarf mistletoe is wide-spread throughout lodgepole pine and ponderosa pine stands on the ARNF. Some removal of dwarf mistletoe infested lodgepole pine trees within timber sale contract areas has been done.

The occurrence of both of these organisms occurs naturally in forested areas and has not been shown to be a result of management activities.

Spruce beetle populations and related mortality continue to increase on Canyon Lakes, Boulder and Clear Creek Ranger Districts. Areas of bark beetle infestations include; the Rawah Wilderness, Buckeye and Tennessee Mountain, Loveland Ski Area, Berthoud Pass, and Peaceful Valley. White pine blister rust was observed for the first time on the Boulder Ranger District in 2005.

The Forest continues to experience a small isolated outbreak of *Ips* beetle on hazardous fuels reduction projects on the Canyon Lakes Ranger District. The primary area of infestation appears to be adjacent to the Bobcat wildfire.

Comparison Of Projected And Actual Outputs – 36 CFR 219.12(k)1

This CFR requires a quantitative estimate of performance comparing outputs and services with those projected by the Forest Plan.

WILDLIFE:
Since 1998, there has been an upward trend in acres of habitat improvement for wildlife, including Threatened, Endangered or Sensitive species (TES) and habitat. Outputs have been 'near-expected' relative to budget levels. The following describes aspects that comprise the habitat treatment acres.

- Improved habitat treatments due to hazardous fuels management has been substantial. Fuels treatments can be beneficial and Forest Plan habitat objectives can be met if wildlife objectives are adequately designed into hazardous fuels treatments.
- Old growth of all conifer types has been largely retained over the past 16 years, except in areas of the MPB epidemic. Development of more, future low-elevation old growth is being best assured by reduction of forest fuels in hazardous fuels treatment areas along the Front Range and by acquisition of low-elevation lands by the Forest Service in the Evergreen, Colorado area. More low-elevation old growth (ponderosa pine (PP) and Douglas-fir (DF)) is being found than was known at the time of the Forest Plan revision (1997). Newer aerial photos (taken since insect epidemics) are providing a more complete and reliable inventory of the locations of PP and DF old growth. Pre-project and specific old growth condition surveys to field truth many PP/DF old growth sites are confirming and/or comparing recent photo interpretation findings. An entire inventory along the Front Range was completed in FY03 to assure that locations are known, and to allow for planning and implementation according to Forest Plan direction. The inventory located additional sites that were previously undetected, but also ascertained that PP/DF old growth still remains the most limited type of old-growth forest within the ARNF. However, with the MPB epidemic, old growth lodgepole pine forests may be at risk. At the time the 1997 Forest Plan was written, there were approximately 183,000 acres of LPP on the Sulphur Ranger District (SRD). As of 2013 the epidemic has likely affected most of these acres. It is estimated that approximately 80 percent of the LPP over 4" in diameter have been killed by the MPB on these acres. It is likely that at least 90% of the LPP over 4" in diameter on the District will eventually be killed by MPB.
- Mountain pine beetle impacts on the Canyon Lakes, Boulder and Clear Creek Ranger Districts east of the Continental Divide appear to have stabilized in 2013, and are not as extensive as west of the Divide. However, it remains unknown how extensive mortality will be over the next 5 years.
- In 2009, a habitat verification project was initiated to field verify old growth conditions across the forest. The effort will conclude in 2015 and provide information to guide old growth management.
- TES habitat improvements for wildlife, fisheries, and rare plants in 2013 have achieved or exceeded the expected Forest Plan objective of 3 projects per year collectively.
- Riparian and terrestrial habitat improvement and restoration, as well as road closures and obliterations have increased. Internal partnering with the watershed, recreation, AML, fisheries, and soils programs, as well as increased funding from external partners, has also increased our capacity to achieve results in these areas.
- Expectations of structural improvements and habitat protection have not been fully realized due to limited funding and other priority projects and habitat treatments.
- Aspen regeneration and reduced conifer encroachment in openings have mostly been realized as expected through design of fuels/timber management projects. However, these habitat improvement projects have also occurred as independent wildlife projects.

FORESTED RESOURCE:

The Allowable Sale Quantity (ASQ) for the first decade is approximately 67 mmbf (135,000ccf). Timber sold in the first decade was approximately 135,000 ccf. Hazard trees were removed from 62 miles of road. 8,630 acres of forest were treated to reduce the risk of wildfire. Future timber harvest on the ranger districts is anticipated to primarily be salvage of lodgepole pine killed by MPB. Once the merchantability of the MPB killed lodgepole pine is reduced the volume sold on these districts will diminish substantially. In FY 2013, 24,418 ccf of timber was sold on the ARP.

Timber volume sold on the Front Range Districts, primarily the Canyon Lakes and Sulphur Ranger Districts has been at levels below the ASQ. However, implementation of the Front Range Long Term Stewardship Contract (LTSC) has expanded timber volume sold from Boulder and Canyon Lakes Ranger Districts. Historically from 2004 through 2008, sales with approximately 40,000 ccf of volume were offered, but received no bids on the Canyon Lakes Ranger District. At this time there is no reason to revisit the ASQ.

RECREATION:
Comparisons of projected vs. actual outputs show Forest Plan objective estimates are high and actual accomplishments are low for:

- Reconstructing or rehabilitating dispersed camping areas.
- Providing new designated wilderness campsites (no actual target)
- Constructing new dispersed-use campsites

This discrepancy in output vs. accomplishment vs. budget availability indicates that these Forest Plan listed objectives are not all-inclusive of the full scope of the recreation program and, in fact, represent just a minor portion of the work involved. In addition, lack of accomplishments in these areas reflects other higher priorities.

- Recreation Special Uses, Heritage, Interpretation and Visitor Information Services, Landscape/Scenery Management., and Accessibility programs are also subsets of the overall recreation program as are Developed Recreation, Wilderness and General Forest Areas.
- Maintenance activities were not recognized as high importance (no objectives) but new construction, reconstruction, and rehabilitation were. However, funds for new construction are very limited. A lot of the work of the Recreation program involves maintenance, yet it has no Forest Plan connection for tracking these accomplishments.
- Public contact for information, education, prevention and enforcement purposes is very important and a desired workload.
- Interpretation and education functions are also important but not part of our Forest Plan monitoring system.
- Volunteer coordination is a function that results in some kind of recognized reportable activity but is rarely viewed as an activity unto itself, yet much of our dollars and efforts are spent working with volunteers.
- The allotted budget for the Recreation program is below predictions shown in the Forest Plan. The program has been funded at less than one half of the Forest Plan projections. Yet, the ARP is one of the top five most heavily visited National Forests/Grasslands in the Nation.

Table 4.2 Forest Plan Monitoring Questions for Priority Management Emphasis and Stakeholder/Public Involvement.

The following questions are displayed in Table 4.2 (Forest Plan, pages 394-396). These questions address priority management emphasis, goals and objectives in Chapter 1 of the Forest Plan. As described in Chapter 1, page 3 of the Forest Plan the ARP has an overall mission to achieve over time; **Forest-wide management implementation must balance the demands of people's vastly different resource-use values with maintaining ecosystem health.** To focus the ARP management towards meeting this mission, the Forest Plan identified three management emphasis areas: 1) biological diversity, ecosystem health and sustainability; 2) human use; and 3) land use and ownership. The following questions fall into one of these three areas. Again, because this is the sixteenth year of Revised Forest Plan monitoring and evaluation, the questions which will be addressed in this report are only the questions with: 1) a *measurement frequency* listed as *annually* or 2) if the *measurement frequency* is listed as either *Annually or As Needed*, then the determination of whether to address the monitoring question in this report will be made by the Monitoring and Evaluation team member, who has program responsibility that the monitoring question references. The determination whether to address the question or not in this report will be based on the meaningfulness the response has on Forest Plan monitoring if reported annually or at another longer timeframe. Therefore, there are eleven topics to be addressed below of the 21 topics from Table 4.2.

Priority Management Emphasis: Biological Diversity, Ecosystem Health, Sustainability

Air, Soil, and Water: Non- Point Source Pollution	Has the Forest made progress toward reducing non-point source pollution in Class II and III watersheds and in streams, which are not fully supporting State-designated uses? How has this been accomplished? (Biodiversity; Air, Soil & Water - Obj. #10)

Progress has been made through the implementation of watershed improvement projects, road decommissioning, and abandoned mine reclamation, although the pace has been at the lower end of the 49-160 annual acres listed in the Forest Plan objectives. Watershed improvement was accomplished through projects funded by the watershed, engineering, and abandoned mines programs, as well as projects accomplished with cooperators and volunteers. Roads are a significant source of non-point source pollution on the ARP and road decommissioning is an effective means of treatment.

Determining the effectiveness of improving State-listed streams is more problematic. The State lists stream segments that are not fully supporting State-designated uses in a biennial report that is referred to as the 303(d) list. When the Plan revision was completed, there were 12 stream segments on the Forest that appeared on the list. On the 2006 303(d) list, only 6 stream segments that occur on the Forest were listed. On the year 2010 303(d) list, the most recent list, 17 stream segments that are located at least partially on the Forest were listed. However, the changes in number of listed streams are mostly an effect of changes in the State's listing criteria as well as increased monitoring by the State to identify impaired streams, rather than significant new sources of pollution emanating from Forest lands. The most common reason for impairment for listed streams on the Forest is metals pollution, often a legacy of historic mining on the Clear Creek and Boulder Ranger Districts. While the Forest continues efforts to rehabilitate abandoned mine sites and reduce pollution on National Forest System lands, many old mines that serve as pollutant sources are located on patented mining claims, private lands that are inholdings

within the Forests. While abandoned mines on Forest lands certainly contribute to metals loading in impaired streams, and reclamation of these mines reduces metals pollution, it is unlikely that the ARP efforts alone will be sufficient to reduce pollution to levels that would cause streams to be de-listed, particularly in watersheds with high concentrations of historic mining activity. In 2013 the ARP partnered with Trout Unlimited to reclaim the Doctor Mine on the Clear Creek Ranger District to reduce elevated metals from eroding into th West Fork of Clear Creek.

Monitoring continued on the Gamble Gulch Watershed on the Boulder Ranger District including surface water sampling during low and high flows, as well as testing tailings and waste rock piles to characterize and determine the impacts from historical mining. Within the Leavenworth Creek Watershed on the Clear Creek Ranger District, we have also been analyzing data to identify areas of elevated metals loading from abandoned historical mining activities. By taking a watershed approach, we are able to partner with several federal, state, and local stakeholders within the area, thus allowing us to be efficient and more effective to work beyond our forest boundaries.

Vegetation: High Fire Hazard	Has the Forest made progress toward reducing the number of high fire hazard, high value, and high and moderate risk acres? How was this accomplished? What was the most effective method? (Biodiversity; Vegetation - Objective #11)

The objective is to reduce the number of high risk/high value, and high and moderate risk acres by 2,000 to 7,000 forested acres annually using mechanical and prescribed fire treatments.

The annual average accomplishment for the 16 years of the Forest Plan is almost 7,000 acres/year and falls within the Forest Plan stated objective. Since 2003 with the development of the Front Range Fuels Treatment Partnership hazardous fuels reduction has averaged over 10,000 high fire hazard acres per year. In FY 2013 almost 8,630 acres were treated on the ARNF.

Priority Management Emphasis: Human Uses

Wilderness	Is the Forest making progress toward providing designated wilderness campsites where resource impacts from users are evident? (Human Uses - Objective 2)

The Forest hasn't added designated wilderness campsites since they were established in the Indian Peaks Wilderness Area in the mid-1980's, and in the Comanche Peak Wilderness Area in 1996. However, the Forest funded an effort in the summer of 2009 to use a National Wilderness Area rapid assessment campsite inventory process to meet the Chief's Wilderness Challenge Element #6.

Developed Recreation	Has the Forest made progress toward providing a mix of facility reconstruction, expansion, and, when possible, new developments consistent with future use projections? Has this been done to assure quality developed recreational opportunities? (Human Uses, Developed Recreation - Objective #4)

Progress has been made. Within the past sixteen years, the following campgrounds were reconstructed: Ansel Watrous, Narrows, West Lake, Sunset (conversion from day use area), Willow Creek, Stillwater, Rainbow, Pawnee and Dowdy Lake. Many other individual campsites were brought into standard for universal accessibility and several developed campsites were reconstructed using Granger-Thye

collections. Many other items were replaced, repaired, or installed such as water and electric lines, new pumps and chlorinator facilities, new picnic tables and fire rings, and some bear resistant food boxes and dumpsters. New tent pad areas were delineated with timbered borders and trails in a few developed campgrounds were hardened. Also, as noted earlier, new developed site construction contracts were completed in 2011at Rainbow Lakes Campground (CG), Brainard Lakes Portal and Sourdough Trailhead (TH). New construction was initiated in FY12 at Pawnee CG and Brainard Lake Day Use Area. Most of these projects were completed in FY 12 and FY13.

In 2013, the ARP completed construction of the Baker Draw Designated Shooting Area on the Pawnee National Grassland. The site includes a parking area, information kiosk, and 30 shooting lanes with 26 benches.

The ARP toilet replacement contract has contributed to at least sixteen new toilets across the Forest. Within the past few years the Sunset Boat Ramp and parking facility were reconstructed and the boat ramp was extended twice and a sailboat "gin" pole was installed at the Stillwater Boat Ramp. A new kiosk was installed on Mt. Evans and the Dos Chappell Interpretive Nature Center building was constructed and opened at the Mt. Goliath Natural Area along the Mt. Evans Scenic Byway. Additionally, the Berthoud Pass Trailhead development and construction project was largely completed in 2010, with minor site rehabilitation work still needed. New toilets were installed in FY12 for Mitchell Lake Trailhead and Niwot Picnic Area in the Brainard Lake Recreation Area.

Within the past several years, West Branch, Rawah, Hewlett Gulch and Lower Maxwell Falls Trailheads were rebuilt. A bridge replacement was installed at Buffalo Creek. The Waldrop Trail bridge in the Brainard Lake Area was reconstructed. A new trail bridge designed for four-wheel drive vehicles on Trail Creek Trail, a new bridge on Sunken Bridges Trail, and a new bridge on the Bakerville-Loveland Trail were installed. Twenty-four miles of new Continental Divide Trail, one mile of new trail on the Grays and Torreys Peaks trail were constructed and a rerouted trail on the Chicago Lakes Trail was completed. Over the past few years, roadside recreation/travel management kiosks were installed at Stillwater East, Stillwater West, North Supply, Cabin Creek, Young's Gulch and Herman Gulch. In FY11 a trail bridge was completed on the High Lonesome Trail and turnpikes were constructed on both the Flume Trail and the Blizzard Pass Trail.

Through a partnership with HistoriCorp the historically significant Shelter at the Echo Lake Campground located on the Mt. Evans road was rehabilitated. All the deferred maintenance needs for this resource were eliminated.

The ARP Recreation Facility Analysis, part of a national process, was completed in FY 2008, identifying and stratifying top recreation facilities eligible for Recreation Site Improvement (RSI) funding to maintain and improve key sites, and to identify what level of deferred maintenance exists across all ARP recreation facilities and describe which facilities are potentially not essential to maintain into the future.

In FY 2009, the ARP completed an assessment of effects to implement proposals for major facility replacements (toilets, etc.) across the Forests and Grassland via funding from RSI and American Recovery and Reinvestment Act (ARRA) programs. A Decision to move ahead on major facility replacement, based on this assessment, was also completed in FY 2009. Construction on several developed site projects was initiated in FY2010 and several were completed in 2011 through 2013 (discussed above).

The September 2013 flood impacted many developed sites and roads that accessed popular developed sites on the Boulder and Canyon Lakes Districts. Repairs to campgrounds, trailheads, picnic areas and access roads will be a massive effort beginning in 2014.

Dispersed Recreation	Has the Forest made progress toward reconstructing or rehabilitating impacted dispersed areas and sites, providing new designated dispersed campsites consistent with future use projections? How has this been accomplished? (Human Uses, Dispersed Recreation - Objective #1, #3)

Progress has been made in dispersed recreation sites over the past few years. The Manhattan Road, Long Draw and Lost Lake areas (on the Canyon Lakes Ranger District) have designated-dispersed campsites. Toilets have been installed in the Stillwater backcountry dispersed camping area and at many trailheads across the ARP to reduce human waste issues in these areas.

Restrictions have been established to prohibit shooting and/or overnight use in the Buckhorn Area of the Canyon Lakes Ranger District; Brainard Lake Recreation Area, Left Hand Canyon, Lefthand OHV Area, and South Saint Vrain Canyon of the Boulder Ranger District; the Mt. Evans Road corridor, Barbour Forks area and the Fourth of July Road corridor on the Clear Creek Ranger District and the closure (Sec 7, T8N R63W) on the Pawnee National Grassland. Two developed shooting area proposals were initiated in FY11; one on the Boulder Ranger District for the Allenspark Area and one on the Pawnee National Grasslands. The PNG Baker Draw Designated Shooting Area was constructed in 2013.

Several annual Lefthand Canyon cleanups have been instituted to remove debris and rehabilitate this heavily impacted dispersed area. There have also been shoreline cleanup projects at Lake Granby and Shadow Mountain Reservoir. Buck-and-rail fences were installed around several dispersed campsites in the Stillwater area of the Sulphur Ranger District to prevent campers and OHV riders from traveling beyond the designated dispersed campsite boundary.

Additionally in 2005, the Boulder Ranger District completed the Brainard Lake Recreation Management Plan and Environmental Assessment for Brainard Lake Recreation Projects. Implementation design began in 2006, continued into 2010 and most components were completed by the end of 2013.

The September 2013 flood impacted many dispersed areas such as Lefthand Canyon and roads that accessed popular dispersed areas on the Boulder and Canyon Lakes Districts. Repairs to land, roads and trails will be a massive effort beginning in 2014.

Visitor Satisfaction	Have the Forest and Grassland made progress toward providing satisfactory recreational experiences to visitors? (Human Uses, Visitor Satisfaction - Objective # 5)

The ARP strives to provide satisfying recreation experiences to our visitors. The Mt. Evans Recreation Area has provided the public with a substantially enhanced recreation experience. The additional funding enabled by the standard amenity recreation fees via the Federal Lands Recreation Enhancement Act of 2004 (REA) has provided for: toilets cleaned to high standards and at greater frequencies; interpretive programs and Forest Service interpreters to lead them; roving patrols to provide visitors with information, comfort, safety and security; new and improved signage; a new interpretive and nature center at Mt. Goliath; and other facilities maintained to high standards.

Within the Arapaho National Recreation Area, standard amenity fees have provided increased service patrols, interpretive day events for first and fifth graders, boat safety patrols on Lake Granby and Shadow

Mountain Lake, cleaned and maintained toilets and trash service in the ANRA picnic areas, and law enforcement patrol in the ANRA for enhanced visitor safety and security. The Christmas Tree special recreation permits at Clear Creek, Sulphur, and Canyon Lakes Ranger Districts provides for substantial information and educational opportunities, technical assistance, safety and security, and overall interaction and good will with the public.

More and better interpretive signs and information has increased visitor satisfaction. New signs on Guanella Pass Scenic Byway, a new trailhead, restroom/warming hut, parking and interpretive plaza at Berthoud Pass, and three interpretive signs at the Lake Granby Overlook of the Colorado River Headwaters Scenic Byway were constructed within the past few years. At the Clear Creek Ranger District's Visitor Center a new interpretive kiosk was recently built. New wildlife mounts and natural wood furniture for the Sulphur Ranger District visitor center have enhanced the visitor's experience. The Boulder Ranger District Visitor Center has also seen improvement with additional available maps, furniture and information racks. A substantial visitor center was designed and constructed for the Forest Supervisor's Office and the Canyon Lakes Ranger District's new office building. Interpretive displays for recreation trip planning and outdoor safety were created as were maps and displays regarding basic location and orientation. The ARP upgraded its web pages for recreation and published a new, updated Forest Visitor Map in 2012.

The Front Range Sport Shooting Partnership was established in 2007. This Partnership with the ARP as a founding member has a mission to develop and expand a framework of cooperation among federal, state, and local partners to enhance shooting sports opportunities in a safe and environmentally sound way along the Front Range of Colorado. In 2013, Baker Draw, a designated recreational sport shooting area, was constructed on the Pawnee National Grassland in a partnership with the Army National Guard, the NRA, Colorado Parks and Wildlife, Weld County, and others. This designated sport shooting area has become very popular.

Hundreds of recreation special-use permits are issued to providers who serve the public and provide recreation experiences via outfitter/guides, marinas, ski areas, boat docks, recreation events, recreation residences, and many others. Also, the Forest Campground Concession Permit provides for concession-managed developed campground (and some picnic areas) operations, maintenance; host staffing, and interpretive programs. Most commenters are very satisfied with the condition and quality of the facilities and services provided at the campgrounds by the concessionaire and the Forest Service.

Roads and trails, signs, information bulletin boards, toilets at trailheads, facilities, dispersed camping areas, day use areas, historic and prehistoric sites, paleontological sites and other areas are maintained on the ARP for enhanced public recreation experiences.

The ARP also provides random interpretive programs in the field and sessions at schools, visitor contacts at district VIS centers and in the field and interpretive signage for our kiosks and bulletin boards. In addition, the ARP has invested in upgrading and hiring visitor services personnel to increase service to the public.

Finally, the 2010 National Visitor Use Monitoring survey estimates approximately 5.4 million annual visits to the ARP, and relatively few complaints occur each year. The overall finding is that the ARP is far exceeding our 70% satisfactory recreation experience objective in the Forest Plan as shown in the following NVUM data: Developed Facilities (83%); Access (87%); Services (81%); and Security (94%).

Priority Management Emphasis: Land Uses and Ownership

Boundary Mgt., Access and Land Ownership Adjustments	Has the Forest made progress toward improving boundary management, access, and land ownership adjustments to protect and enhance Forest and Grassland resources and to increase management efficiencies? Which approaches have been effective? (Land Uses & Ownership, Boundary Mgt., etc. - Objective #1, #2)

Identification of boundary lines has averaged almost 55 miles per year over the last five years. For FY 2013 the ARP accomplished 25 miles of boundary line location for land conveyances and abandoned mine projects as well as boundary location within the High Park Fire burned area. With the increased population and the demands for recreation, the ARP is experiencing dramatic increases in use which causes increasing problems of trespass, encroachment, and loss of access by the public. However, the boundary management program emphasis has shifted to support the hazardous fuels reduction program, and impacts caused by the mountain pine beetle epidemic. Boundary location work is now performed by a mix of service contracts, force account and through agreements with the Bureau of Land Management. In most cases, land adjustments are multi-year projects. Progress has been made toward Forest Plan Objectives though land adjustment cases can be dropped or frequently changed because of changing land values, indecision, delays in environmental analysis (NEPA), and the changing economic climate. With the decrease in budget for NFLM, there is no funding specifically set aside for Land Adjustments. If funds are earmarked for this program, it is to the detriment of other Lands program areas.

Easy to resolve encroachments, such as fences, are being removed in conjunction with fuels and survey projects. The larger, more complex encroachments continue to take longer to resolve and involve political environments that aren't conducive to resolution.

Case Backlog for SUPs, ROW Grants and Land Ownership Adjustments	Have the Forest and Grassland made progress toward improving customer services to reduce the number of backlogged cases for special-use permits, rights-of-way grants, and landownership adjustments? How has this been accomplished? (Land Uses & Ownership, Special Use Permits (SUPs), Right-of-way (ROW) Grants & Landownership Adjustments - Objective #2)

Although progress has been made to address existing backlog, applications for special uses and access easements continue to increase every year. Additionally, the Forest processes 15-30 permits for research and filming requests also in association with the wild-land fires. Target accomplishments and continued protection of the Forest resources are a testament to the experience and expertise within the Lands Program.

The flood in September created much unplanned work for the lands program. Some of this work included: new cases for access; temporary permits for utilities; permits for material for road construction and extensive work with the Colorado Department of Transportation and Boulder and Larimer Counties to reconstruct major highways and county roads and bridges. Also, because the City of Loveland's Idylwilde dam was destroyed discussion have begun with Loveland concerning surrendering their FERC license and rehabilitating the former reservoir.

Permit Review, Cost Recovery	Have the Forest and Grassland made progress toward working with potential permittees to insure that benefiting parties assume the costs of permit review and administration? How has this been accomplished? (Land Uses & Ownership, Permit Review - Goal #2)

Cost recovery was implemented nationally in FY 06 and is fully implemented. The ARP continues to collect approximately $5000 to $10,000 per year in categories 1-4 (smaller proposals) and $50,000-$80,000 in categories 5-6 (major projects). The Category 1-4 collections, however, reimburse program staff for only 30% of the true cost of NEPA analysis and processing, therefore these should not be reflected as part of anticipated budget adjustments. Categories 5 and 6 can be included in overall budget numbers, however those dollars are only applicable when the actual project is being processed, therefore the use is somewhat restricted.

Stakeholder and Public Involvement

Public Involvement	How and to what extent have the public and stakeholders been involved in assisting implementation, monitoring and evaluation of the Forest Plan?

In recreation, stakeholders have primarily been involved in the implementation of trail maintenance, noxious weed removal, and information and education work across the Forest. Many volunteer groups contact visitors, patrol wildernesses and summer/winter trails, restore watersheds, improve stream habitat, and record specific data for monitoring purposes.

All the Ranger Districts have environmental education programs including presentations to schools. In 2008 the Recreation Program manager worked with Fort Collins Natural Areas Program and Poudre School District representatives to apply for and secure a "More Kids in the Woods" grant to help improve the Poudre School District's 6th Grade Eco-Week program, which continued through FY2010. Information, education and interpretation programs continued in 2013 in key campgrounds, at Mount Evans, at the Monarch Lake Environmental Education Day Program, and at all visitor information services at each Ranger District.

Before any ground-disturbing project can be implemented, NEPA requires analysis of effects on our natural/human environment, and it also requires full involvement by the public during the analysis and decision process. The ARP has over 100 proposed projects that are in the analysis/decision process at any one time. The public is given all opportunities to get involved. The ARP's Schedule of Proposed Actions (SOPA) lists these proposed projects and provides a contact person for the project. Our publics get involved at that point or later as public notices, newspaper articles, or a direct mailing let them know about the project. This public involvement can include field trips, public meetings, comment periods, and various other methods. After the project has been approved and implemented, many of the Ranger Districts hold public field trips to review implementation of the project.

Implementing new or updated allotment management plans (AMPs) in order to meet or continue to move toward desired vegetative conditions, including plant composition and vegetation structure guidelines, are important components of the rangeland management program.

A national MOU exists between the Public Lands Council (PLC) and the Forest Service (an identical one with the BLM) for cooperative rangeland monitoring with grazing permittees. The number of grazing

permittees who are assisting in collection of allotment monitoring data is increasing each year. Cooperative Extension Service personnel from Colorado State University as well as Agricultural Research Service (ARS) personnel from the Central Plains Experimental Range are actively involved in conducting training and working with producers.

The Colorado Cattlemen's Association has been instrumental in urging their members to be involved in allotment monitoring efforts and in training and coordination efforts with Forest Service permittees. CCA completed a signed MOU with the Forest Service in 2011, and they have conducted a number of training sessions around the state on cooperative monitoring. In addition, the Crow Valley Livestock Cooperative (CVLC) and the Pawnee Cooperative Grazing Association (PCGA) on the Grassland have been heavily involved through their Boards of Directors in training their members and collecting monitoring data on the allotments they jointly administer with the Forest Service.

Emerging Issues	Have changes in agency management activities resulted in unforeseen issues that the ARNF and PNG need to address? How were needed changes determined and what recommendations or solutions did the public [or ARP personnel] offer?

RECREATION

Ongoing or Emerging Issues

- Illegal UTV (vehicles exceeding 50") use is increasing. These UTVs are using trails which are limited to vehicles 50" or less. This is causing resource damage.
- Renewed emphasis in inventory and data management (INFRA database) of Developed Recreation Sites, Trails, as well as real property inventories for all Recreation Facility assets has created a higher than expected workload and cost to the agency, both in terms of dollars and opportunity cost of not doing other necessary work. However the benefit is timely, accurate data is needed for better managing all forest recreation facilities and stewardship assets. Condition surveys and real property assessments continued through FY11 and FY12 ending in 98% completion for that 5-year cycle.
- Prior to December 8, 2004, the Recreation Fee Demo (RFD) program brought some positive effects to the public but it also created some negative issues. Since the Federal Lands Recreation Enhancement Act of 2004 (REA), a small but very vocal segment of the public has used the REA fee authority for protesting fees, government management authority over public lands, taxes, and general fairness issues. Starting in 2008, the Forest Service has been involved in a lawsuit over Forest Service implementation of REA at Mt. Evans. On June 26, 2012, the Forest Service and the Plaintiffs signed a settlement agreement to resolve all issues raised in the Plaintiffs' complaint. The Forest Service implemented changes throughout the 2012 operating season. During the 2013 operating season the forest continued to implement the terms of the settlement agreement.
- The Forest Service commitments made through Memorandum of Understanding (MOU) with groups like the Continental Divide Trail Alliance and the Colorado Fourteeners Initiative can establish partner expectations for funding, planning, and project implementation that the ARP may or may not be capable of upholding. Certain negotiation aspects are outside local control and we are faced with timing issues, funding issues and issues of other higher priority work which often conflict with partner expectations. Even at local Ranger Districts the issue of outside partner or user group expectations of Forest Service ability to respond to their needs and of other higher priority work is often misunderstood or not realized. Regular review of Forest and District work priorities and capability should help to focus workload and deflect unrealistic expectations by the

public even though the ARP's success in attracting and managing volunteers has been a successful component of the ARP Recreation Program since the Forest Plan implementation began at the end of 1997 and continuing to the present.

- Costs of providing safe drinking water that meets State standards and regulations are rising sharply. Microscopic Particulate Analysis (MPA) testing for all water systems is now on a 3- year cycle and costs between $1,500-$2,000 for each test. Some campgrounds and picnic areas do not collect enough revenue to offset these costs and must be covered by appropriated funding sources. Some campgrounds do not have the size or season length to justify the cost of continuing to provide safe drinking water at those sites. Taking the next step of decommissioning some drinking water systems at some low use sites is an important consideration for future management of these recreation facilities. In several cases, it is far cheaper and safer to identify a site as a dry, pack-in personal water needs site than to continue to bear the costs of routing water testing, pump and waterline replacements, chlorination, and run the risk of bad water potentially being served to the public. Cost benefit assessments should be an ongoing process for some questionable sites.
- Carrying capacity determinations for specified recreation areas that are undergoing planning processes are needed to help plan for existing and future human use, especially where there is demand for outfitter and guide services. On September 17, 2008, final directives were published for Outfitting and Guiding on National Forest System Lands. September 17, 2009 was the date that holders of temporary permits for Outfitter/Guide (O/G) services could request reclassification to transitional priority use. Assessment of need for certain O/G services, delineation of geographic areas into compartments, review of existing permitted use by compartment and assessment of carrying capacity in key compartment areas is work that continued throughout 2012 and 2013.
- Recreation use in the urban front country is increasing, as are the corresponding impacts and conflicts between users. Urban front country areas need to be assessed for their capacity to provide specified recreational experiences in certain areas and not to provide certain recreation experiences in others. This assessment should then lead to management changes on the ground in the future. This process was initiated in 2007 with the establishment of a Forest Niche statement and description as part of the Rec. Facility Assessment process. This process has been used in some recreation planning efforts but not consistently. This information needs to be updated and used for all future recreation planning work.
- Epidemic conditions of the mountain pine beetle (MPB) have created very dire conditions in many of our developed site campgrounds and picnic areas. In 2008, the ARP Recreation Program Manager was part of a Region 2 Team to assess impacts of the MPB on developed recreation sites, dispersed and wilderness areas, trails, and special use sites like Ski Areas and Recreation Residences on the Arapaho-Roosevelt National Forests, White River National Forest, and Pike-San Isabel National Forests. The team made recommendations for consistent approach to hazard tree definition, identification and process for mitigation of such widespread impacts in these specified recreation areas. In FY09 the ARP estimated miles of roads and trails and acres of recreation developed sites affected by hazard trees killed by the Mountain Pine Beetle, and the costs associated with mitigating those hazards. Those estimates were used to fund and implement bark beetle mitigation of hazard trees in developed recreation sites and along key roads and trails throughout the FY10 to FY13 period.
- The September flooding damaged or destroyed many recreation developed and dispersed sites, providing an unexpected opportunity to assess whether or not to rebuild or repair those sites.

Recommendations

- The "300 foot rule" stated on the Forest Map has been incorporated into the 2005 Travel Rule, however, the ARP needs to do site-specific decisions in areas of concentrated dispersed use.

- Some travel management planning and decision-making occurred as the ARP Districts created their Motorized Vehicle Use Maps.
- Additional Wilderness management elements need to be attained as well as additional Wilderness areas managed to standard.
- Special-use permits need to be administered to minimum standards, and more need to be administered fully.
- INFRA databases for Wilderness, Developed Recreation and Trails should be fully populated and operating at a functional level. INFRA for General Forest Areas will most likely be in some phase of implementation.
- More "field presence" is needed to educate the public and enforce regulations. The Forest Service "field presence" personnel should have training to be certified as Forest Protection Officers.
- The James Peak Wilderness (JPW) issues and obligations need to be met. The JPW needs a management plan to focus efforts and establish specific standards and guidelines.
- Consider converting some small campgrounds and day-use areas to dry-sites (no developed water system) as circumstances allow and continue to follow through on ARP Recreation Facility Analysis recommendations for decommissioning of certain developed recreation sites.
- Plan to address carrying capacity as part of management planning and/or environmental analysis for recreation areas undergoing some kind of existing planning process or potential planning based on need or demand.
- Assess ARP urban front country areas for their capacity to provide specified recreational experiences and determine what experiences are better provided in other locations on the ARP or on other lands.
- Increase protection measures for existing stands of healthy trees in our developed sites and begin vegetation management planning for eventual stand vegetation replacement and in some cases, catastrophic vegetation loss replacement.
- Assess whether or not flood damage should be repaired at some recreation facilities or dispersed sites.

TRAVEL MANAGEMENT

Ongoing or Emerging Issues

- There is concern about meeting Forest Plan objectives due to higher planning costs and having to "re-close" previously closed roads and trails. The increasing cost of managing and supporting the hazardous fuels treatment program has diverted funding from on-the-ground transportation system improvement, maintenance and decommissioning.
- At times new travel routes are being established through "social" use and illegal travel activities. In some instances, users are constructing trails and then coming to the forest and asking that the forest add the new trails to our "system" and demanding that we maintain the trails. Many times, these requests are the first we know of the "new" facilities. Some liability issues could be associated with these new, illegal facilities.
- Upkeep of transportation system inventory information, including needed, planned and accomplished annual and deferred maintenance will require more time and effort.
- The Forest Service published the Travel Rule in November, 2005. This rule directs that motorized use will be allowed only on designated forest system roads or trails on all National Forest lands as shown on published Motor Vehicle Use Maps for each Ranger District. Keeping the Access and Travel Management (ATM) database up-to-date is an ongoing challenge and updating Road Management Objectives (RMO's) and Trail Management Objectives (TMO's) is also important

but often of lesser priority because of other more impending needed workload, especially at the Ranger Districts.
- Continually updating the MVUM as conditions and travel management decisions are made will be required, but funding and a decreasing workforce may not always support the effort.
- Updating INFRA database will continue to be a challenge.
- The mountain pine beetle epidemic and related lodgepole pine mortality is creating an extensive need for hazard tree removal along key roads and trails on all Ranger Districts.
- Updating National Forest System road signing to meet retro-reflectivity requirements has been challenging to meet due to limited funding.

Recommendations

- Continue to make the implementation of the Travel Rule an ARP priority.
- Continue to follow the Travel Analysis Process (TAP) for travel management recommendations.
- Continue to improve relationships with volunteer groups and aggressively seek out challenge cost share projects.
- Continue to sign roads and trails for the types of uses allowed.
- Minimize illegal use through expanded law enforcement and field presence. There is a need for aggressive law enforcement and follow up on the districts where the transportation system is being actively signed and managed and where MVUM's have been published.
- Work with the public and adjacent landowners to inform them of Arapaho and Roosevelt National Forests and Pawnee National Grassland travel regulations.
- Establish a method to more adequately plan and track accomplishments and utilization of funds allocated for "ongoing" activities.
- The Forest and Grassland should make a commitment to transportation planning and facilitate its completion. On an ARP-wide basis, prioritize the areas where the ARP will address travel management in association with landscape analysis or on broad project areas. Incorporate travel management planning and the TAP process with other area or project level assessments and analyses for best efficiency. Proceed with planning and implementation based on those priorities.
- Evaluate Human Uses Objective #6 (Forest Plan, p. 8) for applicability to present National Policy and the transportation needs of the Forest and Grassland. National policy leans more toward decommissioning unauthorized roads than converting them to authorized roads. Decisions should be based on sound TAP procedures.
- Evaluate Human Use Objective #9 (Forest Plan, p. 8) for applicability to present National Policy and the transportation needs of the Forest and Grassland. National Policy leans more toward reconstructing and maintaining our existing transportation system. Most of the areas of the Forest and Grassland in need of open road access already have that access. Decisions should be based on sound TAP procedures.
- Revise Forest Plan Objective output measures to match those of Road Accomplishment Report and INFRA so reportable objective accomplishments and annual accomplishments are measuring the same thing. This will also make monitoring and evaluation reporting easier.

WILDFIRE/HAZARDOUS FUELS TREATMENT

Ongoing and Emerging Issues

- There are many management issues related to the interweaving of public land and private property. This public land/private property intermixing is commonly known as the Wildland-

Urban Interface (WUI). One of the most public issues is the danger of wildfires. Since 2000, five of the largest wildfires for recorded ARP wildfire history have occurred. The sizes of these fires can be related to the severe drought at that time and the increased build-up of dead, woody material (hazardous fuels) in the forested ecosystems. The high loss of personal property is due to the increasing inroads into these forested environments by private landowners and mountain communities.

- The mountain pine beetle epidemic and related lodgepole pine mortality has created an extensive need for hazardous fuels treatment on all mountain Ranger Districts. Forest Supervisor's hazardous fuels treatment emphasis items include 1) scale of treatments (landscape versus defensible space), 2) watershed versus site specific, 3) transmission line and infrastructure protection, and roadside hazard tree removal

Recommendations

- Congress has recognized this problem through increased funding and the ARP's hazardous fuels treatment program has expanded with the objective of reducing hazardous fuels; in the WUI, around domestic water supplies and watersheds, and to protect threatened and endangered wildlife/plant species. The ARP should continue all efforts to work with our neighbors (private property owners and public agencies) towards achieving reductions of hazardous fuels. Emphasis on the National Forest Plan and the Front Range Fuels Treatment Partnership should continue.
- Assess increasing amounts of hazardous fuels and emphasis items while developing plans to address fuels and vegetation management needs.

SCENERY RESOURCE

Emerging Issues

- There were no unforeseen issues which emerged as a result of project implementation or changes in agency management during FY 2013. Issues pertinent to scenery resource management were foreseen and are related to ongoing agency management (e.g. vegetation management treatments targeting the mountain pine beetle infestation). Looking toward the next fiscal year, issues may arise as the Forest contemplates utilizing tools such as higher intensity and larger scale prescribed burning in mountain pine beetle-killed areas of the forest and as hazard tree removal projects planned for roads, trails, developed recreation sites, and power lines are implemented.

WATERSHED

Ongoing and Emerging Issues

- Meeting the needs for environmental flows in streams in the ARNF continues to be an issue. Increased interest in additional water development in response to the expanding urban and intermix populations and the potential for drought, have the potential to push this issue to the forefront. There are currently three proposals to increase storage and/or diversion capacity for existing projects under environmental review that are likely to affect the Forest; Seaman Reservoir expansion, Windy Gap Firming, and Gross Reservoir expansion.
- Off-highway vehicle and mountain bike use continue to increase. Unauthorized travel is a continuing source of watershed damage that continues to grow. Recreational use of designated

roads and trails increases the controversy of travel management and can limit our ability to decommission and obliterate roads and trails for resource protection and recovery.
- The anticipated continuing increase in land area treated to reduce fuels and to treat mountain pine beetle killed trees could lead to cumulative watershed impacts. The cumulative impact could increase as treated areas are retreated in the future to maintain acceptable fuels profiles.
- Flood restoration: streamcourse restoration and road reconstruction have a potential to have significant effects

Recommendations

- Continue to seek innovative methods of providing for municipal and agricultural water supply while fulfilling our responsibility to provide for streamflow for ARP uses and purposes.
- Explore ways to provide for desirable OHV recreational experiences while protecting resources. Determine whether developed OHV trail systems such as the Stillwater OHV area have applicability elsewhere on the ARP.
- Focus implementation on identifying and completing sufficient watershed improvement within priority watersheds so that improvement in watershed condition can be demonstrated.
- Work with CDOT and Boulder and Larimer Counties to ensure minimal impacts during flood restoration work.

SOILS

Ongoing or Emerging Issues

- Monitoring indicated that design criteria and relevant/recommended watershed conservation practices are generally applied in vegetation management activity areas. Implementation and effectiveness of design criteria/mitigation measures is frequently discussed with vegtation management project planners and implementers .
- Accumulation of high soil burn severity effects and noxious weed establishment is an ongoing issue on some activity areas, particularly where burn-pile density is high.
- Although generally not the case, monitoring indicates operation of heavy equipment involving multiple passes and turns off designated skid trails has created excessive soil disturbance in some activity areas.
- Chipping and masticating activities are creating heavy fuel loadings in some activity areas with unknown long-term ecological consequences
- Progression of the Mountain Pine Beetle pandemic, accumulation of dead and/or downed fuels and associated risk of high soil burn severity impacts if/when future wildfire occur
- Expansion of impacts from use of vehicles off designated travel routes affects soil and water resources in many areas
- Lack of maintenance of roads and trails affects soil and water resources in many areas

Recommendations

- Continue to use the Soil Disturbance Classification Protocol, first applied on the ARP in 2008, for soil quality monitoring
- Continue to work with Recreation Specialists, Marking Crews, Silviculturists, Engineers, and CORs on soil/water resource issues and solutions
- Continue to partner with Rocky Mountain Research Station (RMRS) and local universities to develop and implement research projects relevant to ongoing and emerging issues
- Continue to implement watershed improvement projects to improve the condition of soil and water resources in heavily impacted areas

AIR

Ongoing or Emerging Issues

- High concentrations of ozone that continue to occur frequently in the summer months could potentially be affecting human well-being and ecosystems on the Arapaho and Roosevelt National Forests and Pawnee National Grassland. Currently, parts of the Front Range Air-shed exceed public health standards for ozone.
- Nitrogen deposition due to off-forest, anthropogenic emissions might be detrimentally affecting higher elevation ecosystems.
- Increased smoke emissions from prescribed and wildfire could affect sensitive receptors and Class 1 areas on and off the ARP.
- Increased emissions from oil and gas development both on and off the ARP could affect human health, particularly sensitive receptors. Air quality related values could also be affected.

Recommendations

- Continue lake, snow and ozone sampling programs
- Continue to work with the Forest Service ARP, Regional, Washington Office and RMRS Personnel to identify and quantify air quality issues and impacts on the ARP (particularly Wilderness Areas, Class I Airsheds, and human health)
- Continue to work with other agencies such as Rocky Mountain National Park and Agricultural Research Service to identify air quality issues and impacts on the ARP
- Continue to implement prescribed fire in compliance with permits issued by the State of Colorado
- Continue to participate in the Prevention of Significant Deterioration (PSD) Program to lower risk of air quality impacts from off forest sources within Front Range, Granby and Medicine Bow Air-sheds
- Update the ARP Air Quality Monitoring Plan to achieve objectives of "Air Element 3" in the 10 Year Wilderness Challenge

WILDLIFE/FISHERIES/RARE PLANTS/INVASIVE SPECIES

Ongoing Issues: Wildlife And Habitats.

- Terrestrial Habitat Improvement target assignments continue to increase as NFWF funding decreases or remains flat
- Maintaining old growth and mature trees is critical given the losses from MPB. The on-going loss of old growth lodgepole pine and potentially low elevation old growth ponderosa pine and Douglas fir has let to a need to re-evaluate existing and future old growth designations and management.
- In 2009, a habitat verification project was initiated to field verify old growth conditions across the forest. The effort will conclude in 2015 and provide information to guide old growth management and to refine vegetation mapping.
- Updating of forest vegetation layers and re-mapping of lynx habitat is a high priority. Updated mapping criteria and changes in habitat have occurred and require that vegetation layers be updated
- Rapid development of energy resources on the PNG warrant continued/expanded monitoring, habitat improvement, and appropriate management of MIS and sensitive species

- Lack of law enforcement and PNG staff prohibits effective raptor/eagle closures of the Pawnee Buttes
- Bighorn sheep herds need to remain separated from domestic sheep and goats to prevent fatal disease outbreaks; separation applies to pack goats as well.
- Changes in snag densities and early successional stage habitats affect different wildlife and their habitats. Some wildlife species will be benefited while others will be negatively affected.
- The threat of White Nose Syndrome in bats and chytroid fungus in amphibians should motivate additional survey and habitat protection for these species.
- Potential federal listing of boreal toad warrants continued survey efforts and pro-active management

Recommendations:

- Re-evaluate old growth management and designations as new information becomes available
- Include vegetation layer updates and maintenance as a forest priority to facilitate GIS analysis
- Re-evaluate lynx habitat and mapping as conditions change
- To insure bighorn sheep herd health, develop forest-wide direction regarding use of goats as pack animals
- Continue and expand efforts to acquire occurrence data of MIS and sensitive species

Aquatic Nuisance Species Emerging Issue

- Although quagga mussel larvae were detected in Lake Granby on the Sulphur Ranger District, rigorous testing has not detected a single adult, juvenile, or larva in the past five years. These are non-native mussels that have spread throughout the country. These organisms have caused large-scale ecological and economic problems in lakes and rivers in the Midwest, the Southwest, and even in some portions of Colorado. Due to the level of recreational boating on this lake system and its waters run into both the South Platte and Colorado Rivers, risks of introducing quagga mussels remains quite high.

Aquatic Nuisance Species Recommendations

- We are committed to working cooperatively with the Colorado Division of Wildlife and other partners to limit the potential for spread of these aquatic nuisance species. A new challenge cost-share agreement was made in 2010 to assist CDOW in managing boat inspection and cleaning stations. Work continued on limiting the spread of these nuisance species in 2011, 2012 amd 2013.

Greenback Cutthroat Trout Genetics Emerging Issue

- Recent genetic studies published in 2007 and 2012 identified major issues with the scientific understanding of cutthroat trout genetics on the east slope and west slope of Colorado. These published findings strongly indicate that there are no currently existing populations of the aboriginal cutthroat trout on the east slope of the ARNF. While cutthroat populations still occur on the eastern slope of the ARNF, the genetic origins of these fish are from various areas of the Colorado River Basin.

Removal of Large Wood from Forest Streams and Rivers for Recreation Purposes Issue

(e.g., passage for rafting and kayaking and access for vehicles on roads located next to streams/rivers)

- Impacts productivity of streams for both vertebrate and invertebrate species

Noxious Weeds Ongoing or Emerging Issues

- Funding has been flat or has decreased in recent years for the Forest-wide noxious weed program, and outside funding sources are being increasingly relied upon. As a result, desired program targets are compromised. Additionally, inventory and treatment monitoring program components are minimal. Capacity for desired program accomplishments is expected to remain at decreased levels commensurate with reduced budget. Although heavily constrained in recent years, the Forest was able to exceed its annual targets in weed treatment by use of outside funds and collaboration by counties.

Fen Ongoing or Emerging Issues

- Fens, which are uncommon specialized wetland ecosystems often harboring rare plants, are being adversely impacted by unauthorized off-road vehicle use, or "mud bogging." Monitoring shows that one fen per year on the ARNF has been severely impacted by such use since 2003. Restoration of one fen has been attempted, but is difficult to achieve, and damage can take hundreds of years to heal. Monitoring of this fen shows that mitigation of a floating pier is at least preventing further damage. Currently, there is a lack of adequate protection or law enforcement measures to remaining sites across the ARNF. Resource damage to fens are expected to increase.

Use of Native Plant Materials Issue

- The ARP is committed to using all native plant materials in revegetation and restoration efforts. Recently, however, native seed availability on the open market is becoming increasingly contaminated with undesirable invasive species such as cheatgrass. The ARP is responding by having contractors and collaborators grow and harvest weed-free seed for Forest use. The Native Plan Materials program has experienced severe budget reduction the last three years, making it more difficult to secure weed-free seed. Seed in the market place is predicted to become more contaminated with non-native weedy species, and decreased plant materials funding will make it more difficult to grow weed-free seed for ARP use.

RANGELAND MANAGEMENT

Ongoing or Emerging Issues

- Dealing with the severe and extended drought of the last decade in Colorado, as well as much of the West, continues to occupy a substantial portion of available time for rangeland managers; this includes planning for coming out of drought periods to allow the land, water, and vegetation resources to recover. Drought strategies have been developed and continue to be implemented and monitored. Producers have been responsive in implementing voluntary reductions and restrictions to be flexible with annual changes in climatic patterns, the forage responses that result, and the need to properly manage rangelands affected by constantly changing conditions.
- The allotment planning schedule has been completed for all allotments on the Forest/Grassland within the established 1996-2010 timeframe. AMPs are prepared or revised as needed in order to implement the allotment planning decisions and to continue to meet or move toward desired vegetative conditions. Allotments are now beginning a ten-year schedule of determining if the NEPA for each of them remains current and sufficient.
- There will be extensive changes to rangeland vegetation, livestock grazing patterns, permittee management and practices, and allotments and allotment infrastructure as a result of the bark beetle infestations and resultant tree mortality and deadfall (this is specific to lodgepole pine stands at this point in time, but ponderosa pine and limber pine stands are now being attacked as well) on the Forest.

- The effects of the September flood will add to the workload of the range staff on the Districts as well as on the permittees.

Recommendations

- The situations will take many years to resolve. Flexibility, patience, and common sense will be required from all employees, IDT specialists, and Line Officers (also permittees and other interested parties).
- Seek out any and all avenues for communication, cooperation, and funding.
- Inform permittees that they need to ask – and receive – permission in advance for such issues as felling trees to maintain access routes or improvements.
- Issue free-use permits to ranchers – for firewood, POL, maybe even house logs.
- Allow the use of native materials whenever possible in fence reconstruction.
- There may be a need to revisit the national policy on not cooperating in the reconstruction of fences located on proclaimed national forest boundaries.
- There may be a need to develop a modified policy on permittee non-use.

LAW ENFORCEMENT/FIELD PRESENCE

Ongoing or Emerging Issues

- Funding allows one law enforcement officer for every 700,000 acres. On average each officer covers 850 incidents per year. Many more incidents are occurring that are going unrecorded and are not prosecuted due to lack of adequate coverage.
- In the past when out in the field, Forest Service personnel would greatly supplement the law enforcement staff by monitoring regulations, talking to the public, and reporting incidents. Due to a reduction in workforce, office requirements, and a lack of Forest Protection Officer training, this important monitoring is occurring at much reduced levels. For example there is limited ability to enforce travel management direction across the ARP due to the lack of field presence (seasonal and permanent employees).
- In an era of tight budgets and personnel downsizing, there is an increased dependence on volunteers to meet program needs. While these people do an excellent job, they lack the authority to enforce regulations.

Recommendations

- Minimize illegal use through expanded law enforcement and field presence. There is a need for follow-up on the districts where the transportation system is being actively signed. The "closed unless designated open: regulation should be actively enforced.
- When out in the field Forest Service personnel need to reestablish their law enforcement responsibilities attitude such as talking to the public and recording incidents. Currently the fire organization has the person-power and can be an excellent resource for field presence by enforcing forest regulations as well as fire regulations. Taking Forest Protection Officer training and carrying an incident book in their gear can accomplish this.
- There needs to be adequate funding and personnel to accomplish the lands related part of conflict free boundaries with regards to trespass, encroachment, small tracts, rights-of-way, and land exchange.

LANDS

Ongoing or Emerging Issues

- Funding issues and scheduling of specialists' time continue to be a factor in meeting Forest Plan objectives for the Lands Program.
- Cost recovery is the assessment and collection of administrative fees from applicants and holders to pay for administrative costs incurred by the Forest Service in processing an application. The fees collected are retained at the Forest level. The regulations are in place and the ARP did continue to implement cost recovery in FY 2013.
- With the increased population, the demands for recreation and quality of life, the Forests and Grassland are experiencing increasing problems of trespass, encroachment, and loss of access by the public. Increased requests for access to private land and use of NFS land are also associated with the demands.

Recommendations

- Surveying and location of boundary lines is only a part of the solution, there needs to be adequate funding and personnel to accomplish the lands related part of conflict free boundaries with regards to trespass, encroachment, small tracts, rights-of-way and land exchange.
- Emphasize processing Alaska National Interest Lands Conservation (ANILCA) access cases to avoid litigation.
- Discrepancies between Forest Plan objectives and outputs in S-Tables need to be resolved.
- Review the proposed outputs in Forest Plan objectives to ensure that the proposed outputs recognize the complexity of land ownership on the Front Range, particularly on Boulder, Canyon Lakes, and Clear Creek Ranger Districts.
- Continue to emphasize elimination of the special use and Small Tracts Act (STA) backlogs. The Forest did not meet the elimination of backlog by 2007 as stated in Table 1.7 (*Forest Plan*, p. 9).
- Gain Forest Supervisor approval to return those STA applications that do not meet the intent of the law.
- Use the 36 CFR 251 regulations and cost recovery to eliminate inappropriate proposals.
- Use the Lands Program Priorities to continue to establish a program of work for the district and supervisor offices.

MINERALS

Ongoing or Emerging Issues

- The ARP accomplished its goal to certify two mineral administrators.
- Seismic testing for oil and gas has been ongoing for the last few years and it is expected that there will be a great expansion of oil and gas drilling on the Pawnee Natinal Grasslands, therefore the ARP began an environmental analysis to analyze all lands on the PNG that are not currently leased. This EIS may determine that a Forest Plan amendment is needed to address the greater expansion of oil and gas leasing expected on the Grassland.

HERITAGE RESOURCES

Ongoing or Emerging Issues:

- The 2013 floods have created a challenge to complete Section 106 compliance projects to repair infrastructure, and other resources damaged by the floods in a timely manner, to ensure that these repairs are completed in a timely fashion. To meet this challenge the Forest negotiated a Programmatic Agreement that facilitates the consultation for projects that are proposed in response to disaster situations.
- The requirements for post implementation report writing, monitoring and samples surveys outside the area of potential effect (burn units, timber harvest units, and hazardous tree removal units) are all new requirements that the Forest needs to complete in order to meet the stipulations in the Programmatic Agreement.
- Safety of employees and contractors in dead and dying tree stands, has required the modification of the "Spruce Bark Beetle and Mountain Pine Beetle Management, Hazardous Fuel Reduction and Hazard Tree Reduction" Programmatic Agreement (PA). The modifications to the PA will require additional work (i.e. project budgets, project hazard analyses) prior to field inventories. The PA will allow the Forest to complete heritage projects in lieu of survey in areas determined to be too hazardous for field inventories.
- The rapidly expanding oil and gas exploration due to the discovery of the Niobrara Shale deposits and new hydraulic fracturing extraction technology with their requests for authorizations on the Pawnee National Grassland is increasing rapidly. These requests for authorizations to explore for and extract leasable minerals often have project boundaries that extend off of National Forest System Lands. Direct, indirect and cumulative effects to cultural resources can be expected from the issuance of these authorizations. The Forest is working with the CSHPO and the Pike and San Isabelle National Forests to negotiate a programmatic agreement to streamline Section 106 of the NHPA compliance for these projects.

Recommendations

- Compliance work is currently being accomplished on most projects in a timely and legal fashion. The heritage staff is fully integrated into the NEPA process on large projects, and on smaller projects should be involved early in the planning stages.
- Continue to seek out new and effective ways (e. g., Challenge Cost Share Agreements, university partnerships, volunteers, grants) to fund heritage resource program activities in an era of flat and declining budgets.
- Provide adequate project funding to do full implementation monitoring.
- Continue to enter data into the GIS Heritage Layers and INFRA Heritage Database.

INFRASTRUCTURE

Ongoing or Emerging Issues

- Safety along travelways due to the mountain pine beetle epidemic will continue to intensify along all National Forest System Roads (NFSR) given the increasing mortality.
- Road maintenance funding is declining. The limited funding in 2013 was directed to road support for the bark beetle mitigations and the Long Term Stewardship contract. Regular maintenance activities for non-bark beetle / hazardous fuels will continue to be funded at minimal levels which will continue to add to the deferred maintenance needs for NFSR.

- Emphasis on watershed analysis and the impacts associated with travelways will lead to an increase in need for more road decommissioning. The Forest has been decommissioning authorized and unauthorized routes as funding allows.
- The flood has destroyed or damaged infrastructure on portions of the Canyon Lakes and Boulder Ranger District. Much of this will take years to replace and some may never be restored to pre-flood condition.

Recommendations

- The Forest has developed priority lists for the most critical National Forest System Routes based on regional established criteria in late 2010. The ranking criteria include, but not limited to, such factors as tree mortality, maintenance level, and recreational use access. This road priority list will serve as a basis for current and future planning for the hazard tree removal along NFSR. The Forest will continue to update the road priority list as updated information becomes available.
- Continue hazard tree signage along those NFSR routes during hazard tree removal treatments to protect the public.
- Continue to prioritize road funding in support of hazard tree removal, bark beetle mitigation, and Long Term Stewardship contract.
- Decommissioning of authorized routes and unauthorized routes should continue with a desired increase as planning is completed and funding is available.
- Continue to work with Federal, State, and local governments/agencies to restore infrastructure damaged by the flood.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

Ongoing or Emerging Issues

- Occasionally, mitigation measures and/or design criteria agreed to and documented in NEPA decisions are not always carried through to contracts and implementation. When these are discovered, actions are taken to mitigate the effects and to avoid future occurrences.

Recommendations

- Continue communication with IDT members, marking crew, and contract administrator. Utilize a cross-walk system to insure all mitigation measures and/or design criteria are included during implementation.
- Perform field reviews during and after implementation

LIST OF PREPARERS

Carl Chambers	Forest Hydrologist/Program Manager
Eric Schroder	Forest Soil/Air Scientist/Program Manager
Mark Martin	Acting Ecosystem Support Group Leader
Mike Spisak	Timber Program Manager
Lynne Deibel	Forest Wildlife Biologist/Program Manager
Karen Roth	Forest Environmental Coordinator
Matt Fairchild	Forest Fisheries Biologist/Program Manager
Trez Skillern	Abandoned Mines Specialist/Program Manager
Erich Roeber	Forest Landscape Architect/Program Manager and Acting Forest Recreation Program Manager
Sue Struthers	Archaeologist/Heritage Resources Program Manager
Patti Turecek	Acting Lands/Minerals Program Manager
David Tomaschow	Forest Land Surveyor/Program Manager
Tom Bates	Acting Forest Botanist/Program Manager
Michele White	Civil Engineer

LIST OF ACRONYMS

ADA: Americans with Disabilities Act
ANILCA: Alaska National Interest Lands Conservation
ANRA: Arapaho National Recreation Area
ARNF: Arapaho and Roosevelt National Forests
ARP: Arapaho and Roosevelt National Forests and Pawnee National Grassland
ATV: All terrain vehicle
BFES: Budget Formulation and Execution System
BLM: Bureau of Land Management
BRD: Boulder Ranger District
CCRD: Clear Creek Ranger District
CDOT: Colorado Department of Transportation
CDOW: Colorado Division of Wildlife
CFR: Code of Federal Regulations
CLG: Certified Local Government
CLRD: Canyon Lakes Ranger District
CNHP: Colorado Natural Heritage Program
CO: Colorado
DMS: Days Managed to Standard
EA: Environmental Assessment
EIS: Environmental Impact Statement
FP: Forest Plan
FPO: Forest Protection Officer
GFA: General Forest Area
GIS: Geographic Information System
IDT: Interdisciplinary Team
KV: Knutson-Vandenberg
MAR: Management Attainment Report
MIS: Management Indicator Species
MOU: Memorandum of Understanding
NEPA: National Environmental Policy Act
NFMA: National Forest Management Act
NFP: National Fire Plan
NGO: Non-Governmental Organization
NRIS: National Resource Information System
OHV: Off-highway Vehicle
PNG: Pawnee National Grassland
RAP: Roads Analysis Process
RFD: Recreation Fee Demo
RMBO: Rocky Mountain Bird Observatory
SASEM: Simple Approach to Smoke Estimation Model
SIA: Special Interest Area
SOPA: Schedule of Proposed Actions
STA: Small Tracts Act
TES: Threatened, Endangered, Sensitive Wildlife or Plant Species
VIS: Visitor Information Services