7 Economic Impacts

7.1 The Carson National Forest Regional Economy

Carson National Forest (NF) generates economic activity from a variety of uses, each of which affects the surrounding region in a number of ways. Carson NF lies mainly within Taos and Rio Arriba Counties, with just a small portion in Mora and Colfax Counties. The principal settlements in the region include Española in Rio Arriba County and Taos in Taos County, though Española is somewhat south of the forest itself. Colfax County contains Springer and Raton, both a significant distance east of the Carson NF. Mora County contains Mora, which is much closer but very small. Further, the economies of Taos and Rio Arriba Counties are much larger than those of Colfax and Mora Counties, and account for 77 percent of the employment in the four county area. Since Carson NF land lies mainly in Taos and Rio Arriba Counties, and the economies of these two counties are significantly larger than Colfax and Mora Counties, the economic contribution of the NF is generally associated with activities in these two counties.

Table 7.1 shows employment and per capita income for the Carson NF region for the year 2003. As a whole, per capita income in the Carson NF assessment area is $21,045, about two-thirds the statewide average but well above average for most rural areas in New Mexico[116]. Rio Arriba and Taos Counties' economies are among the largest in New Mexico, with pockets of relative wealth scattered among mainly rural, low and middle income communities. Colfax County, though smaller than Taos and Rio Arriba Counties, has the highest per capita income of the region, at $22,496. Mora County, by contrast, is the poorest county in the region and among the poorer counties in the state, with a per capita income of only $15,867.

Table 7.1 Total Employment and Income by County, 2003

	Employment (#)	Percent of Region	Per Capita Income ($)	Relative to US
Colfax County	8,469	19%	22,496	0.71
Mora County	2,016	4%	15,867	0.50
Rio Arriba County	17,535	39%	20,720	0.66
Taos County	17,267	38%	21,694	0.69
Carson Region	45,287	100%	21,045	0.67
New Mexico	1,015,365	--	24,892	0.79
United States	167,488,500	--	31,484	1.00

Source: Bureau of Economic Analysis, 2003

Table 7.2 shows the industrial composition of employment in each county for the years 1980, 1990 and 2000. In general and as in most parts of the U.S. and New Mexico, changes in the industrial structure of the region involve a relative increase of employment in the service sector and retail sectors and, during the 1990s, in the construction sector. All counties saw a decline in shares of farm employment. The principal distinction among the counties was regard to the role of the public sector.

Mora County, with the smallest economy in the region, is distinguished among the four counties as the most rural, with a far higher share of farm employment. Yet, the changes in the composition of employment in the county were also most pronounced among the four counties. In particular, services increased 15 percent during the 1980-2000 period, from only 8 percent to 23

[116] New Mexico's statewide average is pushed up significantly by relatively high incomes in urban areas, particularly in Albuquerque, Santa Fe and Los Alamos. Few rural counties have incomes above $17,500 per person.

percent of total employment. Conversely, the farm sector and government employment, which together accounted for 69 percent of total employment in 1980, declined sharply in relative shares, to 52 percent in 2000.

Colfax County‘s industrial structure was fairly stable from 1980 to 2000. There were small increases in the relative size of services[117], retail and government, particularly in state government, and corresponding decreases in farming, manufacturing, and wholesale trade. Growth of the construction sector during the period between 1990-2000 reflects residential development in Angel Fire and Eagle’s Nest. The closing of coal mines in Colfax County is not reflected in the 2003 data, but likely had adverse effect on the counties’ economic activity.

Employment in Rio Arriba County nearly doubled between 1980 and 2000, driven mainly by the very rapid expansion of the service sector and retail trade sectors. Other sectors grew more slowly, except for the small wholesale trade sector which saw a small decline. In terms of employment composition, as in Mora County, farm and government employment fell sharply in Rio Arriba County.

Taos County followed a similar pattern, albeit from a starting point that was less farm based and already more characteristic of tourism. Services grew very rapidly, along with the retail and construction sectors. By contrast, farm and government sectors continued to lose employment shares. To a lesser extent, employment shares in manufacturing, mining, and transportation and utilities also fell.

Table 7.2 Employment in Primary Sectors by County in 1980, 1990, and 2000

Mora	1980	1990	2000	1980%	1990%	2000%	Growth 1980-1990	Growth 1990-2000
TOTAL	1,061	1,120	1,767	100%	100%	100%	6%	58%
Farm Employment	**407**	**429**	**515**	**38%**	**38%**	**29%**	**5%**	**20%**
Non-farm Employment	**654**	**691**	**1,252**	**62%**	**62%**	**71%**	**6%**	**81%**
Private Employment	**324**	**380**	**853**	**31%**	**34%**	**48%**	**17%**	**124%**
Agricultural services, forestry, and fishing	(D)	35	76	(D)	3%	(D)	(D)	117%
Mining	(L)	(D)	(L)	(L)	(D)	(L)	(D)	(D)
Construction	37	43	93	3%	4%	(D)	16%	116%
Manufacturing	(D)	36	(D)	(D)	3%	(D)	(D)	(D)
Transportation and utilities	46	63	102	4%	6%	6%	37%	62%
Wholesale trade	12	(L)	(D)	1%	(L)	(D)	(D)	(D)
Retail trade	116	68	112	11%	6%	6%	-41%	65%
Services	86	120	405	8%	11%	23%	40%	238%
Government and gov't enterprises	**330**	**311**	**399**	**31%**	**28%**	**23%**	**-6%**	**28%**
Federal, civilian	41	39	46	4%	3%	3%	-5%	18%
Military	19	22	17	2%	2%	1%	16%	-23%
State and local	270	250	336	25%	22%	19%	-7%	34%
State government	68	56	58	6%	5%	3%	-18%	4%
Local government	202	194	278	19%	17%	16%	-4%	43%

[117] Data for 2000 have been supressed by the BEA to avoid disclosing information specific to individual businesses. (D) in the tables indicates ‘Disclosure’.

Colfax	1980	1990	2000	1980%	1990%	2000%	Growth 1980-1990	Growth 1990-2000
TOTAL	6,674	6,534	8,465	100%	100%	100%	-2%	30%
Farm Employment	**502**	**434**	**499**	**8%**	**7%**	**6%**	**-14%**	**15%**
Non-farm Employment	**6,172**	**6,100**	**7,966**	**92%**	**93%**	**94%**	**-1%**	**31%**
Private Employment	**5,058**	**4,807**	**6,376**	**76%**	**74%**	**75%**	**-5%**	**33%**
Agricultural services, forestry, and fishing	52	82	(D)	1%	1%	(D)	58%	(D)
Mining	551	208	(D)	8%	3%	(D)	-62%	(D)
Construction	382	313	477	6%	5%	6%	-18%	52%
Manufacturing	404	362	409	6%	6%	5%	-10%	13%
Transportation and utilities	254	287	263	4%	4%	3%	13%	-8%
Wholesale trade	130	94	95	2%	1%	1%	-28%	1%
Retail trade	1160	1184	1,654	17%	18%	20%	2%	40%
Services	2,125	2,277	(D)	32%	35%	(D)	7%	(D)
Government and gov't enterprises	**1,114**	**1,293**	**1,590**	**17%**	**20%**	**19%**	**16%**	**23%**
Federal, civilian	55	58	64	1%	1%	1%	5%	10%
Military	63	65	47	1%	1%	1%	3%	-28%
State and local	996	1170	1,479	15%	18%	17%	17%	26%
State government	408	544	736	6%	8%	9%	33%	35%
Local government	588	626	743	9%	10%	9%	6%	19%

Rio Arriba	1980	1990	2000	1980%	1990%	2000%	Growth 1980-1990	Growth 1990-2000
TOTAL	8,387	11,088	15,537	100%	100%	100%	32%	40%
Farm Employment	**874**	**986**	**1,059**	**10%**	**9%**	**7%**	**13%**	**7%**
Non-farm Employment	**7,513**	**10,102**	**14,478**	**90%**	**91%**	**93%**	**34%**	**43%**
Private Employment	**4,252**	**6,526**	**9,821**	**51%**	**59%**	**63%**	**53%**	**50%**
Agricultural services, forestry, and fishing	116	114	192	1%	1%	1%	-2%	68%
Mining	48	68	78	1%	1%	1%	42%	15%
Construction	464	677	953	6%	6%	6%	46%	41%
Manufacturing	256	507	648	3%	5%	4%	98%	28%
Transportation and utilities	346	518	528	4%	5%	3%	50%	2%
Wholesale trade	117	199	209	1%	2%	1%	70%	5%
Retail trade	1,240	1,563	2,484	15%	14%	16%	26%	59%
Services	1,377	2,532	4,153	16%	23%	27%	84%	64%
Government and gov't enterprises	**3,261**	**3,576**	**4,657**	**39%**	**32%**	**30%**	**10%**	**30%**
Federal, civilian	350	406	416	4%	4%	3%	16%	2%
Military	135	175	136	2%	2%	1%	30%	-22%
State and local	2,776	2,995	4,105	33%	27%	26%	8%	37%
State government	860	678	850	10%	6%	5%	-21%	25%
Local government	1,916	2,317	3,255	23%	21%	21%	21%	40%

Taos	1980	1990	2000	1980%	1990%	2000%	Growth 1980-1990	Growth 1990-2000
TOTAL	8,351	11,434	15,918	100%	100%	100%	37%	39%
Farm Employment	**432**	**472**	**494**	**5%**	**4%**	**3%**	**9%**	**5%**
Non-farm Employment	**7,919**	**10,962**	**15,424**	**95%**	**96%**	**97%**	**38%**	**41%**
Private Employment	**6,355**	**9,402**	**13,173**	**76%**	**82%**	**83%**	**48%**	**40%**
Agricultural services, forestry, and fishing	46	124	188	1%	1%	1%	170%	52%
Mining	737	362	271	9%	3%	2%	-51%	-25%
Construction	519	780	1,330	6%	7%	8%	50%	71%
Manufacturing	440	594	410	5%	5%	3%	35%	-31%
Transportation and utilities	207	333	363	2%	3%	2%	61%	9%
Wholesale trade	86	218	226	1%	2%	1%	153%	4%
Retail trade	1,563	2,379	3,310	19%	21%	21%	52%	39%
Services	2,400	4,005	5,944	29%	35%	37%	67%	48%
Government and gov't enterprises	**1,564**	**1,560**	**2,251**	**19%**	**14%**	**14%**	**0%**	**44%**
Federal, civilian	295	318	312	4%	3%	2%	8%	-2%
Military	91	118	99	1%	1%	1%	30%	-16%
State and local	1,178	1,124	1,840	14%	10%	12%	-5%	64%
State government	206	147	365	2%	1%	2%	-29%	148%
Local government	972	977	1,475	12%	9%	9%	1%	51%

Notes: (D) Non-disclosure of confidential information, but included in totals, (L) Less than 10 jobs, and (N) Data not available for this year.
Source: Bureau of Economic Analysis

To complete the picture, **Table 7.3** shows private employment by percent of occupation for each county and the region as a whole. The occupation data supports the data from previous tables, showing a large percent of jobs in management, sales and services occupations, with construction representing a substantial portion as well. Differences in the total employment between **Table 7.2** and **Table 7.3** are due principally to the inclusion of self-employment in the BEA data.

Table 7.3 Private Employment by Occupation by County, 2000

	Colfax County	Mora County	Rio Arriba County	Taos County	Carson Region
Management and Professional	30%	28%	30%	32%	24%
Professional and related	16%	19%	19%	20%	15%
Education, training, and library	7%	8%	7%	6%	5%
Healthcare practitioners and technical	4%	2%	2%	3%	2%
Service	19%	22%	21%	22%	17%
Sales and office	22%	18%	25%	25%	19%
Farming, fishing, and forestry	3%	6%	2%	1%	1%
Construction, extraction, and maintenance	14%	17%	13%	13%	10%
Production and transportation	12%	8%	9%	7%	7%
Total Private Employment	**6,045**	**1,686**	**16,563**	**13,556**	**48,673**

Source: US Census 2000. Calculations by UNM-BBER.

Finally, **Table 7.4** shows the unemployment rates for each of the counties and the region as a whole from 1995 to 2004. The most striking trend in these data is the much higher unemployment rates of Mora County when compared with the other three counties in the region. While unemployment in all counties in the region is consistently higher than the New Mexico average, Colfax, Rio Arriba, and Taos County are only slightly higher, while unemployment in Mora County is significantly higher.

Table 7.4 Average Annual Unemployment Rate by County 1995-2004

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Colfax County	12.8	9.3	6.7	6.1	5.5	5.2	5	6.2	5.7	5.4
Mora County	24.1	21.4	20.4	18.6	14.8	10.5	9.6	10.6	11.1	11.7
Rio Arriba County	14	12.9	10.4	7.7	6.6	5.7	6	6.5	6.4	6.2
Taos County	15.8	14.5	13	9	10.2	6.3	6.4	6.4	7	6.4
Carson Region	**16.7**	**14.5**	**12.6**	**10.4**	**9.3**	**6.9**	**6.8**	**7.4**	**7.6**	**7.4**
NM TOTAL	**6.4**	**7.4**	**7.1**	**6.3**	**6**	**5.2**	**4.8**	**5.2**	**5.8**	**5.9**

Source: Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS).

The data presented in this section show a region that is substantially oriented toward retail and service industries, though Mora County is an exception to this. As such, the most important aspect of Carson NF use is the revenues generated by recreational visitors. This is not to neglect the primary industrial uses of the forest land, but the main economic concerns of the region with respect to the forest are likely oriented toward maintaining or extending recreational use. This is particularly true for ski visitors, who make up a substantial portion of recreation and, at least in Taos County, are a very important source of revenue during the otherwise non-tourist winter season. One additional aspect discussed in Chapter 5: Uses and Users is that a number of region residents make use of forest food and fuel products to supplement low incomes and provide heat throughout the winter.

7.2 Methodology and Organization of Impact Analysis

In estimating the contribution of the Carson NF to the regional economy, we consider both the operations of the FS in the region as well as the various uses of forest related products. The IMPLAN software is used to determine total economic value of each activity and the operations of the FS. IMPLAN uses county-level input-output (I-O) data to determine the extent to which these activities contribute to the local economy. In doing so, IMPLAN distinguishes between direct, indirect, and induced impacts, where:

> **Direct impacts** include the economic value generated by the activity itself, such as the value of cattle grazed on Carson NF land.
>
> **Indirect impacts** include the value generated by purchases to support that activity and the corresponding purchases to support those activities, in perpetuity. For example, indirect impacts would include the value of fencing purchased for ranching, the value of steel purchased to make the fencing, and so on.
>
> **Induced impacts** capture the value of economic activity generated from spending by employees that produce the direct and indirect goods. The ranch employees will purchase food, pay for electricity, etc…all of which generates additional value from the purchases, as well as sparking new rounds of indirect and induced value.

The IMPLAN region is the same region used throughout this report, consisting of the four counties containing or bordering any of the Carson NF districts. These counties include: Colfax, Mora, Rio Arriba, and Taos County. This single region, containing the above four counties, makes up the area considered as "local," and the results shown from IMPLAN are for this region of four counties as a whole.

As discussed in *Chapter 5: Uses and Users*, the principal economic value generating activities related to the forest land itself include ranching, and recreation and wildlife visits. Oil and gas production also generates high economic value in the region, but the impacts of this activity on the local region are limited. For each activity, we estimate the direct impact, and use IMPLAN to estimate the total economic value by direct, indirect, and induced impacts. The FS is unique in that it does not directly produce a good or service, and so there is no easy measure of its direct economic value. Instead, we look at FS expenditures and salaries and wages to estimate the first round of indirect and induced impacts of the FS, and the corresponding economic activity generated by each. The indirect activity is captured by FS expenditures, and the induced activity is captured by the disposable income of FS employees. Of course, in examining the contribution of the FS, we also consider direct employment by the FS.

This analysis draws on a wide range of data and information sources. Data on the structure of the local economies and characteristics of the workforce comes largely from the 2000 Decennial Census Summary File 3 and US Department of Labor Local Area Unemployment Statistics (LAUS). The FS provided data on the specific activities that occurred on the forest. Specific sources included INFRA (grazing); NVUM (recreation and wildlife); Region 3 Office (procurement, wages & salaries). The US Department of Agriculture National Agricultural Statistics Service (NASS) was the source of data on agricultural land values and cattle stocking rates. Oil and gas production values are from the ONGARD database provided by the Oil Conservation Division at the New Mexico Energy, Minerals and Natural Resources Department

and the New Mexico Taxation and Revenue Department, while oil and gas prices are from GO-TECH at New Mexico Institute of Mining and Technology.

7.3 Direct Impact of Carson National Forest on the Regional Economy

The principal economic activities on the Carson NF include ranching, timber harvests, recreation and wildlife visits, and the operation activities of the FS. As mentioned above, oil and gas extraction generates a large volume of output, the benefits of which for the most part do not accrue to the local region (this is discussed further below). Some of these activities are quite large economically, though their benefit to the local region can vary substantially. Additionally, there is considerable economic activity in terms of guided trips, including hunting tours, whitewater rafting, horseback riding vacations, and other luxury recreational activities that are either not captured in the recreational data used here, or are likely to be substantially underrepresented. In such cases we attempt to address major contributions individually.

To maintain consistency, data for 2004 was used wherever possible. Where 2004 data is not available, or more recent data is available, we used that instead, making sure to adjust values back to 2004. Data for FS salaries and wages is from fiscal year 2005 adjusted to 2004 dollars. Data on grazing land is from 2002. Visitor estimations are derived from the 2003 NVUM survey. All other data is from 2004 unless noted.

The FS provided data on cattle grazing from the INFRA database in terms of Animal Unit Months (AUMs), and we estimated the number of employees needed per AUM. Together these values provide an estimated number of employees needed to produce the 2002 AUMs. Using the IMPLAN value for output per employee, we derive a ranching output for grazing on the Carson NF. This is the direct value of ranching on Carson NF land. Similarly, timber harvesting data was derived from the TIMS database provided by the FS. We use 2004 timber prices to derive the total value of timber cut, which measures the direct value of timber harvested in Carson NF in 2004.

Oil and gas production values come from the Oil Conservation Division of the New Mexico Energy, Minerals and Natural Resources Department. The data list production for 2004 and the geographic location of each well, so we were able to match well locations to find those wells located on Carson NF land. Using 2004 oil and gas prices gives us a market value for the production on forest land. Rock and mineral extraction data was provided by the FS and the market value of the production was calculated using an average of prices from relevant surveyed New Mexico businesses.

For recreation and wildlife visitors, we use estimates of visitors from NVUM data provided by the FS, broken out into several categories based on locality (local or non-local), the type of trip (day, overnight on the forest, overnight off the forest), and the reason for the visit (recreation or wildlife). The FS provided an average expenditure profile for each type of visitor, which estimates the direct economic value of visitor spending to the local economy. It is likely that there are several benefits here that are not captured. Many of additional benefits of a forest in terms of recreation are not economic transactions and hence cannot be easily measured. In addition to these unmeasured benefits, there is some degree of outfitter and guide activity that is likely not captured. The outfitter businesses include guided hunting trips, whitewater rafting on the Carson

River, and other specialized uses by private companies. The impacts from this segment are small, but can be important, since the customers are almost exclusively non-local and the trips can be quite expensive.

Finally, the FS provided data on salaries and wages for Carson NF employees and other direct expenditures. Since the direct economic value associated with the FS personnel expenditures is unknown, we use expenditures to capture the first round indirect impacts and salaries and wages to capture the first round induced impacts. In both cases, the associated later round indirect and induced impacts are calculated by the IMPLAN model.

Table 7.5 is a summary of the output, employment and labor incomes directly associated with Carson NF-based activities[118]. These are the direct inputs to the IMPLAN model. As the table shows, there is the equivalent of 112 full-time annual jobs in the ranching industry and a similar 15 jobs in harvesting lumber from the Carson NF. In the case of FS operations, employment is the number of employees directly employed by the FS in the Carson NF, and labor income is the wages paid to those employees. Output for the FS is actually FS spending on operations, and does not include the costs of fighting wildfires, which is broken out separately. Finally, while mineral and rock extraction data is available, its market value is quite low, estimated at less than $15,000 in 2004. There is negligible minerals extraction on Carson NF, so that is not considered as an impact here. For various reasons, the impacts of wildfire suppression, oil and gas extraction, and ski visitors activities on the local economy are likely overestimated by IMPLAN. These factors are considered in greater detail below, in section 7.4.

Table 7.5 Direct Inputs of the Carson NF, 2004 (000s of 2004 $, except employment)

	Output	Employment	Labor Income
Ranching[1]	**5,149**	**112**	**232**
Timber Harvesting	**2,232**	**15**	**274**
Oil & Gas	**163,122**	**2**	**204**
Visitors & Recreation	**159,835**	**	**
Skiers	**57,131**	**	**
Forest Service Operations[2]	**8,884**	**223**	**7,601**
Wildfire Suppression[2]	**687**	**	**805**

[1] For Ranching, we use proprietor income from 2001, since proprietor income for 2002 is negative

[2] Forest service operations output is actually the first round of indirect spending, while labor income is disposable employee income.

**It makes no sense to associate employment or labor income with visitor spending in the input phase, since there are no jobs until after the money has been spent. Since the impact is originating as consumer spending, there are only indirect/induced impacts, no direct effects except the spending.

Table 7.6 presents total employment and output for industrial sectors that may be affected by Carson NF. A comparison of the IMPLAN generated FS impact values with these data offers a measure of the dependence of local industries on Carson NF resources – to the extent that IMPLAN values comprise a large share of the overall level of activity for a sector, that sector can

[118] Labor income is the sum of employee compensation and proprietor income.

be said to depend on FS resources. In the case of ranching and timber harvesting, Carson NF contributes about $7.4 million in output and 127 jobs combined, equivalent to only about 7 percent of the total for the assessment area. FS operations and employment account for 223 jobs and $8.9 million in output, equivalent to a substantially larger share of federal non-military activities in the assessment area. Most significantly, recreation and tourism related activities associated with the Carson NF contribute about $160 million, accounting for a substantial share of such activities in the assessment area.

Table 7.6 Employment and Output for Select Industries by County, 2002

	Output	Employment
Carson NF Region	**2,495,898**	**35,575**
Cattle Ranching, Farming	**79,068**	**1,720**
Logging	**21,052**	**140**
Oil & Gas	**18,750**	**52**
Support Activities for Oil & Gas	**8,394**	**82**
Drilling Oil & Gas Wells	**2,792**	**26**
Gold, Silver and Other Metals Mining	**18,753**	**98**
Coal Mining	**50,035**	**180**
Sand, Stone and Gravel Quarrying	**942**	**11**
Hotels, Motels and Casinos	**52,003**	**1,076**
Food and Beverage Stores	**28,587**	**619**
Food Services and Drinking Places	**102,834**	**2793**
Federal Non-Military	**53,476**	**728**

Source: IMPLAN 2002 data, calculations by UNM-BBER. Percents do not sum to 100 because not all industries are included.

7.4 Economic Impacts and Multipliers

The direct activities associated with the Carson NF create indirect and induced impacts as businesses and workers make expenditures and purchases that cycle through the local economy. The sum of the direct, indirect, and induced expenditures constitutes the total impact of the Carson NF on the economies of the neighboring communities. These impacts, in terms of employment, income and total output, are summarized in **Table 7.7**. Economic multipliers, equal to the total impact divided by the direct impact, indicate the effectiveness of the industries to retain and recycle revenues locally, generating growth in the local economy. Economic multipliers are shown in **Table 7.8**.

In total, the Carson NF contributes directly and indirectly an estimated $414 million in output, 4,003 jobs and $89.3 million in income to the economies of the four counties included in this study. This is equivalent to nearly 9 percent of the 45,287[119] jobs in these areas in 2003. Visitor spending is by far the largest source of activity, contributing a total of 83 percent of the employment labor income impacts. The FS is the second largest contributor in terms of both employment and income. Oil and gas extraction contribute substantially to revenue generation,

[119] 2003 employment for the region as a whole from Table 7.1.

but have a marginal employment impact. Ranching is very much the opposite – it generates some employment and income but very little revenues. The impacts of timber harvesting are negligible in all regards.

Table 7.7 Direct, Indirect and Induced Impacts of the Carson NF, 2004

TOTAL OUTPUT IMPACTS (000s of 2002 $)

	Direct	Indirect	Induced	Total
Ranching	5,628	4,129	483	10,240
Timber Harvesting	2,234	990	199	3,423
Oil & Gas Extraction	163,086	19,069	806	182,961
Visitors & Recreation	147,525	26,610	25,230	199,365
Skiers	53,865	8,821	11,399	74,085
Forest Service Operations	--	10,836	6,312	17,148
Wildfire Suppression	--	394	478	871
Total	318,473	62,028	33,508	414,008

TOTAL EMPLOYMENT IMPACTS (#)

	Direct	Indirect	Induced	Total
Ranching	112	67	6	185
Timber Harvesting	15	9	3	27
Oil & Gas Extraction	1	52	10	63
Visitors & Recreation	2,695	303	333	3,331
Skiers	912	90	138	1,140
Forest Service Operations	223	85	82	390
Wildfire Suppression		3	4	7
Total	3,046	519	438	4,003

TOTAL LABOR INCOME IMPACTS (000s of 2002 $)

	Direct	Indirect	Induced	Total
Ranching	253	924	155	1,332
Timber Harvesting	247	187	58	492
Oil & Gas Extraction	108	1,959	253	2,320
Visitors & Recreation	55,169	7,627	8,072	70,868
Skiers	25,882	2,601	3,647	32,130
Forest Service Operations	8,308	3,179	1,983	13,470
Wildfire Suppression	440	127	218	785
Total	64,525	14,003	10,739	89,267

The comparatively large contribution of recreational and visitor spending is a direct result of the number of people visiting the Carson NF. More than one million individuals visited the Carson NF in 2003, which indicates a substantial level of use. We can see in **Table 7.7** that a large portion of the economic activity is due to skiing visitors.

In fiscal year 2004, FS spending on wildfire suppression in the Carson NF was about $1.74 million – $1.16 million in compensation and $687 thousand in spending. As shown in **Table 7.7**, wildfire related spending by the FS generated 14 jobs, $1.7 million in additional output, and $1.5 million in additional labor income. There are of course also the firefighter's jobs themselves, which are not included as they are largely not local.

Estimates for skiing, oil and gas, and fire suppression carry a high degree of uncertainty and rest on series of very specific assumptions. In the case of ski visitors, the difficulty is that it is not known the degree to which the impact of ski visitors is already captured in the visitors and recreation impacts shown in **Table 7.7**. Taos County includes Taos Ski Valley, Red River Ski Area, and Sipapu Resort, each of which generates a substantial number of visitors each winter. If one believes that the FS NVUM data accurately captures these visitors, than the impact of ski visitors should be considered a subset of the visitor and recreation impacts, and should not be added to the total impacts shown earlier. On the other hand, it is useful to see the impact of ski visitors as a separate category because downhill skier spending patterns are likely different from other recreational forest users, and because they may not be accurately counted in the NVUM data. This is especially true in the Carson NF region because skiing is such a large industry. In **Table 7.7** skiers are not included in the totals, as they are assumed to be included in the Visitors & Recreation data.

In the case of oil and gas, the region benefits from state and local governmental distributions in addition to the IMPLAN estimated impacts of extraction. Within Carson NF, oil and gas extraction occurs exclusively in the Jicarilla Ranger District, which lies in the Chama Municipality in Rio Arriba County. Using 2005 *ad velorum* tax rates, the tax benefit to Rio Arriba is estimated to be about $1.4 million (2004 $) – about $1 million to the County and $379 thousand to the Chama School District. In addition, in 2005 FS oil and gas-related disbursements amounted to almost $400,000 to the region's County governments. In total, these funds equal almost $2 million dollars in additional tax revenues to Rio Arriba County. Further, there are indirect and induced impacts that occur as the county governments spend these revenues. Finally, state taxes generate about $11.5 million in revenues from oil and gas extraction on Carson NF, though it is difficult estimate the share of this total that is returned by the State to the region through its expenditures. These public distributions are not included in **Table 7.7**.

For FS wildfire suppression spending, the pattern of expenditures by laborers is uncertain but has substantial implications. In this analysis, it is assumed that only half of the take home income of fire fighters is spent locally, as most work only temporarily in the area and their schedule entails the long periods of intensive work with little free time. With better estimates for the portion of income that is spent within the local region, it is a simple matter to share these impacts down to their appropriate amounts.

The economic multipliers listed in **Table 7.9** offer additional insights into the economic dynamics of the Carson NF. In particular, note the high labor income multipliers for ranching and wildfire suppression. In the case of ranching, this is due to the extremely low direct income generated per worker (only around $2,000) that is a result of very low proprietor income in the base year data. In the case of wildfire suppression, the high multiplier is caused by the large degree of indirect spending, which generates almost half of the total labor income impacts for that category, but which is not captured in estimates of direct labor income. The resulting multiplier is substantially higher simply because of the high expenditures of the FS when fighting wildfires. Many of the

other higher multipliers are an artifact of high output to employment ratios (in the case of oil and gas) or very low income to employment ratios (in the case of ranching and timber).

Table 7.8 Economic Multipliers for the Carson NF, 2004

	Output	Employment	Income
Ranching	1.82	1.60	5.26
Timber Harvesting	1.53	1.76	1.99
Oil & Gas	1.12	57.18	21.40
Visitors & Recreation	1.35	1.24	1.28
Skiers	1.38	1.25	1.24
Forest Service Operations	--	1.75	1.62
Wildfire Suppression	--	--	1.78

7.5 Challenges and Opportunities for Forest Management

Carson NF contributes substantially to the regional economy, accounting for nearly 9 percent of all employment in the four county assessment area. Visitor and recreational activities, including skiing, account for about 4 of 5 jobs and an equivalent share of labor income, and FS operations make up much of the remainder. Oil and gas extraction in Rio Arriba County generates revenues but little in the way in the way of employment and labor income. Despite their traditional significance, ranching and timber harvesting on the Carson NF make only a marginal contribution to the local economy.

Rio Arriba County contains almost 928,000 acres of the 1.58 million acres of the Carson NF. Carson NF land covers 25 percent of the entire county. With such a large piece of the NF land, Rio Arriba County captures majority of the economic contributions of the Carson NF, particularly among resource-based activities. Indeed, all active oil and gas wells in the Carson NF are located in Rio Arriba County, as well as a substantial volume of grazing and fuelwood harvesting.

Taos County contains almost 570,000 acres of Carson NF land, which covers 40 percent of the county's land area. With principal recreational assets located in the County, including Taos and Red River, Taos County captures substantial economic benefits for the NF. Additionally, the proximity of the NF and the amenities that it offers is attractive to developers and second home owners, generating additional activity not measured in this report.

Colfax and Mora Counties have only small slices of Carson NF land, and derive only marginal benefit from the use of forest land. Colfax County likely realizes some benefit from the proximity of the NF in developments in Angel Fire and Eagle's Nest, but this is very difficult to quantify. More direct activities, such as grazing and timber harvesting, are minimal in these Counties.

Oil & gas development has an uncertain economic impact, representing both opportunity and risk. The continuation of high prices are likely to heighten interest in exploration mainly in western Rio Arriba County and in the neighboring Jicarilla RD. Resource exploration and development typically generates the greatest number and the highest paying jobs, possibly to the benefit of the very low income communities on the Jicarilla Apache Reservation as well as communities in

central Rio Arriba County. Of course, the economic risk associated with oil & gas development is the volatility of economic cycles.

Apart from the specific areas where oil and gas exploration is possible, there is no reason to believe that the established trend away from resource-based activities such as grazing and timber harvesting and toward recreational uses will not continue.

Further, the assessment region will likely continue to attract second home buyers and retirees attracted by the beauty and amenities of the Carson NF. Economically, this portends continued growth of urban-based economic activities such as retail, service, hospitality, real estate and construction. These activities will continue to create jobs, though many will pay only low to moderate wages. Development will also require large investments in infrastructure, in many cases in areas that are difficult to access. The expansion of recreational uses and amenity-based development also will likely continue to drive up land prices, not only near already urbanized areas such as Taos, Red River, and Angel Fire, but increasingly in eastern and central Rio Arriba County. Tourism, recreational and amenity residential development are often characterized by highly volatile economic cycles – periods of rapid expansion followed by periods of declining investment, particularly in construction and real estate sectors. To be sure, volatility is not new to communities that have traditionally depended on resource development, whether in ranching, timber or mining. Yet, a significant difference is that rural economies in the region have been traditionally tied to the land and were able to balance multiple uses to soften the impacts of downswings in any given sector. Such opportunities are less available as the amenity-based economy continues to grow. High land values in the region discourage resource-based activities, particularly those that cross boundaries of public-private land. For example, grazing activities that provide supplemental income and food sources to rural communities typically combine the use of public land with private land to remain viable, but rising land values threaten these strategies.

Residential and amenity-based development along the boundaries of the NF also has implications for fire prevention. Residential development along forest boundaries both increases the likelihood of fire and the costs associated with fire fighting. These risks are especially high near many of the more remote areas of Carson NF, where fire fighting is especially problematic. The risks, of course, are not only economic, but there are concerns that are specifically economic in nature. Development increases concern for fire prevention, encouraging officials to limit access to the forest. This can have very substantial and adverse impacts on the regional economy, which increasingly depends on recreational opportunities that the NF offers.

Another risk facing the local economy concerns drought and global warming more generally. Dry conditions increase fire hazards and thus limit recreational opportunities on forest land. Further, dry winters mean less snow at the region's ski resorts, which are among the principal economic drivers in the area. The risk is not only short term and specific – that a dry winter will bring fewer skiers – but long term and general. Global warming will likely encourage resort developers to move north, where ski conditions are less at risk. As it is, Carson NF's ski areas are southern most along the Rockies and likely the first to be impacted by rising global temperatures.

Finally, the Carson NF plays a key role in terms of water generation and retention, which is vital to economic development in the arid southwest region. The factors that determine hydrological capacity of the forest are well beyond the scope of this study, but the economic implications cannot be overstated. Suffice to say, there are few economic activities discussed in this report or otherwise that could be sustained without the water that is so closely associated with Carson NF.

This is ultimately the most significant economic contribution and risk associated with forest management.

8 Community Relationships

This chapter describes the relationships between the Forest Service (FS) and other entities. The FS has an extensive history of working with local communities and other government agencies on various projects, ranging from economic development to forest health and sustainability. Partnerships are an indispensable method of managing operations and conducting business. They play a vital role in achieving goals that the FS might not meet alone. Data provided by the FS shows that over 200 community organizations and businesses partner with the FS on various projects throughout New Mexico. **Table 8.1** below lists the types of partners the FS worked with in 2005.

Table 8.1: Partnership Types for All New Mexico National Forests, 2005

Partner Type	Example	Number of Partnerships
Federal	US Fish and Wildlife	15
State Government	NM Youth Conservation Corps.	22
Local Government	Village of Questa	38
Tribal	Taos Pueblo	19
Non Governmental Org.	Mora County Livestock Assoc.	48
Private	Pecos Baldy Enterpises	36
Universities/ Public Schools	Western New Mexico University	28

Source: USDA Forest Service

The most common partners are non-governmental organizations, which are typically non profit organizations such as neighborhood associations and agricultural sustainability groups. State government agencies are also common partners, including Children, Youth and Families and the New Mexico State Land Office. These fruitful partnerships work to benefit both the forest land and the users.[5]

Several projects on the Carson NF have relied on collaborative relationships. In 1986, efforts on the Valle Vidal attempted to improve vegetative conditions for wintering elk through the use of prescribed burns. Fish barriers were created in all ranger districts (RDs) to prevent upstream migration of non-native fish such as brown and rainbow trout. This program has been around for about 20 years and over 106 projects have been funded at a minimum of $692,242.[6]

As another example, the NM Department of Game and Fish collaborates with the FS to help fund wildlife preservation projects on NM public lands through the New Mexico Habitat Stamp Program (HSP). Since its statewide implementation in 1991, all trappers, anglers and licensed hunters must buy a five dollar habitat stamp when purchasing a permit. The monies obtained from the stamp are used to fund wildlife and fishery habitat improvement projects.[7] As of 2003, the HSP fund has provided $398,862 for a range of projects; the Carson NF spent $293,379 in the form of project planning and implementation as well as conducting endangered species surveys and NEPA documentation.[8]

[5] USDA Forest Service, Southwestern Regional Collaboration Newsletter, February 2006.
[6] Ibid.
[7] USDA Forest Service, Carson National Forest, http://www.fs.fed.us/r3/carson/press_releases/03-12-03_partnerships.htm.
[8] Ibid.

Not everyone is interested in collaborating, however. The FS is often perceived as illegitimate and unproductive land managers.[9] The FS is sometimes perceived by residents as representatives of the government that "stole" their land over one hundred years ago. The experiences of local residents' forbearers have resulted in a sense of ownership among traditional users that proceeds and overrides the jurisdiction of the FS System. These traditional users rely on their own values and beliefs regarding access to and use of forest lands rather than following FS management plans and directives.[10] A study on the attitudes, values, and beliefs towards the FS illustrates that this issue still remains a barrier to relations between FS and traditional users.

8.1 Grants and Agreements

The FS provided a list of 35 grants issued to various entities since 1999.[11] The data show that the total grants and agreements amount for the same time period is $5,105,307. Of this total amount, the FS contributed $3,386,415 in cash and in-kind contributions. The range of partner organizations is broad, including environmental advocacy groups, utility companies and citizen involvement organizations. Some of the larger amounts are with agencies such as Kit Carson Rural Electrical Cooperative ($491,155), Taos Canyon Neighborhood Association ($449,608), and the Forest Guild ($386,208). The full list provided by the FS can be found on **Table A.6** in the appendix.

8.2 Collaborative Forest Rehabilitation Program

The Collaborative Forest Rehabilitation Program (CFRP) is one of the most significant ways the forest has been teaming up with communities. The Community Forest Restoration Act of 2000 (Title VI, Public Law 106-393) established a cooperative forest restoration program in New Mexico. The program provides cost-share grants to stakeholders for forest restoration projects on public land. Projects are designed through a collaborative process and must address specific issues, such as wildfire threat reduction, ecosystem restoration, preservation of old and large trees, and increased utilization of small diameter wood products. The Act authorizes up to $5 million annually. State, local and tribal governments, educational institutions, landowners, conservation organizations and other interested public and private entities are all eligible to apply for funds.

In New Mexico, about 13 projects were funded between 2001 and 2005; at least three were in the Carson NF. An example of a funded CFRP project, Ensenada Forest Health Restoration Project, is managed by Alfonso Chacon and Sons, a private company in Ojo Caliente. According to the FS, the project proposes to implement a 260 acre restoration project in the Ensenada area of the Vallecitos Federal Sustained Yield Unit.[12] The goals of the project are to restore ecosystem functions, re-establish natural fire regimens, and improve stand structure and species

[9] Raish, C. (2000). Environmentalism, the Forest Service, and the Hispano Communities of Northern New Mexico. Society & Natural Resources, 13: 489-508.

[10] Russell, J. and Adams-Russell, P. (2005). Attitudes, Values and Beliefs Toward National Forest System Lands: The Carson National Forest. USDA Forest Service.

[11] A list of G&A Incoming and Outgoing Funds was provided to BBER. BBER is unable to know if this list is exhaustive, but it appears to be the best data available.

[12] USDA Forest Service, Collaborative Forest Restoration Program, 2001-2005 Project Summaries and Contact Information.

composition. Additionally, the project aims to restore meadows by relocating unnecessary roads and removing encroaching conifers. Other benefits of the project are the establishment of collaborative relationships among community groups, the creation of jobs, and the provision of public outreach and education. Other partners in the project include the FS, Forest Guardians, Forest Guild, Mesa Vista Public Schools, Ojo Caliente Mineral Springs, and Forest Guild Youth Conservation Corps to name a few.[13]

Research examining attitudes and beliefs toward the Carson NF found that many people are satisfied with the CFRP as it is a successful way to mesh ecological values with local economic benefits.[14]

8.3 Volunteers

According to data collected from the USAD FS, the Carson NF benefited from the work of at least 228 volunteers between 2003 and 2005. **Table 8.2** outlines the age and gender composition of the Carson NF volunteers. Seventy eight percent of all the Carson NF volunteers were over 55 years of age, implying older people are more likely to have the time, willingness and interest to donate their services to the NF. However, the data does not include the volunteer support provided by Philmont Boy Scout Ranch, which provides forest volunteer opportunities to Boy Scouts from all over the country.[15]

The total number of volunteers is significantly higher in 2005 than in 2004. Also in 2004, the proportion of older volunteers was much lower, 15 percent versus 78 percent in 2005.

Table 8.2: Age and Gender of The Carson NF Volunteers, 2003-2005[16]

	2005				2004				2003			
	< 18	18-54	55+	TOTAL	< 18	18-54	55+	TOTAL	< 18	18-54	55+	TOTAL
Male	0	29	99	128	1	26	8	35	0	110	95	205
Female	0	20	80	100	1	16	0	17	0	61	7	68
Total	0	49	179	228	2	42	8	52	0	171	102	273

Volunteers comprise a major labor source for the FS, allowing the agency to take on more projects than it ever could without such support. Volunteers perform a long list of tasks, including maintaining recreation sites and trails, litter pick up and wildlife restoration. In the Carson NF, the most common volunteer activities involve wildlife, fish and rare plants. Volunteers provided more than $45,000 worth of labor on related tasks. The relationships between volunteers and the FS not only benefit the NF, but the volunteers themselves are provided opportunities learn about maintaining and sustaining forest health.

[13] USDA Forest Service CFRP Website, http://www.fs.fed.us/r3/spf/cfrp/index.shtml.
[14] Russell, J. and Adams-Russell, P. (2005). Attitudes, Values and Beliefs Toward National Forest System Lands: The Carson National Forest. USDA Forest Service.
[15] The data provided to BBER had no record of volunteers under the age of 18.
[16] Data does not include volunteers from the Philmont Boy Scout Ranch.

In 2003, the Albuquerque Wildlife Federation celebrated 20 years of project work on the Valle Vidal. The group has worked on constructing numerous fences, planting and fencing woody riparian vegetation and improving wetland and watershed conditions. Trout Unlimited and New Mexico Trout have worked on the Carson NF constructing willow enclosures, angler access structures, in addition to gathering and assembling fish data and several other projects.[17]

The Philmont Scout Ranch is located in Cimarron, New Mexico, about 45 miles west of Taos. The center has served as the only national volunteer training center for the Boy Scouts of America since 1950. Each year, more than 6,000 Scouts and family members visit the center for training.[18] A 2003 press release noted that approximately 1,200 Boy Scout volunteers visit the Questa RD every year to work on resource management, snag recruitment and watershed improvement projects.[19]

Not including the work provided by the Boy Scouts, the FS estimates the appraised value of 1,610 volunteer hours at just under $20,000 in 2005, as shown in Table 8.3. In comparison, the Cibola NF estimated the value of volunteers to be over $400,000 and the Gila NF estimated $289,000 for the same year. The data accounts for the "skill-level" of volunteers, adjusting appraised value to the Government Pay Grade scale. The "person years" column illustrates how many years worth of work was subsidized by the efforts of volunteers. Over the past three years, the FS has received the most benefit from volunteer efforts related to wildlife and recreation related activities.

Table 8.3: Value of Volunteers on The Carson NF

	2005			2004			2003		
Resource Category	Accum. Hours	Appraised Value (Dollars)**	Person Years*	Accum. Hours	Appraised Value (Dollars)**	Person Years*	Accum. Hours	Appraised Value (Dollars)**	Person Years*
Recreation	36%	$3,954	0.32	86%	$6,805	0.29	59%	$43,747	2.33
Heritage Program	0%	$0	0.00	0%	$0	0.00	11%	$12,563	0.43
Wildlife, Fish & Rare Plants	64%	$45,406	0.57	8%	$1,359	0.03	20%	$16,966	0.78
Range Management	0%	$0	0.00	0%	$0	0.00	1%	$0	0.04
Forest Management	0%	$0	0.00	0%	$0	0.00	0%	$480	0.01
Watershed & Air Management	0%	$0	0.00	6%	$1,144	0.02	9%	$6,694	0.34
Protection	0%	$0	0.00	0%	$0	0.00	0%	$0	0.00
Research	0%	$0	0.00	0%	$0	0.00	0%	$0	0.00
Business & Finance	0%	$0	0.00	0%	$0	0.00	0%	$0	0.00
Facilities Construction (Off-Center)	0%	$0	0.00	0%	$0	0.00	0%	$0	0.00
Facilities Construction (On-Center)	0%	$0	0.00	0%	$0	0.00	0%	$0	0.00
Other Facilities	0%	$0	0.00	0%	$0	0.00	0%	$0	0.00
Other	0%	$0	0.00	0%	$0	0.00	0%	$0	0.00
TOTALS	100%	$49,360	0.89	100%	9,308	0.34	100%	$80,450	3.93

Source: USDA National Forest Service 'Human Resources' Data.

* Accum. Hours/1800 Hours (Expressed in years)

** Accum. Hours*Estimated Government Pay Grade

Focus groups with the Carson NF users revealed a perception among local residents that the NF needs to more effectively organize and work with volunteers in adjacent communities. Participants expressed their willingness to contribute their assistance or time to perceived

[17] USDA Forest Service, Southwestern Regional Collaboration Newsletter, February 2006

[18] Philmont Scout Ranch Official Website, http://www.scouting.org/philmont/.

[19] USDA Forest Service, Carson National Forest, http://www.fs.fed.us/r3/carson/press_releases/03-12-03_partnerships.htm.

problems such as trail maintenance, signage issues and education. They also perceive the Agency needs to improve its receptiveness to these concerns and work more effectively with volunteers.[20]

8.4 Challenges and Opportunities for Forest Management

The Carson NF obtains much needed support from local communities in the form of volunteers and collaborative relationships. This support allows the forest to facilitate innovative projects aimed at improving forest health and reducing threats, such as fires and non-native species. The Carson NF has well established mechanisms in place to solicit and manage collaborative relationships, which is a substantial benefit.

Local communities have the potential to provide a healthy supply of volunteers for the forest, especially with the Philmont Boys Ranch nearby. However, recruiting volunteers may be difficult because northern New Mexico is a sparsely populated region.

The FS has opportunities to improve the already well-developed community relationships. There is documented interested among locals to volunteer at the forest. Having more volunteers on forest land benefits not only the forest but also the volunteers themselves. Volunteers can receive personal benefits by working in the forest, such as learning about forest health, wildlife conservation, and the value of forest maintenance. By actively recruiting young volunteers from local communities, it offers the chance to grow their enthusiasm about the forest and transferring forest-related knowledge and wisdom to the next generation.

Another opportunity to improve community relationships is to engage local communities in decision-making processes that are meaningful to them. This may be especially valuable in areas where families' livelihood and culture are directly tied to the land. In many cases, traditional users and long-term residents may be reluctant to work with the FS because they may perceive their attachment and "land ethic" to be beyond the bureaucratic entanglements of the FS. The FS, in this case, must convince skeptics that it shares their concerns about the land and honors its cultural significance before the agency will be accepted as legitimate land managers.

As mentioned in a previous section, providing opportunities for locals to share their collective knowledge about the forest and its uses sends a clear and welcoming message. Native American tribes and long-time ranchers hold a traditional wisdom about the land and its health, a potentially valuable resource for forest management. As people who have lived with the land and have depended on it for their livelihood, they feel they can tell when forest health is being compromised and can help predict possible outcomes of forest planning activities.

Developing community relationships is not without risks. Relationships between the Forest Service, as an agency, and local communities are often strained when it comes to decision making and land management issues. The FS serves as an arbiter of conflicts, occupying a precarious but familiar position. Tribes sometimes view the FS as both an advocate and also a threat, especially when it comes to protecting special areas. Special interests (wildlife conservationists, environmental interests, development advocates, etc) influence FS decisions that may result in perceived hardships for the local landowners. For instance, tree clearing efforts may raise the ire

[20] Russell, J. and Adams-Russell, P. (2005). Attitudes, Values and Beliefs Toward National Forest System Lands: The Carson National Forest. USDA Forest Service.

of wildlife conservationists, but it provides added safety to local residences. This mismatch of interests can create tension between groups, applying more pressure on the FS.

It is impossible for the FS to address all needs for all interests. However, the Carson NF maintains positive working relationships with local communities through CFRP grants and other arrangements.

9 Principal Findings, Challenges And Opportunities

9.1 Economic Impacts of the Carson NF

The Carson NF directly and indirectly accounts for an estimated $414 million in output, $89 million in labor and 4,000 jobs, equal to about 9 percent of employment in the four county assessment area. Visitor and recreational activities, including skiing, account for about 4 of 5 jobs and an equivalent share of labor income; FS operations make up much of the remainder. Oil and gas extraction in Rio Arriba County generates revenues but little in the way in the way of employment and labor income. Despite their traditional significance, ranching and timber harvesting on the Carson NF make only a marginal contribution to the local economy. As it does not occur on Forest land, this study does not measure the role of the Forest in creating markets for residential development, including second homebuyers and amenity migrants, but there is every reason to believe that this may account for one of the most significant impacts of the Forest on the regional economy.

In all likelihood, the trends established over the past few decades will continue and even accelerate during the foreseeable future. The share of national income received by the top tiers of income earners has increased significantly over the past two decades, creating a pool of funds available for leisure spending and second home purchase. Further, the retirement of the 'baby boomers' will be reaching its apex over the next two decades, broadening the market for amenity rich residential development. The areas surrounding Carson NF, particularly near Questa and Camino Real RDs, are attractive locations for these populations and activities. On the flip side, economic strategies traditionally employed in the area, typically combining ranching, *acequia* agriculture, wood collection and other communal land uses, appear to be less viable in the context of rising land values and declining prices for primary commodities. Consequently, many of these traditional users are party to the transformation of land use patterns, as ranches and agricultural lands are sold for residential and second home development.

9.2 Socioeconomic Change and Conflicting Demands for Forest Management

The economic trends described above have significant implications for the social and cultural dynamics of the assessment region. Historically, the region has been occupied by populations, whose economic strategies and cultural identities have been closely tied to the land, including Native American peoples and Hispano land grant communities. For decades, these groups have felt marginalized by FS resource management policies which were seen locally to be associated with outside and better organized interests in resource extraction industries (e.g. Vallecitos Federal Sustained Yield Unit, Jicarilla oil and gas exploration). Although the interest in resource extraction in northern New Mexico has faded with the globalization of resource industries, traditional groups now face new pressures. The in-migration of a new population of retirees and amenity migrants, the maturation of outdoor recreational industries, and the growth of the environmental movement in the region place demands on the FS to enact conservation policies that again are seen by traditional Forest users as marginalizing their position in favor of outside and better organized interests[21].

[21] Wilmsen, Carl. (2001). "Sustained yield recast: the politics of sustainability in Vallecitos, New Mexico", *Society and Natural Resources*, 14: 193-207.

The potential for conflict between traditional interests and the growing population of retirees, second homebuyers, tourists and recreational users is further exacerbated by the structural characteristics of emerging economic development model. Typically, economic development driven by land development tourism and recreation tend to produce employment that is either short-term (in construction) or low-paying (in hospitality). Thus, traditional users find not only that rising land values and public regulation crowd out traditional uses such as grazing and wood harvesting, but that emerging uses provide few opportunities to earn incomes needed to remain in the area.

As a principal land manager, the FS frequently finds itself at the center of these conflicts. To be effective in mitigating conflict, it must be seen as a fair and legitimate arbiter, which means not only balancing the interests of the various groups but also national (increasingly environmental) mandates with local (increasingly economic) needs. One possible strategy – frequently referenced but not always successful – is establish sustainable development initiatives that involve both traditional and newly emerging communities. This builds upon a common interest – within traditional communities to continue to have access to Forest resources and to see the propagation of established forest management practices, and within newer arrivals to be rooted in a rich and diverse cultural landscape.

9.3 Land Development and Ecological Management

Nationally, the FS faces the challenge of managing the ecological risks associated with land development along Forest boundaries, and this too is the case in northern New Mexico. In the case of Carson NF, fire is the primary hazard. As a result of a long period of drought and decades of fire suppression, much of the Carson NF faces the risk of “uncharacteristic” or catastrophic wildfire. Land development along the Wildland-Urban interface exacerbates the risks associated with such wildfire, both as a potential contributing cause of fire and as life and property that is priority for firefighters. Another ecological hazard associated with land development along the Wildland-Urban interface is species management. New development has both the potential to introduce invasive plant and animal species, and to attract wild species such as bear into domesticated environments.

Fragmented patterns of landownership and use further complicate these risks. Of the 1.587 million acres within the boundaries of the Carson NF, about 105,000 acres (or nearly seven percent) are privately owned. Far from consolidated, privately owned land is widely distributed in relatively small parcels, creating a fragmented or ‘checkerboard’ pattern of land ownership in various parts of the Forest. Further, the many areas of the Carson NF tend to be relatively more accessible than those of other NFs in New Mexico. In the Carson NF, only 57,000 acres, or less than 4 percent of all forest land is designated as Inventoried Roadless Areas (IRAs). As a whole, more than 12 percent of the five National Forests in New Mexico are designated as IRAs.

As a result of these patterns, development often occurs in very isolated locations, significantly increasing the costs and complexity of Forest management. Moreover, the ‘checkerboard’ pattern of landownership implies multiplication of Wildland-Urban interfaces – in a checkerboard pattern there is a greater density of boundaries between private development and NF land, multiplying the ecological challenges. An additional complication of fragmented patterns of development in the Carson NF is that it interrupts the consistent and comprehensive application of ecological management practices. For example, the containment of invasive species requires that measures

be taken on the scale of an entire ecosystem – small areas without application can serve as a haven for the species and a basis for its regeneration. Yet, private landowners do not always share the same concerns or priorities as federal land managers, thus impeding the effective implementation of management practices. Further, many of the new residents relocate from more urban environments, and have limited direct experience in managing their impact on wild lands. Without experience, these populations are more likely to engage in ecologically risky behavior and less likely to undertake the measures that would protect them from ecological hazards.[22]

On the positive side, the checkerboard pattern of landownership also provides a valuable opportunity for Carson NF managers to demonstrate alternative and sustainable management practices to private landowners that neighbor FS-owned land. This enables the FS to better achieve its land management objectives and fulfill its broadest mission to demonstrate the sustainable multiple-use management concept.

9.4 Differences among Ranger Districts

The six RDs in the Carson NF face very distinct challenges and require management policies specific to each. In broad strokes, the greatest similarities are among the three central RDs (Tres Piedras, Canjilon and El Rito) and the two eastern RDs (Questa and Camino Real); Jicarilla RD is relatively distinct from the others.

The areas surrounding the three central RDs are thinly populated by small communities with populations less than 1,000. Many in these communities are strongly associated with Hispano land grants; have an interest in the continuing use of Forest land for grazing and timber harvesting; and are at an early stage of tourism and residential development. Employment opportunities in communities neighboring the Forest are few, forcing most residents to travel more than an hour to work. This region is arguably the most closely tied to the Forest and the patterns of fragmented landownership that make public and private land management practices so interdependent is most pronounced here. Further, Mexican spotted owl habitats subject to close regulation tend to be concentrated in these three Districts. By the same token, with strong internal identity and cohesion, a history of contentious interaction with the FS, and the increasing integration as result of the growth of tourism and development, this subregion faces the greatest degree of socioeconomic dislocation. Yet, on the other hand, given the nature of the challenges that this subregion faces, one may hope that emerging strategies of community partnership have the most to offer in this area. Combined, these three RDs comprise 53 percent of the Carson NF.

The eastern-most subregion, including Camino Real and Questa RDs, has the most developed tourism and residential development markets. Carson NF's principal recreational attractions, including Taos Valley and Red River ski areas are located in these Districts, and areas with the greatest density of second home and retiree residential development, such as those in and near Taos, Arroyo Hondo, Angel Fire and Eagle's Nest, are closest to these eastern-most Districts. Conversely, traditional uses of the land are least prevalent in these areas. Ecological issues are most pressing in this area, as the intensity of use and development raises concerns for wildfires and resource degradation. In this subregion, the FS finds the greatest concentration of natural

[22] McKinley, J. and Johnson, K. "On the Fringe of Forests: Where Homes and Fire Meet," *New York Times*, June 26, 2007.

allies, but also some of its sharpest critics. Camino Real RD comprises 24 percent of the Carson NF, and the Questa RD an additional 12 percent.

Finally, located along the Colorado border on the western edge of the Jicarilla Apache Reservation, the Jicarilla RD is isolated by some distance from the other RDs of the Carson NF. In general terms, Jicarilla RD has more in common with the Four Corners area than RDs of north central New Mexico. The principal economic use of the district is oil and gas exploration, and in that way it is closely tied to interests located in Farmington. There are few other economic uses of the Forest. The population nearest the district is predominately Native American, on the Jicarilla Apache Reservation and in the small town of Dulce. Unlike other Districts, resistance to FS policies have been generally non-local – plans to open undeveloped areas of the District for gas exploration have been fought by Santa Fe-based environmental groups but have been tacitly accepted by local communities which benefit from revenue sharing and, to a lesser extent, employment opportunities.

9.5 Community Partnerships

Faced with federal mandates and declining resources, the FS is turning increasingly to community partnerships as a way of achieving its goals. The Carson NF has a long history of public-private partnerships, and a strong program in place to attract and recruit potential partners and allies. Programs such as the Collaborative Forest Restoration Program are effective because they incorporate local businesses and non-profits into forest management. Carson NF managers must continue to pursue opportunities to develop similar programs and relationships with traditional land users, including Hispanos and Native Americans. Failing to develop such programs poses the risk of further alienating traditional groups, as they may perceive the strength of partnerships with environmental, urban and business groups as further evidence of bias in forest policy. To this end, one possible strategy may be to involve traditional communities in decision making in the area of sustainable forest management practice. This may help to bring together long established and newly expanding communities in a common effort while at the same time passing along local knowledge about sustainable land management.

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Appendices

Table A.1: Population of Places in Assessment Area, 2000

	Number			Percent Change	
Carson Places	**1980**	**1990**	**2000**	**1980-1990**	**1990-2000**
Alcalde CDP	.	308	377	NA	22%
Angel Fire village	.	93	1,048	NA	1027%
Chama village	1,090	1,048	1,199	-4%	14%
Chamisal CDP	.	272	301	NA	11%
Chimayo CDP	1,993	2,789	2,924	40%	5%
Cimarron village	888	774	917	-13%	18%
Cuartelez CDP	.	.	452	NA	NA
Dulce CDP	1,648	2,438	2,623	48%	8%
Eagle Nest village	202	189	306	-6%	62%
Espanola city	6,803	8,389	9,688	23%	15%
La Puebla CDP	.	.	1,296	NA	NA
Maxwell village	316	247	274	-22%	11%
Penasco CDP	.	648	572	NA	-12%
Picuris Pueblo CDP	.	.	86	NA	NA
Questa village	1,202	1,707	1,864	42%	9%
Ranchos de Taos CDP	1,411	1,779	2,390	26%	34%
Raton city	8,225	7,372	7,282	-10%	-1%
Red River town	332	387	484	17%	25%
Regina CDP	.	.	99	NA	NA
Rio Chiquito CDP	.	.	103	NA	NA
Rio Lucio CDP	.	.	379	NA	NA
San Juan CDP	.	465	592	NA	27%
Santa Clara Pueblo CDP	.	1,156	980	NA	-15%
Santa Cruz CDP	.	2,504	423	NA	-83%
Springer town	1,657	1,262	1,285	-24%	2%
Taos town	3,369	4,065	4,700	21%	16%
Taos Pueblo CDP	.	1,187	1,264	NA	6%
Taos Ski Valley village	.	.	56	NA	NA
Vadito CDP	.	283	242	NA	-14%
Wagon Mound village	416	319	369	-23%	16%
TOTAL CARSON PLACES	**29,552**	**39,681**	**44,575**	34%	12%
NM TOTAL	1,303,303	1,515,069	1,819,046	16%	20%

Source: US Census Bureau, Decennial Census, 1980, 1990, 2000. Calculations done by UNM - BBER.
CDP - Census Designated Place

Table A.2 Designated Trails on The Carson NF

Canjilon Ranger District

TRAIL NAME	TRAIL TYPE
Rim Vista	Standard/Terra Trail
Salazar	Standard/Terra Trail
Vega Paz	Standard/Terra Trail
Fifteen Springs	Standard/Terra Trail
Echo Ampitheater	Standard/Terra Trail
Joaquin Canyon	Standard/Terra Trail
Cebolla	Standard/Terra Trail
Martinez Canyon	Standard/Terra Trail
Yeso	Standard/Terra Trail
Lookout	Standard/Terra Trail
Burns	Standard/Terra Trail
Hidden Lake	Standard/Terra Trail
Hart	Standard/Terra Trail
Canjilon Mountain	Standard/Terra Trail

Questa Ranger District

TRAIL NAME	TRAIL TYPE
Williams Lake	Snow Trail
Cebolla Mesa	Standard/Terra Trail
Williams Lake	Standard/Terra Trail
Midnight	Standard/Terra Trail
Goose Creek	Standard/Terra Trail
Poineer Creek	Standard/Terra Trail
Lake Fork	Standard/Terra Trail
Gavilian	Standard/Terra Trail
Columbine	Standard/Terra Trail
Sawmill Park	Standard/Terra Trail
Manzanita	Standard/Terra Trail
Italianos	Standard/Terra Trail
Willow Fork	Standard/Terra Trail
Dry Fork	Standard/Terra Trail
Jiron Canyon	Standard/Terra Trail
Heart Lake	Standard/Terra Trail
Pinabete	Standard/Terra Trail
Placer Fork Shortcu	Standard/Terra Trail
Exploration	Standard/Terra Trail
East Fork	Standard/Terra Trail
Lobo Peak	Standard/Terra Trail
Yerba	Standard/Terra Trail
Long Canyon	Standard/Terra Trail
Red River Nature	Standard/Terra Trail
Deer Creek	Standard/Terra Trail
Placer Fork	Standard/Terra Trail
San Cristobol	Standard/Terra Trail
Midnight Chuckwagon	Standard/Terra Trail
Bull Creek	Standard/Terra Trail
Rito Del Medio	Standard/Terra Trail
Wheeler Peak	Standard/Terra Trail
Lost Lake	Standard/Terra Trail
Cow Lake	Standard/Terra Trail
Lama Canyon	Standard/Terra Trail
Gold Hill	Standard/Terra Trail
Williams/Wheeler	Standard/Terra Trail
Goose Lake/Gold Hil	Standard/Terra Trail

Camino Real Ranger District

TRAIL NAME	TRAIL TYPE
Amole	Snow Trail
Capulin Ice Caves	Snow Trail
Elliot Barker	Standard/Terra Trail
Amole	Standard/Terra Trail
Devisadero Loop	Standard/Terra Trail
Capulin Ice Caves	Standard/Terra Trail
Sardinas Motorized	Standard/Terra Trail
Rio Chiquito	Standard/Terra Trail
Cerro Vista	Standard/Terra Trail
Policarpio	Standard/Terra Trail
Valle De Los Romero	Standard/Terra Trail
Agua Sarca	Standard/Terra Trail
Cortado	Standard/Terra Trail
South Boundry	Standard/Terra Trail
Drake Canyon Loop	Standard/Terra Trail
Ojitos	Standard/Terra Trail
Paradise	Standard/Terra Trail
Cordova Canyon	Standard/Terra Trail
Buena Suerte	Standard/Terra Trail
Rancho De Rio Grand	Standard/Terra Trail
El Nogal Nature Tra	Standard/Terra Trail
Ojito Maes	Standard/Terra Trail
Serpent Lake	Standard/Terra Trail
Angostura Cutoff	Standard/Terra Trail
Serpent Lake Cutoff	Standard/Terra Trail
Indian Lake Trail	Standard/Terra Trail
Pot Creek Interpret	Standard/Terra Trail
Osha Canyon	Standard/Terra Trail
Comales	Standard/Terra Trail
Middle Fork	Standard/Terra Trail
West Fork Santa Bar	Standard/Terra Trail
East Fork Santa Bar	Standard/Terra Trail
Indian Creek	Standard/Terra Trail
Bear Mountain	Standard/Terra Trail
Camino Real	Standard/Terra Trail
San Leonardo	Standard/Terra Trail
Trampas	Standard/Terra Trail
Divide	Standard/Terra Trail
Jicarita Creek	Standard/Terra Trail
Gallegos	Standard/Terra Trail
Hidden Lakes	Standard/Terra Trail
La Cueva Canyon	Standard/Terra Trail
Angostura	Standard/Terra Trail
Capulin	Standard/Terra Trail
Maes Canyon	Standard/Terra Trail
Agua Piedra Handica	Standard/Terra Trail
Flechado Canyon	Standard/Terra Trail
La Cueva	Standard/Terra Trail
La Cueva Cutoff	Standard/Terra Trail
Mondragon	Standard/Terra Trail
Comales Cutoff	Standard/Terra Trail
Diablo	Standard/Terra Trail
Rito De La Olla	Standard/Terra Trail
La Cueva Peak	Standard/Terra Trail

Table A.3: Capital Improvements in Assessment Area

Counties	Road	Terminus	Year	Amount	Description
Colfax	LOCAL	Railroad Depot in Raton	2006	$250,667	Miscellaneous Construction
Colfax	LOCAL	Angel Fire Trails	2006	$308,000	Multi-Use Path
Colfax	LOCAL	Angel Fire Road	2006	$100,000	Reconstruction
Colfax	LOCAL	Country Club Drive	2006	$666,667	Road Improvements
Colfax	I25	MP 450 to MP 456	2010	$5,000,000	3R & Reconstruction
Colfax	I25	Interchange Ramp Rehabilitation	2009	$1,000,000	Ramp Modifications
Colfax	I25	US 654 - US 87 Intersection with I-25 (Exit 451) in Raton; Bridge # 6108	2008	$3,000,000	Interchange Rehabilitation
Colfax	L00016	Springer - Bridge # 3457	2009	$1,500,000	Bridge Replacement
Colfax	NM0058	7.1 Miles East of JCT US 64	2008	$500,000	Bridge Replacement
Colfax	NM0058	7.1 Miles East of JCT US 64	2008	$500,000	Bridge Replacement
Colfax	NM0434	Village of Angel Fire	2006	$133,333	Landscaping
Colfax	US0056	Clayton, 6th Street to Railroad	2010	$2,600,000	3R & Reconstruction
Colfax	US0056	Clayton, 6th Street to Railroad	2010	$200,000	Pedestrian Facilities
Colfax	US0056	JCT NM 39 - East	2007	$4,500,000	Pavement Rehabilitation
Colfax	US0056	Springer - East to Abbott	2006	$9,592,000	Reconstruction
Colfax	US0056	Abbott - East	2007	$2,500,000	Preventative Maintenance
Colfax	US0056	13.71 Miles East of JCT NM 39 - East	2011	$1,500,000	Pavement Rehabilitation
Colfax	US0056	13.71 Miles East of JCT NM 39 - East	2011	$1,000,000	Pavement Rehabilitation
Colfax	US0064	Within Village of Eagle Nest	2008	$500,000	Miscellaneous Construction
Colfax	US0064	.5 Miles West of JCT. NM 434 - East for 1 mile and MP 282 to MP 285	2008	$1,000,000	Intersection Improvements
Colfax	US0064	.5 Miles West of JCT. NM 434 - East for 1 mile and MP 282 to MP 285	2008	$2,500,000	Overlay
Colfax	US0064	4 Miles West of JCT NM 434 - East for 1 mile and MP 282 to MP 285	2011	$1,500,000	Pavement Rehabilitation
Colfax	US0064	4 Miles West of JCT NM 434 - East for 1 mile and MP 282 to MP 285	2011	$1,500,000	Pavement Rehabilitation
Colfax	US0064	JCT I-25 Loop 17 - East to JCT I-25 and I-25 Interchange	2009	$500,000	Miscellaneous Construction
Colfax	US0064	Raton to Clayton	2007	$11,037,225	Reconstruction
Colfax	US0064	1 mile East of JCT NM 193 - East	2007	$3,000,000	Pavement Rehabilitation
Colfax	US0064	Raton to Clayton	2006	$11,037,225	Reconstruction
Colfax	US0064	Raton to Clayton	2006	$15,260,000	Reconstruction
Rio Arriba	LOCAL	Espanola Railroad Museum	2007	$532,000	Miscellaneous Construction
Rio Arriba	LOCAL	Lindrith Rds	2006	$25,000	Road Improvements
Rio Arriba	LOCAL	Canones Creek Bridge	2006	$20,000	Bridge Rehabilitation
Rio Arriba	LOCAL	JCT US 64 / J8 South Pedestrian Facilities	2009	$585,000	Pedestrian Facilities
Rio Arriba	LOCAL	JCT US 64 South in Dulce	2011	$325,000	Miscellaneous Construction
Rio Arriba	LOCAL	Transit Mix Road NM 584 to Lowdermilk Lane	2006	$614,667	Road Improvements
Rio Arriba	390035	County Road 35	2006	$5,000	Road Improvements
Rio Arriba	390036	County Road 36	2006	$5,000	Road Improvements
Rio Arriba	LOCAL	Guardrail Installation	2006	$77,000	Guardrail, Safety
Rio Arriba	390073	County Roads 69 and 73	2006	$50,000	Road Improvements
Rio Arriba	390089	County Road 89A	2006	$55,000	Road Improvements
Rio Arriba	390107	County Rds 107 / 108 in La Mesilla	2006	$10,000	Road Improvements
Rio Arriba	390107	County Rds 144, 107, 108, 44, and 4	2006	$100,000	Road Improvements
Rio Arriba	390108	Commission District 2 Roads	2006	$25,000	Road Improvements
Rio Arriba	390162	Guardrail Installation	2006	$27,000	Guardrail, Safety
Rio Arriba	FL5345	Various Espanola Streets`	2006	$50,000	Road Improvements
Rio Arriba	FL5349	Onate St. Bridge	2007	$1,622,000	Bridge Replacement
Rio Arriba	FL5349	Onate St. Bridge	2008	$1,654,000	Bridge Replacement
Rio Arriba	FL5349	Espanola Main St. (Paseo De Onate)	2006	$5,400,000	Pavement Rehabilitation
Rio Arriba	FL5349	Paseo de Onate / NM-30	2006	$75,000	PE and R-O-W
Rio Arriba	NM0017	NM 17 / US 64 / 84	2006	$200,000	Lighting -Safety
Rio Arriba	NM0068	JCT 84/285 to JCT NM 291	2006	$750,000	Signalization
Rio Arriba	NM0068	Fairview Lane North 3 Miles	2007	$3,000,000	Reconstruction
Rio Arriba	NM0068	R-O-W Fencing	2006	$300,000	Fencing
Rio Arriba	NM0068	JCT NM 74 to Velarde	2007	$5,200,000	Reconstruction
Rio Arriba	NM0068	Velarde to Pilar	2010	$5,300,000	3R & Reconstruction
Rio Arriba	NM0068	Velarde to the Horseshoe Curve	2006	$250,000	Professional Services
Rio Arriba	NM0074	JCT NM 68 to JCT Old NM 74	2010	$750,000	Pedestrian Facilities
Rio Arriba	NM0076	1.1 Miles east of JCT NM0503 - East	2007	$6,000,000	Reconstruction
Rio Arriba	NM0096	R-O-W Fencing	2006	$175,000	Fencing
Rio Arriba	NM0537	Deer Crossing Beacons	2006	$150,000	Safety
Rio Arriba	NM0584	Fairview Lane Drainage Improvements	2006	$1,000,000	Drainage Improvements
Rio Arriba	US0064	San Juan / Rio Arriba C/L to JCT US 84	2008	$8,000,000	Pavement Rehabilitation
Rio Arriba	US0064	San Juan / Rio Arriba C/L to JCT US 84	2009	$2,000,000	Bridge Replacement
Rio Arriba	US0064	San Juan / Rio Arriba C/L to JCT US 84	2007	$5,300,000	Pavement Rehabilitation
Rio Arriba	US0064	San Juan / Rio Arriba C/L to JCT US 84	2009	$750,000	Bridge Replacement
Rio Arriba	US0064	San Juan / Rio Arriba C/L to JCT US 84	2009	$7,700,000	Pavement Rehabilitation

Table A.3 Cont'd: Capital Outlays for Counties in Assessment Area

Rio Arriba	US0064	San Juan / Rio Arriba C/L to JCT US 84	2006	$3,000,000	Bridge Replacement
Rio Arriba	US0064	San Juan / Rio Arriba C/L to JCT US 84	2006	$7,000,000	Pavement Rehabilitation
Rio Arriba	US0064	San Juan / Rio Arriba C/L to JCT US 84	2006	$390,000	Right-of-Way Acquisition
Rio Arriba	US0064	San Juan / Rio Arriba C/L to JCT US 84	2006	$10,000,000	Reconstruction
Rio Arriba	US0064	Forest Boundary E of US0084 - East	2006	$7,500,000	Pavement Rehabilitation
Rio Arriba	US0084	Intersection with Paseo de Onate	2006	$5,400,000	Pavement Rehabilitation
Rio Arriba	US0084	Intersection with Paseo de Onate	2006	$800,000	Intersection Improvements
Rio Arriba	US0084	JCT NM0096	2007	$2,000,000	Overlay
Rio Arriba	US0084	Echo Ampitheatre to Cebolla	2009	$8,000,000	3R & Reconstruction
Rio Arriba	US0084	MP 249 to MP 254 Tierra Amarilla South	2007	$6,000,000	3R & Reconstruction
Rio Arriba	US0084	US0550 Warranty Work in District 5	2006	$100,000	Field Supplies
Rio Arriba	US0550	US0550 Warranty Work in District 5	2006	$1,400,000	Contract Maintenance
Mora	LOCAL	El Camino Del Monte Quemado Road	2006	$40,000	Road Improvements
Mora	LOCAL	El Carmen Rd	2006	$50,000	Road Improvements
Mora	FR2151	Wolf Creek - Bridge #5276	2011	$2,100,000	Bridge Replacement
Mora	I25	Bridges 7004, 7005, 7006, 7007	2006	$2,500,000	Bridge Rehabilitation
Mora	I25	MP 287 to MP 400	2011	$5,500,000	Pavement Preservation
Mora	I25	MP 400 to MP 412	2009	$3,000,000	Preventative Maintenance
Mora	NM0094	MP 18 East to JCT NM 518	2010	$1,900,000	Reconstruction
Mora	NM0094	MP 18 East to JCT NM 518	2010	$100,000	Right-of-Way Acquisition
Mora	NM0120	Canadian River Bridge Mora/Harding C/L	2008	$2,000,000	Bridge Deck Replacement
Mora	NM0434	NM 518 / NM 434 Intersection in Mora	2006	$1,945,000	3R & Reconstruction
Mora	NM0434	NM 518 / NM 434 Intersection in Mora	2006	$100,000	Right-of-Way Acquisition
Mora	NM0434	Correct Four Curves MP 0.0 to MP 17.5	2006	$1,500,000	3R & Reconstruction
Mora	NM0434	Correct Four Curves MP 0.0 to MP 17.5	2006	$100,000	Right-of-Way Acquisition
Mora	NM0434	Mora to Black Lake	2011	$4,000,000	3R & Reconstruction
Mora	NM0434	MP 18 to MP 24	2010	$3,000,000	3R & Reconstruction
Mora	NM0434	MP 18 to MP 24	2010	$2,000,000	Right-of-Way Acquisition
Mora	NM0518	.75 Miles S of JCT NM 442 - North	2006	$3,400,000	3R & Reconstruction
Taos	LOCAL	Cuchilla Hill Road	2006	$7,000	Road Improvements
Taos		Taos Airport Civil Air Patrol Hangar	2006	$50,000	Miscellaneous Construction
Taos	LOCAL	Red River Streets	2006	$200,000	Road Improvements
Taos	55C021	Santa Barbara Road	2006	$60,000	Road Improvements
Taos	55C134	St. Lavender Road	2006	$50,000	Road Improvements
Taos	FL7100	River Street / Pioneer Road	2006	$50,000	Road Improvements
Taos	NM0038	Through Red River	2006	$30,000	Miscellaneous Construction
Taos	NM0068	Scenic Overlook at Rio Arriba / Taos County Line	2006	$550,000	Scenic Overlook
Taos	NM0068	Scenic Overlook at Rio Arriba / Taos County Line	2007	$500,000	Auxilary Lanes
Taos	NM0068	Pilar to Horse Shoe Curve	2011	$1,100,000	3R & Reconstruction
Taos	NM0068	Pilar to Horse Shoe Curve	2011	$3,400,000	3R & Reconstruction
Taos	NM0068	Intersection NM 0068/CR 110	2006	$1,500,000	Intersection Improvements
Taos	NM0068	Taos Relief Route	2011	$500,000	New Construction
Taos	NM0068	Ranchos De Taos	2008	$2,810,000	Reconstruction
Taos	NM0068	JCT NM0518 North	2006	$441,333	Bicycle Lanes/Trails
Taos	NM0068	La Posta to Camino De La Placita	2010	$1,540,000	Four-Lane Construction
Taos	NM0068	La Posta to Camino De La Placita	2010	$3,460,000	Four-Lane Construction
Taos	NM0150	Intersection with Valencia Road	2006	$1,500,000	Intersection Improvements
Taos	NM0240	NM-240 in Taos	2006	$25,000	Road Improvements
Taos	NM0240	Ranchitos Road, Salazar Road to Carbajal Lane	2006	$163,887	Road Improvements
Taos	NM0518	R-O-W Fencing	2006	$300,000	Fencing
Taos	NM0585	Taos Truck Bypass	2006	$150,667	Pedestrian Facilities
Taos	NM0585	Taos Truck Bypass	2006	$5,000,000	Additional Lanes
Taos	US0064	Rio Grande River Gorge Bridge	2007	$2,000,000	Bridge Rehabilitation
Taos	US0064	Taos to Tres Piedras	2009	$4,600,000	3R & Reconstruction
Taos	US0064	JCT NM0068	2008	$500,000	Corridor Study
Taos	US0064	Taos North Town Limit to Placitas Road	2006	$60,000	Miscellaneous Construction
Taos	US0064	Taos North Town Limit to Placitas Road	2006	$2,700,000	Miscellaneous Construction
Taos	US0064	NM-64 in Taos	2006	$200,000	Road Improvements
Taos	US0064	NM 64 in Taos	2011	$2,500,000	3R & Reconstruction
Taos	US0064	Montoya to Mariposa in Town of Taos	2007	$100,000	Pedestrian Facilities
Taos	US0064	Montoya to Mariposa in Town of Taos	2007	$500,000	Miscellaneous Construction
Taos	US0285	Ojo Caliente - North	2008	$3,500,000	3R & Reconstruction
Taos	US0285	.2 Mile North of JCT NM011	2008	$2,500,000	Overlay
Taos	US0285	11.4 Miles South of JCT US64 - North	2008	$8,000,000	Overlay

Table A.4: Designated Recreational Sites on the Carson NF

Trail Name	Site Type	Operational Status	ROS Class
Canjilon District			
Canjilon Lakes Pg	Picnic Site	Open	Roaded Natural
Canjilon Lakes	Campground	Open	Roaded Natural
Trout Lakes	Campground	Open	Roaded Natural
Echo Amphitheater	Picnic Site	Open	Roaded Natural
Piedra Alumbre Visitor Center	Interpretive Site (Major)	Open	Roaded Natural
Rim Vista Trailhead	Trailhead	Open	
Tres Piedras Rocks	Picnic Site	Closed	Roaded Natural
Tres Piedras District			
Hopewell	Picnic Site	Open	Roaded Natural
Hopewell Cg	Campground	Open	Roaded Natural
Los Pinos	Campground	Open	
Laguna Larga	Camping Area	Open	
Lagunitas	Campground	Open	Semi-Primitive Motorized
El Rito District			
El Rito	Campground	Open	Roaded Natural
Cruces Basin Th	Camping Area	Open	Semi-Primitive Motorized
Questa District			
Lower Hondo	Campground	Open	Roaded Modified
Cuchillo Del Medio	Campground	Open	Roaded Modified
Twining	Campground	Open	Roaded Modified
Cabresto Lake	Campground	Open	
Elephant Rock	Campground	Open	Roaded Natural
Fawn Lakes	Campground	Open	Roaded Natural
Junebug	Campground	Open	Roaded Natural
Goat Hill	Campground	Open	
Columbine	Campground	Open	Roaded Natural
Italianos	Trailhead	Open	
Mccrystal Group Site	Group Picnic Area	Open	Roaded Natural
Cimarron	Campground	Open	Roaded Natural
Mccrystal	Campground	Open	
Cebolla Mesa	Campground	Open	Semi-Primitive Motorized
Shuree Ponds	Picnic Site	Open	Roaded Natural
Taos Ski Valley, Inc.	Ski Area Alpine	Open	
Red River Ski Area	Ski Area Alpine	Open	
La Bobita	Campground	Open	Roaded Modified
Upper Cuchilla	Campground	Open	
Rr Winter Trail System	Other Winter Sports Site	Open	Roaded Natural
Enchanted Forest	Other Winter Sports Site	Open	
Eagle Rock Lake	Picnic Site	Open	Roaded Natural
Mallette Th	Trailhead	Open	
Gavilan Th	Trailhead	Open	
Bull Of Woods/Wheeler	Trailhead	Open	Roaded Modified
Manzanita Th	Trailhead	Open	Roaded Natural
Yerba Th	Trailhead	Open	Roaded Natural
Williams Lake Th	Trailhead	Open	Roaded Modified
Pioneer Th	Trailhead	Open	
Goose Lake Th	Trailhead	Open	
Middle Fork Th	Trailhead	Open	Roaded Natural
East Fork Th	Trailhead	Open	Roaded Natural
Middle Fork Lake	Camping Area	Open	Roaded Natural
Shuree Ponds Fishing Site	Fishing Site	Open	
Goose Lake	Day Use Area	Open	Semi-Primitive Motorized

Table A.4 Cont'd: Designated Recreational Sites on The Carson NF

Trail Name	Site Type	Operational Status	ROS Class
Camino Real District			
Duran	Campground	Open	Roaded Natural
Upper La Junta	Campground	Open	Roaded Natural
La Junta Canyon	Camping Area	Open	Roaded Natural
Agua Piedra Cg	Campground	Open	Roaded Natural
Comales	Campground	Open	Roaded Natural
Santa Barbara	Campground	Open	Roaded Natural
El Nogal	Picnic Site	Open	Roaded Natural
Santa Barbara	Trailhead	Open	
South Boundary	Trailhead	Open	
La Cueva Th Beginning	Trailhead	Open	
La Cueva Th Ending	Trailhead	Open	
Elliott Barker	Trailhead	Open	Roaded Natural
Devisadero	Trailhead	Open	
Cordova Canyon	Trailhead	Open	
Comales Th	Trailhead	Open	
Vinateria	Day Use Area	Closed	Roaded Natural
Las Petacas	Campground	Open	Roaded Natural
Capulin	Campground	Open	Roaded Natural
La Sombra	Campground	Open	Roaded Natural
Trampas	Trailhead	Open	Roaded Natural
Llanadero	Picnic Site	Open	Roaded Natural
Agua Piedra	Picnic Site	Open	
Tierra Azul	Day Use Area	Open	
Pot Creek	Interpretive Site (Minor)	Closed	Roaded Natural
Sipapu Ski Area	Ski Area Alpine	Open	
Agua Piedra Group Area	Group Campground	Open	
Cebolla Canyon	Trailhead	Open	
Gallegos	Trailhead	Open	
Angostura	Trailhead	Closed	
Agua Piedra Trail Head	Trailhead	Open	
Us Hill Snow Play Area	Other Winter Sports Site	Open	
Cerrado	Trailhead	Open	
Amole	Trailhead	Open	Roaded Natural
Jicarrilla District			
Buzzard Park	Campground	Open	Roaded Natural
Cedar Springs	Campground	Open	Roaded Natural

Table A.5: Hunting Regulations on the Carson NF

Big Game

Species	License/Permit Type	Hunt Dates	Special Arms	Units	Permits
Bear	Private Land	Varies 10/28-11/13	Any Legal Sporting Arm	Units 4, 5A, 5B, 46,54,55	Units range 5-unlimited
Deer	Private Land	9/1-9/22	Bow	Units 46,54,55	Unlimited
Bear	Private Land	9/23-9/29	Muzzleloader and Bow	Units 46,54,55	Unlimited
Deer	OTC-Draw Permits	10/28-11/1 & 11/4-11/8	Any Legal Sporting Arm	Unit 51, 53, 54, 55, 56, 57	Units range 1-5-100
Elk	Private Land	Varies 10/1-1/31	Any Legal Sporting Arm	4, 5A, 5B, 46,51, 53, 54, 55A, 56, 57	Units range 15-150
Elk	Private Land	Varies 9/1-9/22	Bow	Units 4, 5A, 5B, 46, 48, 51, 53, 54, 55A, 57	Units range 10-225
Elk	Private Land	10/1-12/31	Muzzleloader	Units 48, 53	Units range 35-150
Elk	Public Draw	Varies 10/1-12/14	Any Legal Sporting Arm	Units 4, 5A, 5B, 48, 51, 53, 54, 55, 56,	Units range 5-250
Elk	Public Draw	9/1-9/22 & 10/1-10/5	Bow or Muzzleloader	Units 5A, 5B, 48, 53, 54, 55	Units range 10-225
Elk	Public Draw	9/1-9.22 & 10/1-10//5	Mobility Impaired	Unit 51, 53, 54, 55, 56, 57	30
Antelope	Public Draw	Varies 8/27-9/11	Any Legal Sporting Arm	Units 45-47, 53-57	300
Antelope	Public Draw	9/20-9/24	Bow	Units 45-47, 53-57	Units range 2-200
Antelope	Public Draw	9/20-9/23	Muzzleloader	Unit 52	175
Antelope	Public Draw	8/6-8/7	Mobility Impaired	Unit 45-48, 53-57	45
Turkey	OTC-Draw Permits	11/12-11/20 & 4/15-4/20	Any Legal Sporting Arm	Portions of Units 4, 55	20
Black Bear Hunt	Public Draw	9/8-9/18	Any Legal Sporting Arm	Portions of 53	Units range 1-6
Bear	OTC-Draw Permits	Varies 8/1-11/15	Any Legal Sporting Arm	Zone 2	130
Cougar	OTC	10/1-3/1	Any Legal Sporting Arm	Zone B, Zone C, Zone P	Units range 5-38
Bobcat	OTC	Varies 9/1-4/1	Allowable Trap Measures	Not well-specified	License for protected species

Small Game/Waterfowl

Species	License/Permit Type	Hunt Dates	Special Arms	Units	Permits
Quail	General Hunt	11/15-2/15	Any Legal Sporting Arm	Statewide	Not Specified
Dove	General Hunt	9/1-10/30	Any Legal Sporting Arm	North Zone	Not Specified
Band-Tailed Pigeon	General Hunt	9/1-10/20	Any Legal Sporting Arm	Regular Season	Not Specified
Blue Grouse	General Hunt	9/1-10/15	Any Legal Sporting Arm	GS-1	Not Specified
Squirrel	General Hunt	9/1-10/31	Any Legal Sporting Arm	GS-1	Not Specified
Pheasant	OTC-Draw Permits	12/8-12/11	Any Legal Sporting Arm	Statewide	Not Specified
Duck/Mourning Dove	OTC	10/8-1/11	Any Legal Sporting Arm	GS-1	Not Specified
Falconry/Waterfowl	OTC	9/17-9/25	Any Legal Sporting Arm	GS-1	Not Specified

Source: Department of Game and Fish 2005 Hunting Regulations and Rules Handbook for Big Game and Small Game Waterfowl.

Notes: Bag Limit definitions follow below

Deer definitions: APRD (antler point restrictions) one deer with at least 3 points on one antler

Elk definitions: MB one male bull

A- one antlerless elk

ES- one elk, any sex

Antelope definitions: : MB- one male buck Antelope

F-M one female or immature antelope

Notes: Wildlife Management Unit designations follow

Zone B (Unit 51), Zone C (Units 46, 48, 53-55), Zone P (Units 56, 57)

Zone 2 (Units 53-57) Zone 2 (Units 53-57)

GS-1 (includes Rio Arriba, Mora, Colfax)

Antelope Units

Colfax 54,55,57

Mora 45-48, 53

Rio Arriba 7, 52

Big Game Units -

Colfax 54, 55A, 55B, 56, 57

Mora 45-48

Rio Arriba 3,4 5A, 5B, 51

Taos 53

Table A.6: Grants and Agreements on The Carson NF

Grant & Agreement Number	Cooperator Cash Contibution	Cooperator Other Contribution	Cooperator Total Contribution	FS Cash Contribution	FS Other Contribution	FS Total Contribution	Total G&A Amount
99-CO-11030200-003	$491,155.00	$0.00	$491,155.00	$0.00	$0.00	$0.00	$491,155.00
	Cooperator/ Contributors:	KIT CARSON RURAL ELECTRICAL COOPERATIVE					
02-DG-11030200-001	$0.00	$0.00	$0.00	$333,988.00	$0.00	$333,988.00	$333,988.00
	Cooperator/ Contributors:	LA JICARITA ENTERPRISE COM, LA JICARITA ENTERPRISE COMMUNITY					
03-CS-11030200-005	$0.00	$28,600.00	$28,600.00	$24,000.00	$3,300.00	$27,300.00	$55,900.00
	Cooperator/ Contributors:	ROCKY MTN BIRD OBSERVATORY					
03-DG-11030200-002	$0.00	$91,535.00	$91,535.00	$294,673.00	$0.00	$294,673.00	$386,208.00
	Cooperator/ Contributors:	FOREST GUILD					
03-DG-11030200-003	$0.00	$90,052.00	$90,052.00	$270,992.00	$0.00	$270,992.00	$361,044.00
	Cooperator/ Contributors:	LA LAMA NEIGHBORHOOD ASSOCIATION, LA LAMA NEIGHORHOOD ASSOC					
03-DG-11030200-004	$0.00	$90,000.00	$90,000.00	$330,925.00	$0.00	$330,925.00	$420,925.00
	Cooperator/ Contributors:	TAOS BUSINESS ALLIANCE, TAOS BUSINESS ALLIANCE FOR ECONOMIC DEVELOPMENT					
03-DG-11030200-013	$83,250.00	$0.00	$83,250.00	$333,000.00	$0.00	$333,000.00	$416,250.00
	Cooperator/ Contributors:	QUESTA, VILLAGE OF, VILLAGE OF QUESTA					
03-DG-11030200-014	$135,300.00	$0.00	$135,300.00	$214,175.00	$0.00	$214,175.00	$349,475.00
	Cooperator/ Contributors:	SUSTAINABLE COMMUNITIES, SUSTAINABLE COMMUNITIES INC./ZERI					
03-IA-11030200-001	$0.00	$22,000.00	$22,000.00	$0.00	$0.00	$0.00	$22,000.00
	Cooperator/ Contributors:	USDI, BUREAU OF LAND MANAGEMENT					
04-CO-11030200-007	$5,000.00	$0.00	$5,000.00	$0.00	$0.00	$0.00	$5,000.00
	Cooperator/ Contributors:	CHUCK WAGON TRAIL RIDERS FOUNDATION, INC.					
04-CO-11030200-014	$190,473.73	$0.00	$190,473.73	$0.00	$0.00	$0.00	$190,473.73
	Cooperator/ Contributors:	NEW MEXICO DEPT OF GAME & FISH					
04-CO-11030200-015	$33,637.00	$0.00	$33,637.00	$0.00	$0.00	$0.00	$33,637.00
	Cooperator/ Contributors:	ROCKY MOUNTAIN ELK FOUNDATION					
04-DG-11030200-013	$99,400.00	$0.00	$99,400.00	$350,208.00	$0.00	$350,208.00	$449,608.00
	Cooperator/ Contributors:	TAOS CANYON NEIGHBORHOOD, TAOS CANYON NEIGHBORHOOD ASSOCIATION					
04-DG-11030200-016	$43,750.00	$0.00	$43,750.00	$175,000.00	$0.00	$175,000.00	$218,750.00
	Cooperator/ Contributors:	HEALTHY FOREST - HAPPY POTTERS, HEALTHY FOREST-HAPPY					
04-IA-11030200-001	$25,000.00	$0.00	$25,000.00	$0.00	$0.00	$0.00	$25,000.00
	Cooperator/ Contributors:	USDI, BUREAU OF LAND MANAGEMENT					
04-PA-11030200-011	$0.00	$0.00	$0.00	$304.00	$0.00	$304.00	$304.00
	Cooperator/ Contributors:	FOREST GUILD					
04-PA-11030200-012	$10,460.00	$0.00	$10,460.00	$0.00	$0.00	$0.00	$10,460.00
	Cooperator/ Contributors:	SIETE DEL NORTE					
04-PA-11030200-019	$100,000.00	$0.00	$100,000.00	$0.00	$0.00	$0.00	$100,000.00
	Cooperator/ Contributors:	NEW MEXICO ENVIRONMENT DEPARTMENT					
04-RO-11030200-017	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	Cooperator/ Contributors:	TAOS COUNTY					
05-CA-11030200-003	$0.00	$0.00	$0.00	$10,000.00	$0.00	$10,000.00	$10,000.00
	Cooperator/ Contributors:	TAOS COUNTY SHERIFF DEPT, TAOS COUNTY SHERIFFF'S DEPARTMENT					
05-CA-11030200-005	$0.00	$0.00	$0.00	$4,500.00	$0.00	$4,500.00	$4,500.00
	Cooperator/ Contributors:	RIO ARRIBA COUNTY, RIO ARRIBA COUNTY SHERIFF'S DEPARTMENT					
05-CO-11030200-008	$20,000.00	$0.00	$20,000.00	$0.00	$0.00	$0.00	$20,000.00
	Cooperator/ Contributors:	AMIGOS BRAVOS, INC.					
05-CO-11030200-010	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	Cooperator/ Contributors:	NEW MEXICO DEPT OF GAME & FISH					
05-CO-11030200-013	$150,280.00	$0.00	$150,280.00	$0.00	$0.00	$0.00	$150,280.00
	Cooperator/ Contributors:	NEW MEXICO ENVIRONMENT DEPARTMENT					
05-CS-11030200-009	$0.00	$0.00	$0.00	$19,350.00	$0.00	$19,350.00	$19,350.00
	Cooperator/ Contributors:	UNIVERSITY OF WYOMING					
Grant & Agreement Number	**Cooperator Cash Contibution**	**Cooperator Other Contribution**	**Cooperator Total Contribution**	**FS Cash Contribution**	**FS Other Contribution**	**FS Total Contribution**	**Total G&A Amount**
05-PA-11030200-012	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	Cooperator/ Contributors:	ROCKY MOUNTAIN YOUTH CORPS					
06-IA-11030200-001	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	Cooperator/ Contributors:	U.S. POSTAL SERVICE					
06-MU-11030200-005	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	Cooperator/ Contributors:	TAOS PUEBLO					
06-CO-11030202-002	$9,000.00	$0.00	$9,000.00	$0.00	$0.00	$0.00	$9,000.00
	Cooperator/ Contributors:	ROCKY MOUNTAIN ELK FOUNDATION					
06-IA-11250200-014	$0.00	$0.00	$0.00	$17,000.00	$0.00	$17,000.00	$17,000.00
	Cooperator/ Contributors:	USDHHS FEDERAL OCCUPATIONAL HEALTH					
Grand Totals:	**$1,396,705.73**	**$322,187.00**	**$1,718,892.73**	**$3,383,115.00**	**$3,300.00**	**$3,386,415.00**	**$5,105,307.73**

G&A Count: 35