Monitoring and Evaluation Report

Shasta-Trinity National Forest

FY 2006

FY 2006 Monitoring and Evaluation Report
Shasta-Trinity National Forests

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Appendix C

Summary of the 2006 Forest Monitoring Results

Current Trends and Highlights

- Strong partnerships were maintained in the areas of local community development, recreation programs, natural resource management, and adaptive land management.
- Illegal activities increased on the forest compared to a decrease in the law enforcement workforce.
- New tools were further developed for fuels and wilderness management: a Stewardship FireShed Assessment (SFA) process and a Trinity Alps Wilderness Fire Use plan.
- Timber volume continued to be less than allowed in the Forest Plan and intermediate and salvage harvest continued to be emphasized more than regeneration cutting.
- Forest road maintenance funding continued to decline and roads decommissioning continued to increase due to funding and for safety reasons.
- Conifers mortality due to bark beetle infestations saw a decline compared to previous years.
- Range management focused on environmental planning with a decrease in permit administration.
- Several thousand tons of fish-friendly rock were distributed along 1500 feet of the Trinity River to accommodate salmon spawning.
- With assessments in place, project planning began in Late-Successional Reserves for habitat enhancement and fuels reduction.
- An off-highway vehicle study was initiated to assess the effects of noise upon the Northern spotted owl. The study will include two more years of data collection.
- Best Management Practices successfully protected water quality at 84% of project sites.

Public use and Information Programs Summary

Heritage Resource Management: Compliance with Section 106

Monitoring was recorded at 30 historic properties with most projects under a Programmatic Agreement for Section 106. At timber sales locations, six inadvertent effects at historic properties occurred. Administrative steps are being done to avoid such future effects.

Recreation

Partnerships: There has been a strong emphasis on partnerships, volunteerism and hosted programs on the Forest since 1995. In 2006, the Forest maintained partnerships with Shasta Lake Improvement Project Partnership, Shasta and Trinity Houseboat Owners Associations, Backcountry Horsemen of America, California Conservation Corps (CCC), Backcounty CCC, Redding Dirt Riders, Redding Mountain Biking, Sierra Club, TrailWeavers, and The Watershed Research and Training Center.

Off Highway Vehicle (OHV) Route Designation Process: The Forest continued to implement the five-step OHV Route Designation Strategy and the new Travel Management Rule.

Pacific Crest Trail (PCT): The California Conservation Corps and the Back Country Horsemen helped the Forest maintain the PCT

Wilderness

A Fire Use Plan was being developed for Trinity Alps Wilderness. The Forest focused efforts on meeting the 10-year Wilderness Stewardship Challenge. Areas of potential encroachment were monitored and posted, with no miles posted in FY 2006. A temporary campfire closure order was established for high lakes at Canyon Creek and Stuarts Fork headwaters

Wild and Scenic Rivers

River access and cleanup projects helped significantly to improve the wild and scenic character of Trinity River. Section 7 analysis of the Wild and Scenic Rivers Act was conducted for Canyon Creek, a proposed river, pursuant to the Trinity 1-8 mining proposal. Caltrans continued to plan for a curve widening for Hwy 299.

Visual Quality

The visual quality program focused on the design collaboration with California Dept. of Transportation, Western Area Power Authority, and Bureau of Reclamation; monitoring of scenery design at Pilgrim Timber Sale and Elmore Fuel Reduction; review scenery for recreation residences; and PG&E hydroelectric permit re-licensing.

Law Enforcement

Illegal activities increased again: the number of marijuana gardens, plants and sophistication of management; vandalism and theft of property, resource damage from OHV use, and theft of fuelwood and timber. Law enforcement and investigation statistics show 1522 incidents, a decrease from the prior year which is due to a lower law enforcement officer workforce and many incidents will never be known or recorded.

Social and Economic Environment Summary

Hayfork Adaptive Management Area

Various studies and collaborative projects occurred. Two research studies on noise disturbance to the northern spotted owl are on-going: one on logging activities and another on off-highway vehicle effects. Community collaboration occurred for various fire and fuels activities including preparation of a stewardship contract at Post Mountain, Brady Fuels Reduction stewardship agreement in Hayfork Valley, and implementing fuels reduction treatments adjacent to State Highway 3.

Community Development/Partnerships

Over 142 active partnership agreements were in place, with 55 agreements newly executed in 2006. There were 10 Resource Advisory Council projects in Shasta County funded at $ 242,115 and 17 projects funded in Trinity County at $ 902,637. Additionally, there were 20 cooperative fire protection agreements. Over 65 partners were involved with grants or agreements. These included CalTrans, California Conservation Corps, Trinity County and Western Shasta Resource Conservation Districts, Bureau of Reclamation, Western Area Power Administration, Rocky Mountain Elk Foundation, California Deer Association, Mule Deer Foundation, Watershed Research & Training Center, and Back Country Horsemen of California.

Tribal Government Program

Consultation continued with Native Americans for timber sales, special use permits and recreation improvements. The Forest entered into new MOUs with the Pit River Tribe and the McCloud Wintu and held quarterly meetings with these two groups. With Pit River, McCloud Wintu and Hayfork Wintu being the most actively involved tribal groups, Native American consultations continue to be productive in resolving issues arising during project planning.

Resource Management Programs Summary

Fire and Fuels

The Forest applied the Stewardship FireShed Assessment process to strategically set priorities for placement of vegetation projects across the landscape. The assessment reviews the effectiveness of various treatment options in project planning. It utilizes forest vegetation and fire modeling tools and analyzes project effectiveness and design.

Timber Management

Allowable sale quantity: The timber volume offered for sale in FY 2006 totaled about 43.1 MMBF. This was lower than the 82.0 MMBF stated in the Forest Plan. For on-the ground timber harvest, the Forest exceeded intermediate and salvage cutting objectives, though did not meet annual regeneration cutting objectives:

Harvest Type	Forest Plan Objective	FY 2006 Accomplishment
Intermediate Cutting Volume (MBF)	12,000	13,690
Salvage Cutting Volume (MBF)	4,000	3,240

Reforestation and Timber Stand Improvement: With emphasis on thinning and salvage, 533 acres were reforested. Since less regeneration cutting occurred, this was 15% of the 3500 acres projected in the Forest Plan.

Biomass: Biomass sale accomplishment was about 6,810 MBF (16%) and sold as part of the regular timber sale program of 43,100 MBF. Biomass opportunity was emphasized on the east side of the Forest.

Facilities Management

Roads: Out of a total of 6565 miles of forest roads, 865 miles, or 13%, were maintained at target operational levels. Due to reduced funding, health and safety issues have become the overriding consideration for road maintenance. About 11 miles of road were decommissioned with more to be decommissioned and "disinvested" in the future. Road construction was low at 3.9 miles.

Dams and bridges: Qualified engineering staff completed bridge and dam inspection reports and was close to full compliance with required inspection frequencies. All operating dams and bridges are up to standard. Some small dams have been removed and stream channels returned to more pre-dam conditions.

Buildings and administrative sites: The Forest complied with required inspection frequency and deferred maintenance protocols. Every building was inspected by qualified personnel at least once every five years. However, current fund levels are not sufficient to maintain buildings to standards and funds primarily go to correct health and safety deficiencies. The Forest worked to dispose of buildings identified for decommissioning in the Facilities Master Plan.

Potable water sources: All potable water sources, at about 40 sites were tested according to regulations. Monthly routine water samples found 9% testing positive with 4% confirmed positive after repeat sampling. Mitigation occurred at these sites after immediate regulatory agency consultation. Thus, water quality was maintained to standard. Further interagency coordination is needed in the future to maintain testing standards at shared facilities.

Forest Pest Management

Aerial detection surveys located 8,485 acres of conifer mortality from bark beetles on the Forest compared to over 40,000 acres in 2004 and 2005.

Range Management

With five of the Forest's 17 allotments vacant, all 12 active allotments were monitored. Of these, 9 were monitored more intensely due to fisheries issues and higher numbers of grazing animals. Fences were maintained on six allotments to monitor use and exclude livestock from riparian areas. Fifty-two acres of riparian areas were monitored and protected from livestock damage. NEPA analysis was completed on 3 allotments.

Biological Environment Summary

Fisheries Management

Sport fisheries: There were 255 acres of underwater lake habitat improved at Shasta Lake for sport fisheries benefits: placement of underwater manzanita brush structures, willow plantings and annual cereal grass seeding. Fish abundance was three to ten times greater in treatment areas.

Improve anadromous fishery: In the South Fork Trinity River Basin, spring-run salmon surveys found greater results than the previous year: 138 adult chinook, 105 adult steelhead, and 109 ½-pound steelhead were counted. Additionally on South Fork Management Unit habitat improvement projects were completed for road decommissioning and obliteration, fish passage in Goods and Browns Creeks, and Hidden Valley watershed restoration. Several thousand tons of fish-friendly rock were distributed along 1500 feet of the Trinity River to accommodate salmon spawning.

Wildlife Management

Late-Successional Reserves: Late-Successional Reserves had five habitat improvement project design plans that began in FY 2006. These LSRs were: Chanchellula (Gemmill Thin), Harris Mountain (Harris Fuels Reduction), Clear Creek (Pettijohn), Mudflow, and Algoma.

Threatened and Endangered: Bald Eagles - Monitoring revealed that 33 of 35 eagle territories were occupied at reservoirs in the National Recreation Area, with a total of 31 chicks fledging. **Northern spotted owl -** A total of 24,500 acres of suitable northern spotted owl habitat were surveyed for project planning on Shasta-McCloud, Trinity, and South Fork Management Units. Northern spotted pairs were detected at 11 sites, with barred owls located at one site. Additionally along with the Mendocino National Forest, the Shasta-Trinity National Forest hosted a study on effects of off-highway vehicles on the northern spotted owl. Performed by the University of Washington, the research was the second of 4 years of data collection. On these Forests, 33 pairs and 18 nests were located in 2006.

Neotropical birds: With partners from Klamath Bird Observatory, Institute for Bird Populations, and PSW Redwood Sciences Lab, neotropical bird population and habitat data were collected using two methodologies. First, bird population and habitat data were collected at Indian Valley and Hocker Road mist net sites according to Monitoring Avian Productivity and

Survivorship protocol. Secondly, Breeding Bird Survey point counts occurred along 5 transects on the Trinity Forest covering a total area 650 acres with results from over 30 bird species.

Botany

Sensitive Plants: Twenty-one new populations of sensitive plants and fungi were found and 53 biological evaluations were written for projects. Additionally, mitigations were developed for 35 projects to lessen or eliminate impacts to sensitive plants. A conservation strategy process for serpentine endemics of Rattlesnake Terrane moved forward with habitat models for six species by the University of California at Davis.

Noxious Weeds: Under Memoranda of Understanding for Shasta, Siskiyou, and Trinity Weed Management Areas, Forest weed program coordinators continued to cooperate with agencies and organizations to develop and implement weed inventory, prevention, and treatment projects. Weed spatial and tabular data was prepared for future entry into the National Data Center.

Physical Environment Summary

Soil and Water

Best Management Practices (BMP): Forest monitored 83 randomly selected sites for BMP protection of soil and water resources in accordance with regional protocols. Monitoring sites were at a variety of projects: timber, engineering, recreation, range, fire, minerals, etc. At these sites, successful implementation of all planned BMP occurred at 63 sites (75%), while 70 sites (84%) were successfully effective in protecting water quality.

Soil Quality: Monitoring was done on the Shasta McCloud Management Unit for the Bear Fire where weed-free rice straw mulch was used to ameliorate erosion and sedimentation. One year after application of mulch at high severity burn areas, erosion was lowered to background levels (0.62 tons/acre) and vegetation had recovered. At high severity burn areas where erosional pavement was created (fine soil washed away to leave rock fragments) erosion recovery was achieved but vegetative recovery is expected to occur in 5 years. Where mulch was not applied, natural recovery took longer in high severity burned areas.

Watershed Restoration Projects: For aquatic systems, over 1 mile of Trout Creek, a tributary to the McCloud River, and 92 acres of riparian meadow were renovated by obliterating a gully and restoring the remnant stream channel. Also 18 new ponds were created. The Forest will implement a comprehensive 10-year monitoring plan of vegetation, water table, stream discharge and fish for the project. The Forest supported partners in fish passage restoration at Swamp Creek where culverts hindered redband trout migration. With restoration at 2 crossings, connectivity was returned to 3 miles of Swamp Creek. For terrestrial systems, restoration at the Hotlum Fire included monitoring and control of invasive plant species. To encourage early seral stages, improve wildlife habitat and restore soil productivity windrows were re-spread on 75 acres at Mt Shasta-McCloud unit.

The National Strategic Plan

The USDA Forest Service Strategic Plan for Fiscal Years 2004-2008 displays six conservation goals for the Nation's forests and grasslands. The six goals are based on four current threats to conservation—growing fire danger due to hazardous fuel buildups; the spread of invasive species; loss of open space; and unmanaged recreation, particularly the unmanaged use of off-highway vehicles. The goals of the Strategic Plan include:

1 Reduce the risk from catastrophic wildland fire
2 Reduce the impacts from invasive species
3 Provide outdoor recreation opportunities
4 Help meet energy resource needs
5 Improve watershed condition
6 Other mission related work

During 2006 the Shasta-Trinity National Forest made contributions toward all of these goals. These results can be found in the Monitoring and Evaluation report under each respective topic.

APPENDIX A
FY 2006 Implementation of Forest Plan Standards and Guidelines

Appendix A provides background and detailed information for the FY 2006 Monitoring and Evaluation Report. It is organized by resource areas and evaluates the use of key standards for each area.

Public use and Information Programs

Heritage Resource Management: compliance with Section 106

Forest Plan Standard: For Prescription XI sites, achieve full compliance with Section 106 and develop required protection plans. (Ref: Forest Plan, page 4-50, D3, D12)

Monitoring Objectives: To ensure that Forest's program of work is in compliance with Section 106 and 36 CFR 800. Determine if plans have been completed for significant heritage resources and determine if sites are being monitored sufficiently.

Methods: Both the FY 2006 Department of the Interior Report and the Annual Report for the Section 106 Programmatic Agreement, describe Forest compliance with Section 106.

Data Collected: Monitoring was recorded at 30 historic properties around the Forests. No protection plans were prepared during FY 2006.

Results: In FY 2006, the vast majority of projects fell under the Programmatic Agreement for Section 106. Based on the monitoring of timber sales, six inadvertent effects to historic properties have been identified. Administrative steps are being done to avoid future effects. Reviews by the State Historic Preservation Office and Region 5 support this conclusion.

Recommendation: In some cases monitoring sites needs to be more frequent and priority of monitoring needs to be given to Prescription XI sites within proposed actions.

Interdisciplinary Involvement: Information resulting from archaeological studies is being shared with other specialists preparing watershed studies.

Public Involvement: Public involvement occurs during project level NEPA.

Data location: Heritage department, Forest headquarters, Redding, CA.

Recreation: partnerships

Forest Plan Standards: Promote partnerships with user groups to assist in the operation, maintenance, and development of recreation sites and facilities (Ref: Forest Plan, page 4-23, r)

Method: Recreation staff and members of the Forest Recreation Fee Board of Directors participated in on-going discussions related to maintaining and expanding existing partnerships, developing new partnerships, exploring new ways of doing business, and determining the most efficient means for accomplishing program objectives, including providing safe, quality recreation opportunities and meeting the diverse needs of the recreating public.

Results: In 2006, the Forest maintained partnerships with Shasta Lake Improvement Project Partnership, Shasta and Trinity Houseboat Owners Associations, Backcountry Horsemen of America, California Conservation Corps (CCC), Backcounty CCC, Redding Dirt Riders, Redding Mountain Biking, Sierra Club, TrailWeavers, and The Watershed Research and Training Center. These partners assist the Forest in operating, maintaining and enhancing recreation sites and trails for forest visitors. The majority of the developed sites in the National Recreation Area continue to be managed by concessionaires.

Recommendations: Continue to promote partnerships and explore ways to improve efficiency.

Public Involvement: Direct involvement with partners, stakeholders, other forests, other agencies and interested community members.

Data location: Recreation department, Forest headquarters, Redding, CA.

Recreation: OHV

Forest Plan Standard: Cooperate with the State, other agencies, and user groups to identify potential OHV trails. Where compatible with management objectives, develop segments of OHV trails that support the concept of a statewide OHV trail system. (Ref: Forest Plan, page 4-23, #16 f.)

Results: The Forest continued to implement Region 5's five-step Route Designation Strategy and the Travel Management Rule in 2006.

Recommendations: Continue to implement the five-step Route Designation Strategy. Promote increased public participation in the route designation process.

Public Involvement: Direct involvement with motorized and non-motorized user groups, other state and federal agencies and local community members occurred in 2006.

Data location: Recreation department, Forest headquarters, Redding, CA.

Recreation*:* Pacific Crest Trail (PCT)

Forest Plan Standard: Provide a safe, usable, and convenient passage through the project area or a reasonable detour during the entire period of project activities. As a minimum, detours will consist of temporary route markers and a four foot wide travel way cleared of vegetation. Tread work will only be performed to allow safe stock passage. (Ref: Forest Plan, page 4-23, #16 b.2)

Method: In 2006, the California Conservation Corps and the Back Country Horsemen (BCH) helped maintain the portions of the PCT that traverse the Forest.

Recommendations: Provide regular maintenance on the sections of the PCT that cross the Forest. Continue to promote safety on the PCT by providing safe, useable and convenient passage for users and by providing the appropriate level of training needed for individuals performing trail maintenance work and by enforcing the use of the required Personal Protective Equipment while performing trail maintenance activities on the PCT.

Public Involvement: Direct involvement with the California Conservation Corps, Back Country Horsemen of America, Pacific Crest Trail Association, and "through hikers".

Data location: Recreation department, Forest headquarters, Redding, CA.

Wilderness: develop direction

Forest Plan Standard: Develop wilderness direction to guide annual programs and long-term strategic actions in the Forest's 5 wildernesses. (Ref: Forest Plan page 4-29, #24a).

Method: Nationwide, a 10-Year Wilderness Stewardship Challenge has been initiated to ensure that all wilderness areas are meeting common objectives that will result in quality wilderness. Components of the strategy include addressing noxious weeds, fire ecology, environmental education, Forest Plan direction, and campsite inventories.

Results: Wilderness Implementation Schedules were developed to implement direction from the Forest Plan. A Fire Use Plan is currently being developed for Trinity Alps Wilderness. The Forest focused other efforts on meeting the 10-year Wilderness Stewardship Challenge.

Recommendations: Continue to implement the 10-year wilderness strategy, including elements in the implementation schedules and Limits of Acceptable Change monitoring.

Data location: Recreation department, Forest headquarters and District Offices.

Wilderness: encroachment sites

Forest Plan Standard: Post potential encroachment sites on the boundaries of the five Wildernesses as necessary. (Ref: Forest Plan page 4-29, #24b)

Method: Wilderness boundary posting is an on-going forest program. Posting is routinely conducted in conjunction with specific projects, such as timber sale activity adjacent to Wilderness for Forest Service and private lands timber management.

Results: Areas of potential encroachment are monitored and posted. No miles were posted in FY 2006.

Recommendations: Continue program.

Data location: Recreation department, Forest headquarters, Redding, CA.

Wilderness: visitor information

Forest Plan Standard: Initiate visitor information and education programs that interpret and emphasize values and behavior that protect wilderness resources. Post regulations, orders, and/or permits outside the Wilderness boundaries. (Ref: Forest Plan page 4-29, #24f).

Method: Seasonal wilderness rangers meet visitors and provide them with information. Signs and pamphlets are also posted at all trailheads. The Trinity River Management Unit is utilizing an "electronic kiosk" to disseminate wilderness information, education, and permits. Recreation Opportunity Guides are available either in hard copy form or on the Forest website http://www.fs.fed.us/r5/shastatrinity/maps/rog-index.shtml

Results: The various methods of sharing information on wilderness behavior and ethics were used. Problem areas still existed, requiring alternate approaches. For example, a temporary campfire closure order was established for high lakes at Canyon Creek and Stuarts Fork headwaters.

Recommendations: Continue using proven methods and develop new ways of disseminating information to wilderness users. Continue to monitor the effectiveness of the campfire closure order before making a decision as to whether to implement for a longer period of time.

Data location: Ranger District Offices.

Wild and Scenic Rivers

Forest Plan Standard: Protect the existing character within established boundaries of designated Wild and Scenic Rivers, and within a 1/4 mile boundary on either side of the proposed Wild and Scenic Rivers pending the outcome of their formal classification by Congress. (Ref: Forest Plan page 4-28, #23 Wild and Scenic Rivers).

Method: Management Plans are complete for all designated rivers. These plans are used to address specific issues, such as improved public access. Proposed rivers are being addressed through the project planning process. Otherwise, both existing and proposed rivers are places where the Forest and partners come together to implement actions, such as the annual National Rivers Cleanup Day.

Results: River access (at Big Flat and Pigeon Point) and annual cleanup projects helped significantly to improve the wild and scenic character of Trinity River. A Section 7 analysis was conducted for Canyon Creek, a proposed river, pursuant to the Trinity 1-8 mining proposal. Caltrans continued to propose actions (i.e. curve widening) for Hwy 299, that must be analyzed for potential effects to the Trinity River. Due to long-standing problems with the land survey along much of Trinity River, encroachments of private features onto National Forest System lands, and *vice versa*, continued to be identified. Private landowners also approached the Forest seeking access to their lands. Land ownership issues are being prioritized to accommodate current budget levels.

Recommendations: Continue to conduct high priority projects and maintain active community involvement.

Data location: Weaverville Ranger District Office and Forest Headquarters, Redding, CA.

Visual Quality

Forest Plan Standard: Maintain a diversity of scenic quality throughout the Forests, particularly along major travel corridors, in popular dispersed recreation areas, and in highly developed areas. (Ref: Forest Plan Goals, page 4-5)

Monitoring Objective: Assess integration of visual quality standards in forest management activities.

Method: The 2006 visual quality program focused on the design needed to: (1) collaborate and review scenery with other agencies such as the California Dept. of Transportation, Western Area Power Authority, and Bureau of Reclamation (2) the monitoring of scenery for vegetation management projects, such as Pilgrim Timber Sale and Elmore Fuel Reduction and (3) collaborate and review scenery for special use permits, including recreation residences and the PG&E permit re-licensing.

Results: Projects will be monitored for implementation of proposed objectives.

Recommendations: Continue development and implementation of proposals.

Public Involvement: Public involvement was achieved through the NEPA comment process.

Data location: Recreation and visual quality department, Forest headquarters, Redding, CA.

Law Enforcement

Forest Plan Standard: Protect the public interest by a thorough and aggressive program of violation prevention, violation detection, investigation and apprehension of violators and the presentation of cases for prosecution. (Ref: Forest Plan page 4-21, #13)

Monitoring Objective: Annual monitoring of the number of reported incidents.

Methods: Data is summarized yearly by law enforcement staff in the Law Enforcement and Investigations Management Attainment Reporting System (LEIMARS) report.

Results and Recommendations:
LEIMARS annual statistics for Shasta-Trinity Forest: Incidents, Warnings, Citations and Arrests

FY 2001	1,557	**FY 2004**	2,223
FY 2002	1,912	**FY 2005**	2,681
FY 2003	1,897	**FY 2006**	1,522

Though LEIMARS statistics show a decrease from the prior year, 2006 had an increase in the number of marijuana gardens, the number of plants eradicated and an increasing sophistication of the drug trafficing organizations that manage the gardens.

There was also an increase in vandalism and theft of both private and public property including resource damage due to OHV use, range allotment fences, fuelwood theft and timber theft. The

trend of more visitors each year to the National Recreation Area at Shasta Lake is welcome from a recreation viewpoint but it is increasingly difficult to deal recreational violations from a law enforcement standpoint.

LEIMARS statistics show a decrease from the prior year due to 1 LEO being on extended sick leave for several months. In 2006, the law enforcement workforce was down to 0 patrol captain and 3 law enforcement officers on the Forest. In this low workforce situation, it is increasing difficult to adequately deal with all types of increased incidents. Without a larger law enforcement workforce the Forest can only respond to after-the-fact to violations, rather than having a proactive law enforcement program.

Data location: Law enforcement office, Forest headquarters, Redding, CA.

Social and Economic Environment

Hayfork Adaptive Management Area

Forest Plan Standard: Development, demonstration, implementation, and evaluation of monitoring programs and innovative management practices that integrate ecological and economic values. (Ref: Forest Plan, page 4-69, Technical Objectives).

Monitoring Objective: To report implementation and effectiveness of actions that lead towards the goals and objectives for the Hayfork Adaptive Management Area.

Several projects occurred in the Hayfork Adaptive Management Area in FY 2006:
O&C Research on logging activity noise disturbance effects to Northern spotted owls. This project was developed to research the effects that disturbance associated with logging activities has on productivity of the northern spotted owl. In 2006 the Forest continued analysis of Alan Franklin's owl data and existing data on logging disturbances, correlated with known sites within the AMA. Study results are expected to be available in 2007.

Research on Effects of Off-Highway Vehicles on Northern Spotted Owls. The goal of this study is to assess disturbance effects of Off-Highway Vehicles (OHV) on northern spotted owl, which included data collection within the AMA in FY 2006. Information is needed on the effects of OHV use on northern spotted owl stress levels, behavior, and nesting success. Results of this study would assist in managing OHV use in owl habitat. Results of the 3-year study will be available in 2008.

Post Mountain Stewardship Collaboration. During 2005, the Post Mountain NEPA process started. In FY 2006, collaboration continued with the Post Mountain Volunteer Fire Department and the Hayfork Watershed Research and Training Center. The NEPA document was completed in May of 2006. A Post Mountain Stewardship Integrated Resource Contract is expected to be awarded in 2007.

Brady Fuels Reduction Stewardship Agreement collaboration began in 2006 with Hayfork Watershed Research and Training Center and adjacent land owners in the Hayfork Valley. This project will be showcased in the community to share what can be done in a collaborative effort.

It will be used for field visits for community members to see what type of fuel reduction could occur on and adjacent to their property. It is expected that this agreement will be signed in 2007.

Highway 3 and Hayfork South Fuel Reduction. A collaborative effort was developed with the Hayfork Watershed Research and Training Center and landowners adjacent to State Highway 3. The goal was to reduce fuel directly adjacent to State Highway 3. Implementation occurred in 2006 and continues into 2007. In 2006, approximately three miles of Fuel Reduction was accomplished on private and public lands.

The Hayfork Adaptive Management Area guide is now available on the Forest website.

Hayfork Comparative Risk Assessment Framework and Tools Beta Testing started in 2005, and continued in FY 2006. Comparative Risk Assessment Framework and Tools (CRAFT) is designed to lead natural resource managers through an integrated assessment of the risks, uncertainties, and trade-offs that surround forest and rangeland management. CRAFT helps to identify and clarify objectives, design alternatives, assess probable effects, compare risks, and communicate risks. Beta testing is expected to be completed in 2007.

Community Development/Partnerships

Forest Plan Standard: Emphasize the development of partnership programs through coordination with interested public and agencies (Ref: Forest Plan, page 4-5 #28).

In 2006, the Forest executed 55 new agreements resulting in a total of 142 active agreements. Additionally, there were 20 cooperative fire protection agreements.

Grants	24
Collection Agreements	23
Participating Agreements	57
Cost Share	9
Interagency Agreements	10
MOUs	19
Total	**142**

Types of Partners: Partnerships included grants and agreements with over 65 different partners. Some of these include: the Resource Advisory Councils (RAC) in Shasta and Trinity Counties, CalTrans, California Conservation Corps, Trinity County Resource Conservation District, Western Shasta Resource Conservation District, Bureau of Reclamation, Western Area Power Administration, the State of California, Rocky Mountain Elk Foundation, California Deer Association, and the Mule Deer Foundation, the Watershed Research & Training Center, and the Back Country Horsemen of California.

Partnerships with Resource Advisory Committees (RAC) on the Shasta-Trinity Forest: In October 2000, Congress passed Public Law 106-393 entitled "Secure Rural Schools and Community Self Determination Act of 2000" which stabilized federal payments to states for funding schools and roads.

The Act established the committees consisting of 15 local citizens representing a broad array of backgrounds, interests, and experiences. Each year the Resource Advisory Committees recommend projects to the Forest Service to be conducted on Forest Service system lands, or that will benefit resources on Forest Service system lands. For more information visit the Forest website at: http://www.fs.fed.us/r5/shastatrinity/home-page/rac.shtml

SHASTA COUNTY RAC

In FY06 there were 10 RAC projects funded in Shasta County for a total of $ 242,115.

Connecting Kids to the Land	Shasta-Trinity NF	Approved	$5,000
Day Lassen Bench Fuel Reduction II	Shasta-Trinity NF	Transferred to Lassen NF	$60,000
Dumpsite Cleanup and Enforcement	Shasta-Trinity NF	Transferred to Lassen NF	$14,425
Fender's Ferry Rd Rehabilitation (34N17)	Shasta-Trinity NF	Completed	$100,000
Forestry Institute for Teachers (FIT)	Shasta-Trinity NF	Completed	$20,000
Jones Valley Fish Habitat Improvement	Shasta-Trinity NF	Completed	$1,920
Pacific Crest Trail Opening Maintenance	Shasta-Trinity NF	Completed	$5,000
RAC Project Maps	Shasta-Trinity NF	Completed	$2,150
Shasta County RAC Administration	Shasta-Trinity NF	Completed	$2,000
Shasta Lake Fish Habitat Improvement	Shasta-Trinity NF	Approved	$31,620

TRINITY COUNTY RAC

In FY06 there were 17 RAC projects funded in Trinity County for a total of $ 902,637.

2006 Doe Lake Trail Restoration	Shasta-Trinity NF	Approved	$33,700
2006 Shasta-Trinity Fish/Trails Project	Shasta-Trinity NF	Completed	$14,000
Bear Creek FMZ Stage I	Shasta-Trinity NF	Approved	$30,569
Browns Integrated Project: road decommissioning	Shasta-Trinity NF	Approved	$112,000
Finley FMZ Stage I	Shasta-Trinity NF	Approved	$21,053
Hayfork Area Fuels '06	Shasta-Trinity NF	Completed	$88,054
Hayfork Youth Restoration and Basin Trails	Shasta-Trinity NF	Completed	$26,500
Hidden Valley Decommission	Shasta-Trinity NF	Approved	$155,000
Hidden Valley Road Upgrade	Shasta-Trinity NF	Approved	$35,000
Hidden Valley Watershed Restoration Project, SFMU road upgrade and decommissioning.	Shasta-Trinity NF	Approved	$106,500
Hwy 3 South '06	Shasta-Trinity NF	Completed	$61,655
Little Browns FMZ Stage I	Shasta-Trinity NF	Approved	$40,031
Musser Hill FMZ Stage II	Shasta-Trinity NF	Approved	$135,075
Pacific Crest Trail (PCT) Opening	Shasta-Trinity NF	Completed	$5,000
Trinity Alps Wilderness Trail Clearing-Phase II	Shasta-Trinity NF	Completed	$18,700
Trinity County Native Understory Seed Bank	Shasta-Trinity NF	Approved	$4,300
Trinity County RAC GIS (Carryover)	Shasta-Trinity NF	Completed	$7,500
Weaver Basin Trails Maintenance/Restoration	Shasta-Trinity NF	Completed	$8,000

Data location: Grants and Agreements department, Forest headquarters, Redding, CA.

Shasta Dam Feasibility Study
During 2006, the Forest continued to work with the Bureau of Reclamation in the feasibility study of enlarging Shasta Dam. The Forest participated on the Project Management Environmental Study Team and the Project Coordination Team.

Trinity River Basin Fish and Wildlife Management Program.
Coordination with the Management Program was active in FY06. The Forest Service is a chartered member of the Trinity River Restoration Program Management Council and participates in all council and subcommittee functions. The Forest began a gravel injection project on the Trinity River in 2006 that will be completed in 2007. Over 1500 feet of river was mechanically shaped and then injected with 2500 tons of gravel rock for salmon spawning purposes.

Tribal Government Program

Forest Plan Standard: Develop partnerships with Native American tribes and consult with Native Americans at the forest planning and project level of analysis. (Ref: Forest Plan page 4-4 #7, and page 4-50 #4)

Monitoring Objectives: The objective of monitoring the Tribal Government Program is to determine if partnerships and the consultation process are established and serving to improve relationships, communication and understanding between the Forest Service and Indian people.

Methods: MOUs are signed with the Pit River Tribe, the Shasta Nation, the Redding Rancheria, and the McCloud Wintu. Annual meetings are held with recognized tribes and Native Americans are consulted during project scoping and watershed analysis when there are issues of concern.

Results: In 2006, consultation continued with Native Americans for projects such as timber sales, special use permits and recreation site improvements. The Forest entered into new MOUs with the Pit River Tribe and the McCloud Wintu. The Forest held quarterly meetings with these two groups. Native American consultations have been productive in resolving issues arising during project planning. Some projects were modified following consultations. Native Americans are interested in both historical places and areas of current use on the Forest. The Pit River Tribe, the McCloud Wintu and the Hayfork Wintu continue to be the most actively involved tribal groups.

For more information related to these objectives, refer to the Sec 106 PA Heritage Resource Management Report for FY 2006 prepared by the Forest Archeologist.

Recommendation: Continue consultations and partnerships at current level.

Public Involvement: Direct involvement with tribes.

Data location: Heritage department at Forest headquarters, Redding, CA.

Resource Management Programs

Fire and Fuels: Hazard Fuels Treatments and Strategic Planning

Forest Plan Standard: Natural fuels will be treated in the following order of priority: 1) public safety; 2) high investment situations (structural improvements, powerlines, plantations, etc.); 3) known high fire occurrence areas; and 4) coordinated resource benefits, such as ecosystem maintenance for natural fire regimes. (Ref: Forest Plan, page 4-17 #8, e)

1. Fuels Planning Monitoring 2005-2007

Objective: Monitor (A) environmental analysis process and (B) strategic placement of treatments across the forest.

Methods: (A) Environmental effectiveness evaluation for fuels treatment prescription evaluates hazard reduction levels by potential fire behavior outputs (i.e. flame lengths, rate of spread). (B) The Forest applied an integrated forum to incorporate the Stewardship FireShed Assessment (SFA) process to strategically set priorities for placement of vegetation projects across the landscape. The SFA allows a decision maker to assess the effectiveness of treatment options in the planning phase of a project. It utilizes forest vegetation and fire modeling tools and analyzes their effectiveness and design. The advantages to learn and understand SFA are undisputed. A high level of expertise is required to become proficient with the various technical tools that comprise SFA. Therefore, the Forest is taking incremental steps to fully adopt the SFA concepts and tools. There have been three formal workshops and a handful of informal sessions sponsored by the Regional Office and Forest. The Forest moved closer to full implementation of comprehensive vegetation-fuels strategy.

Results: The South Fork Management Unit utilized the SFA tools for a couple of 2006 projects. Review of modeling outcomes and lessons learned for these projects was shared forest-wide. Monitoring and sharing of information will help improve consistency and application of SFA tools

Recommendation: Continue Forest efforts to learn and adopt SFA process and tools for development of vegetation treatment programs.

Public Involvement: As a very important aspect of SFA implementation, the public participated in formal workshops and will become more involved as the tools are developed further and more people are trained in using SFA.

Fire and Fuels: Activity Fuels

Forest Plan Standard: Activity fuels that remain after meeting wildlife, riparian, soil, and other environmental needs will be considered surplus and a potential fire hazard. The amount and method of disposal will be determined in ecosystem analysis. (Ref: Forest Plan, page 4-17)

Monitoring Objectives: Evaluate the effectiveness of prescribed fuel treatments to adequately treat excess activity fuels within various site-specific resource and environmental constraints.

Methods: All proposed treatment areas were visited prior to logging during the NEPA stages. Fuels inventories, photo series assessment, and team expertise were used to estimate the amount of activity fuels likely to be generated on a unit-by-unit basis for the project area. If there were no plans for reforestation; activity fuels were treated to meet hazard reduction objectives. In areas of reforestation, fuels specialists and silviculturists worked together to prescribe the appropriate method of fuel treatment. All treatments, both for hazard reduction and site-prep, were developed by project interdisciplinary teams.

Results: In FY 2006, the McIntosh machine pile project at Shasta-McCloud Management Unit was monitored. A post-burn fuels inventory and visual site assessment found that the 280 acre mechanical piling and burn treatment of prescribed activity fuels was successfully implemented.

Recommendation: Continue to carefully monitor timber sale Brush Disposal (BD) program, to assess whether the pre-sale estimated BD work adequately meets the needs of LMP standards and recommendations for the post-harvest outcome.

Public Involvement: Field trips with local citizens groups and industry representatives are conducted to review timber sale areas.

Data location: Burn plans are located at local Management Unit Offices, headquarters in Redding and Redding Interagency Command Center. Post-burn summaries are located at the District offices.

Timber Management: allowable sale quantity

Forest Plan Standard: Timber yields from suitable lands will be chargeable toward the Allowable Sale Quantity ASQ. The suitability of land for timber production will be field verified at the project level using the timber suitability criteria shown in Appendix I of the Forest Plan. (Ref: Forest Plan page 4-26, #20a., and page 5-13, Timber)

Monitoring Objective: The objective is to determine if the timber sold in FY 2006 meets the ASQ level specified in the Forest Plan.

Method/Data Collected: Information on timber products offered and sold is collected at the district level and compiled at the forest level into a national database called the Timber Information Management System (TIM).

Results: The timber volume offered for sale in FY 2006 totaled about 43.1 MMBF. This was lower than the 82.0 MMBF allowable sale quantity as stated in the Forest Plan. The average annual timber volume offered for sale since the signing of the Forest Plan in 1995 is about 55.6 MMBF, or about 68% of the ASQ.

Recommendations: Continue monitoring annually to determine the average annual output for the 10 year period of the Plan.

Public Involvement: Public involvement occurs during NEPA at the project level.

Where is data located: The Timber Information Management (TIM) report can be accessed through Forest Service computer systems.

Timber Management: silvicultural systems

Forest Plan Standard: Silvicultural Systems/Harvest Methods. Emphasize the regeneration harvest of understocked and poorly growing stands, whether using even or uneven-aged systems. Intermediate cuttings in overstocked stands (thinning) and the salvage of dead and dying trees will also be emphasized.(Ref: Forest Plan page 4-26, #20e)

Monitoring Objective: The objective is to determine if silvicultural systems and harvest methods prescribed in timber sales are following the prescriptions specified in the Forest Plan.

Method: Information was compiled through review and collection of volume per acre data from individual timber sale Environmental Assessments (EAs) and contracts sold.

Data Collected: Volume and acres of regeneration cutting and intermediate (thinning) and salvage cutting in timber sales.

Results: The Forest did not meet annual regeneration cutting objectives, but exceeded the intermediate and salvage cutting objectives, as follows:

Harvest Type	Forest Plan Objective	FY 2006 Accomplishment
Regeneration Cutting-Volume (MBF)	66,000	4,140
Regeneration Cutting-Acres	3,500	230
Intermediate Cutting-Volume (MBF)	12,000	13,690
Salvage Cutting-Volume (MBF)	4,000	3,240

Recommendations: The Forest would have to place additional emphasis on regeneration cutting in the future in order to meet long-term sustained yield timber objectives as specified in the Forest Plan.

Public Involvement: Public involvement occurs during NEPA at the project level. Extensive public involvement occurred during the preparation of the Forest Plan.

Where is data located: Timber sale EAs and contracts are at Forest headquarters, Redding, CA.

Timber Management: reforestation

Forest Plan Standard: Achieve stocking standards of well distributed trees within five years of final harvest (unless otherwise certified by a certified silviculturist as meeting ecosystem objectives) under all silvicultural methods. (Ref: Forest Plan page 4-26, #20g, and page 5-13, Timber)

Monitoring Objectives: The objectives are to 1) determine if reforestation goals are being met,

and 2) determine if regeneration harvest areas are being adequately stocked within five years.

Method: Information on reforestation accomplishment and regeneration status was taken from the Forest Service Activity Tracking System (FACTS).

Data Collected: FY 2006 reforestation acres were accomplished and FY 2001 regeneration harvest acres were certified for reforestation in FY 2006.

Results: Reforestation acres accomplished totaled 533 acres. This is about 15% of the 3500 acres projected in the Forest Plan because the Forest has emphasized thinnings and salvage more than regeneration cutting during the past few years.

Recommendations: Continue monitoring annually.

Public Involvement: No direct involvement.

Where is data located: The data resides in the National FACTS Database.

Timber Management: timber stand improvement

Forest Plan Standard: Timber stand improvement (TSI) projects will emphasize maintaining or improving growth, and healthy, vigorous trees, through release and thinning. (Ref: Forest Plan page 4-27, 1, and page 5-13, Timber)

Monitoring Objective: The objective is to determine if timber stand improvement goals are being met.

Method: Information on TSI accomplishment was taken from the FY 2006 FACTS national database.

Data Collected: TSI acres accomplished.

Results: TSI acres accomplished totaled 2803 acres. This was less than the 5300 acres (53%) projected in the Forest Plan.

Recommendations: Continue monitoring annually.

Public Involvement: No direct involvement.

Where is data located: The FACTS National Database.

Biomass

Forest Plan Standard: Incorporate biomass opportunities into ecosystem analysis and project proposals that meet ecosystem objectives, such as dead/down material for wildlife and ground cover for soil protection, and to reduce fuel loading to complement the natural fire regime. (Ref: Forest Plan page 4-14, #3a)

Monitoring Objective: Determine if biomass opportunities have been incorporated into project proposals.

Method: Information on biomass volume offered and sold was compiled through the review and collection of volume data from timber sale contracts sold in 2006.

Data Collected: Volume of biomass sold in FY 2006.

Results: No volume targets for biomass were established in the Forest Plan. Actual accomplishment was about 6810 MBF (16%) of biomass sold as part of the Forests' regular timber sale program of 43,100 MBF. Biomass opportunities have been emphasized more on the east side of the Forest. Biomass opportunities have been limited on the west side of the Forest primarily due to economic constraints.

Recommendations: In the future, greater priority should be placed on sawlog volume when allocating timber dollars (NFTM). Biomass opportunities should be multi-funded, using fuels, wildlife, EM, and other funding sources along with timber dollars to accomplish biomass removal projects.

Public Involvement: Public involvement occurs during NEPA at the project level.

Where is data located: Timber sale contracts at Forest headquarters, Redding, CA.

Facilities Management: road maintenance

Forest Plan Standard: Schedule and perform road maintenance activities to meet management objectives. (Ref: Forest Plan page 4-16, #7a., and page 5-7, Facilities)

Monitoring Objective: To ensure that the Forest road maintenance program meets current regulations and direction.

Data Collected: In FY 2006, based on a total of 6565 miles of forest system roads:

1. Miles of roads maintained:

High clearance roads	318.8
Passenger vehicle roads	545.9
Total	864.7 miles of road maintenance

2. Total miles of road construction = 3.9 miles
3. Total miles of road decommissioned = 11.4 miles

Results: Results show that current funding not sufficient to maintain roads at target operational levels. Only 13% of forest roads received some type of maintenance and, of those, 9% were maintained to standard.

Recommendations: Due to lack of funding, health and safety issues have become the overriding consideration for road maintenance. More roads will need to be decommissioned and "disinvested" in the future unless funding increases.

Public Involvement: Informal contacts, public comments and complaints.

Data location: Engineering department at Forest headquarters, Redding, CA.

Facilities Management: dams and bridges

Forest Plan Standard: Inspect dams and bridges at prescribed intervals and provide the maintenance necessary to keep them safe. (Ref: Forest Plan on page 4-16, #70)

Monitoring Objective: To ensure facilities do not pose a threat to public health and safety.

Method: Visual inspection following methods as required by the Forest Service manual.

Data Collected: Qualified Engineering staff completed bridge and dam inspection reports.

Results: All operating dams and bridges were up to standard. Based on load analyses, a bridge may be posted for a reduced weight limit and maintained at that revised standard. Routine maintenance of bridges is performed by road maintenance crews. Major repairs were prioritized and completed based on available funding. Some small dams have been removed from the system and the stream channels put back to more pre-dam conditions.

Public Involvement: Posted information and public comments due to closures.

Data location: Engineering department at Forest headquarters, Redding, CA.

Facilities Management: buildings and administrative sites

Forest Plan Standard: Manage, construct, and maintain buildings and administrative sites to meet applicable codes and to provide the necessary facilities to support resource management. (Ref: Forest Plan page 4-17)

Monitoring Objective: To ensure buildings and administrative sites do not pose a health and safety hazard to public and employees and that they meet the requirements of the applicable building codes and the Forest Service manual.

Method: Visual inspection following required methods. Every building to be inspected by qualified personnel at least once every five years in accordance with deferred maintenance protocols.

Data Collected: Over the last 5 year years, engineering staff has overseen the completion of inspection reports for every building on the Forest. Inspection information, including annual and deferred maintenance needs were entered into the INFRA database.

Results: The Forest was in compliance with the required inspection frequency and deferred maintenance protocols. However, available funding was not sufficient to maintain buildings to standard. Funding was primarily dedicated to correcting health and safety deficiencies. The deferred maintenance backload continued to increase, while OMB and the Department are asking the Forest Service to reduce deferred maintenance 25% by 2010. Work continued to dispose of buildings identified for decommissioning in the Facilities Master Plan.

Recommendations: Perform maintenance work to eliminate health and safety concerns and reduce deferred maintenance backlog. Continue efforts to dispose of buildings.

Public Involvement: Minimal public involvement is required unless the building is historical or the building is to be disposed.

Data location: Engineering department at Forest headquarters, Redding, CA.

Facilities Management: potable water sources

Forest Plan Standard: Monitor potable water sources and designated swimming areas according to the Safe Drinking Water Act and other regulatory health requirements. (Ref: Forest Plan page 4-16, #7p.)

Monitoring Objective: To ensure potable water sources provide water safe for public and employee use.

Data Collected: All potable water sources were tested during 2006. Monthly bacteria tests were taken and sent to a lab which notifies within 24 hours if a poor result is found. The Forest Service then calls the State or County regulatory agency within 24 hours to agree on the mitigation that will be followed. There are approximately 40 sites monitored by the Forest.

Results: The program is monitored according to regulations; water quality is being maintained to standard. All official drinking water system records were documented per Forest Service Manual 7400 (Public Health and Pollution Control Facilities). The forest maintains a computer-based drinking water system inventory for each drinking water system, including physical data, treatments, and monitoring testing results. Sampling data had 9% of our monthly routine water samples testing positive and 4% were confirmed with repeat sampling.

Recommendations: Continue monitoring to standard and fully implement new inventory database. More interagency coordination is needed to keep testing up to standard at shared interagency facilities. **Note:** Costs for the drinking water program continue to increase. Because water tanks are confined spaces, all tank cleaning and repairs are contracted by confined-space trained and certified 3-person crews.

Public involvement: If substandard results are found from testing, the site is posted "non-potable" until water test are bacteria free. The public can also fill out complaint forms that are available in recreation facilities.

Data location: Engineering department at Forest headquarters, Redding, CA.

Forest Pest Management

Results: With increased rain conditions prior to FY 2006, aerial detection surveys located decreased number of acres (8,485) of conifer mortality from bark beetles on the Forest compared to 42,671 acres in 2005 and 53,000 acres in 2004. The conifer types with mortality included pine, fir, mixed conifer, Douglas-fir and tan-oak mortality. Also in the northeast portion of

California, Shasta-Trinity was one of three Forests that showed heavy mortality due to blackstain root disease, Mountain pine beetle and western pine beetle. Along with some Forests near Yosemite National Park, Shasta-Trinity Forest had defoliation from Douglas-fir tussock moth which increased from last year.

Data location: Pest management department at Forest headquarters, Redding, CA.

Range Management: sustainability of forage

Forest Plan Standard: Manage rangeland vegetation and livestock grazing activities in order to meet and/or provide for desired ecosystem conditions, including the sustainability of forage for livestock and wildlife and the attainment of the Aquatic Conservation Strategy and proper management of Riparian Reserves. (Ref: Forest Plan Goals, page 4-5 and Standards, page 4-22)

Objective: Determine if rangeland ecosystems are healthy, if livestock/wildlife forage is available on a sustainable basis and if proper management of this resource and its associated attributes is occurring.

Methods: Five of the Forest's 17 allotments were vacant, thus information monitored was based on 12 active allotments. Of these 12, 9 were monitored more intensely than the others because of potential fisheries issues.

Both hardwire and electric fence systems were maintained on six allotments in an effort to monitor use and exclude livestock from riparian areas. Range readiness checks were made on 10 of the 12 active allotments. Distribution of livestock use, utilization checks and suitability of range within 10 allotments was checked to determine if management objectives and Forest standards and guidelines were being met. Overall results:

Standard or Objective	Activity	Accomplishments
Provide for proper management of selected riparian areas	Riparian areas monitored and/or protected	7 sites/ 52 acres
Designate lands that are suitable for livestock grazing	Determination of suitability	1,890 acres
Ecosystem analysis, NEPA documents and annual operation instructions is the primary tool for implementing management actions	Completed NEPA analysis	3 allotments
WA & NEPA documents shall be prepared to bring authorized grazing use in conformance with Forest Plan objectives	Supporting documentation and surveys in preparation for an EA	4 Specialist Reports 1 archeology field survey
Verify range readiness, proper utilization and distribution on active allotments.	Range readiness and/or utilization and distribution checks done on 10 of the 13 allotments	10 allotments

Results: Met Regional target for NEPA documentation on three allotments.

Recommendation: Continue to monitor range condition, suitability and utilization each year. Continue to work with permittees and cooperating agencies in development and implementation of Annual Operating Instructions.

Data location: Information can be found in the Annual Grazing Statistical Reports in the Range department at Forest headquarters, Redding, CA.

Range Management: coordinate with other organizations

Forest Plan Standard: Coordinate rangeland activities with other agencies, organizations and individuals having an interest in the management of the rangeland resource where it is appropriate. (Ref: Forest Plan Standards, page 4-22, #f)

Objective/Method: Determine by review of program records if rangeland activities are being coordinated with other agencies, organizations and individuals, as appropriate.

Results: Annual operating plans were developed through coordination with the permittees. Permittees were required to maintain allotment structures, including electric fences. Permittees were also responsible for maintaining proper distribution of their livestock.

Recommendation: Continue to work with permittees and cooperating agencies in development and implementation of Annual Operating Instructions.

Data location: Range department at Forest headquarters, Redding, CA.

Biological Environment

Fisheries Management: sport fisheries

Forest Plan Goal: Emphasize sport fisheries as a major recreation activity by expanding recreational fishing opportunities. (Ref: Forest Plan Goals, page 4-4, # 12).

Monitoring Objective: To determine fish response and abundance related to habitat improvement treatments compared with untreated areas in Shasta and Trinity Lakes.

Results: There were 255 acres of underwater lake habitat improved in 2006 for sport fisheries benefit. Included, is the placement of underwater manzanita brush structures, rooted willow plantings, and acres of annual cereal grass seeding. Fish utilization abundance was monitored at the improvement sites via scuba diving accompanied with underwater photography. Fish abundance continues to range from three to ten times greater in these treatment areas compared to untreated control areas.

Internet website Fishing Page: The Forest's recreational fishing website is viewable at: **www.fs.fed.us/r5/shastatrinity/recreation/st-main/st-fishing/index.shtml**.

Fisheries Management: summer steelhead and spring-run Chinook salmon habitat

Forest Plan Standard: Emphasize the restoration of summer steelhead and spring-run Chinook salmon habitat in the South Fork Trinity River Basin. (Ref: Forest Plan Goals, page 4-4, #13)

Monitoring Objective: Detect changes in channel cross section geometry and bedload particle size, since these physical processes affect biological health. Previous inventories completed in the 1980s and 1990s did not provide us with sufficient focus to detect trend changes.

Results: South Fork Trinity River spring-run Chinook salmon adult surveys have been conducted repeatedly since 1998 via snorkeling and the counting of spawning redds. The California Department of Fish and Game coordinates this survey and staff from the Forest participates every year. Spring-run Chinook salmon adult and redd surveys were once again funded in FY 2006. Results summary:

Adult Chinook	Steelhead	½ pound Steelhead
138	105	109

All three figures are considerably greater than the results from the previous year. Comparisons such as this are always good news, but do not necessarily indicate an improvement of more meaningful long-term trends.

Fisheries Management: instream flows

Forest Plan Standard and Objective: Develop an instream flow assessment program to determine fish needs and to protect the integrity of fish habitat in selected streams. (Ref: Forest Plan Standards and Guidelines, page 4-18, #9a)

Results: In 2004, an agreement was signed by PG&E to adopt the proposed flows for the Pit 3, 4 and 5 FERC relicensing project supported by the Forest Service. The agreed-upon flows within the three Pit River bypass reaches (20+ miles in length) increase up to 300% over existing flow levels. The new license cannot be issued, however, until PG&E develops numerous monitoring plans that were requested by the Forest Service within the 4(e) conditional environment. Review and comment on these draft plans by the USFS occurs on short notice whenever PG&E issues new drafts and will be on-going in 2006 and beyond. Issuing of the license by FERC is now expected to occur in 2007.

Forest Plan Standard: Coordinate instream flow needs with the California Department of Fish and Game (DFG), counties, and other local agencies to benefit fish habitat. Specific projects may entail hydroelectric facilities, water diversions, and water impoundments. (Ref: Forest Plan Standards and Guidelines, page 4-18, #9b)

Results: The DFG was a representative on the Pit River Collaborative Team and worked cooperatively with the USFS in the development of the Forest Service's 4(e) conditions and 10(a) recommendations.

The Forest also worked closely with the Department in negotiating an acceptable riparian habitat replacement ratio (1:1 chosen) for the vegetation removed in order to widen the Trinity River

near Lewiston on Forest Service administered land. The widening occurred in order to accommodate greater volumes of coarse sediment which were added to enhance 1000 feet of river in 2006 to benefit fish.

Fisheries Management: improve anadromous fishery

Forest Plan Standard and Objective: Improve the anadromous fishery within the South Fork Trinity River and its tributaries. This can be done by evaluating and implementing opportunities for stream habitat improvement, watershed restoration, and biological (stock) enhancement in the context of a watershed/ecosystem analysis. These projects will be done in conjunction with the Trinity River Basin Fish and Wildlife Management Program. (Ref: Forest Plan Standards and Guidelines, page 4-18, #9c)

Results: South Fork Management Unit fisheries funds were used to support the Trinity County Resource Conservation District (RCD) projects for road obliteration, fish passage in Goods and Browns Creeks, and Hidden Valley watershed restoration and road decommissioning. Juvenile coho salmon surveys, adult salmonid surveys, stream condition surveys, and spring/fall Chinook salmon surveys were all conducted within the South Fork Trinity.

Forest Plan Standard: Coordinate rehabilitation and enhancement projects with cooperating agencies involved in the Model Steelhead Stream Demonstration Project Plan and the Trinity River Basin Fish and Wildlife Management Program. (Ref: Forest Plan Standards and Guidelines, page 4-18, #9d)

Results: Coordination with the Management Program was active in FY 2006. The Forest Service is a chartered member of the Trinity River Restoration Program Management Council and participates in all Council and subcommittee functions. The Forest took the lead on a Trinity River Coarse Sediment injection project in the Trinity River on Forest Service managed lands immediately below the Lewiston Dam outlet in FY 2006, to be completed in FY 2007. About 2,300 tons of fish-friendly rock was deposited within 1000 feet of river. The project will be next year and will enhance about 1,800 feet of river with roughly 8,000 tons of suitable gravel. Funding for the project originates from the Trinity River Restoration Program.

Wildlife Management: late-successional reserves

Forest Plan Standard: A management assessment should be prepared for each large Late-Successional Reserve (or group of smaller Late-Successional Reserves) before habitat activities are designed and implemented. (Ref: Forest Plan page 4-37)

Monitoring Objective: Late-Successional Reserves (LSRs) were developed to protect and enhance conditions of late-successional and old growth forest ecosystems which serve as habitat for late-successional and old growth-related species. LSR Assessments will provide guidelines to meet desired conditions.

Methods: A comprehensive forest-wide late-successional reserve assessment (LSRA) was completed in 1999. This LSRA was produced by an interagency core team, including USFWS and the Bureau of Land Management. The LSRA was a significant undertaking, covering 18 LSRs and 6 Managed Late-successional Areas (MLSAs). One additional LSR, Clear Creek, was

completed in 1998. All of these assessments used methodology provided by the Regional Ecosystem Office (REO) and the Record of Decision for the Northwest Forest Plan.

Results: These assessments have been used extensively in project design and planning. The LSRA stressed the need to treat unacceptable fuel hazards and over stocked stand conditions. The planning for five habitat improvement and protect projects began in FY 2006.

Chanchellula LSR - Gemmill Thin project proposal	Thinning and fuels reduction to enhance and protect late successional habitat near Wildwood and Chanchelulla Wilderness.	expect 2008 implementation
Harris Mountain LSR - Harris LSR Fuels Reduction project proposal	Remove dead and dying trees on about 200 acres near McCloud.	2006 implementation
Clear Creek LSR – Pettijohn LSR project proposal	Thinning smaller trees and removing ladder fuels from about 780 acres to maintain and enhance old growth habitat. Also, 4 miles of existing roads to be decommissioned near Weaverville.	expect 2008 implementation
Mudflow LSR	Begin Environmental Impact Statement bagan using the 1999 LSR assessment to develop the strategy.	NEPA work will continue in 2007
Algoma LSR	Begin Environmental Impact Statement bagan using the 1999 LSR assessment to develop the strategy.	NEPA work will continue in 2007 and 2008

Recommendations: Continue use of the LSR assessment for project planning and update at periodic intervals.

Public Involvement: The public was informed of project progress in the quarterly Schedule of Proposed Actions, which can be found at http://www.fs.fed.us/sopa/forest-level.php?110514

Data location: Forest headquarters, Redding, CA., various Ranger Districts, and the Shasta-Trinity Forest website at http://www.fs.fed.us/r5/shastatrinity/publications/

Threatened, Endangered, and Sensitive Species

Forest Goals and Standards: Monitor and protect habitat for federally listed threatened and endangered (T&E) and candidate species. Assist in recovery efforts for T&E species. Cooperate with the State to meet objectives for State-listed species. Manage habitat for sensitive plants and animals to prevent them from becoming a candidate for T&E status.

Terrestrial Threatened and Endangered Species on Shasta-Trinity National Forest

Source: Forest Records and US Fish & Wildlife Service document October, 16 2006:379362653-101224

(E) Endangered; (T) Threatened; (C) Candidate species;

Scientific Name	Common Name	Category
Orcuttia tenuis	slender Orcutt grass	T
Arabis macdonaldiana	McDonald's rock-cress	E
Branchinecta lynchi	vernal pool fairy shrimp	T

Desmocerus californicus dimorphus	valley elderberry longhorn beetle	T
Pacifastacus fortis	Shasta crayfish	E
Rana aurora draytonii	California red-legged frog	T
Brachyramphus marmoratus	marbled murrelet	T
Coccyzus americanus	western yellow-billed cuckoo	C
Haliaeetus leucocephalus	bald eagle	T
Strix occidentalis caurina	northern spotted owl, Critical habita	T
Martes pennanti pacifica	Pacific fisher	C

Terrestrial Species Monitoring Examples:

Spotted Owl monitoring - Shasta Forest

Objective: Monitor northern spotted owl nesting territories to determine breeding status and monitored projects to determine presence as required to complete projects during limited operating period.

Methods: During FY 2006, 10,000 acres of suitable northern spotted owl habitat were surveyed on the Shasta-McCloud Management Unit. This included historical territories and 4 large timber sale projects that were surveyed at night. Region 5 spotted owl survey protocol was utilized and historical searches to determine breeding status. Information was coordinated with the State of California and adjacent private landowners.

Results and Recommendations: Found northern spotted pairs at 5 sites, with barred owls located at one site. Recommend continuing monitoring owl territories and projects to assess breeding status.

Data location: Statewide Strix database and Mt. Shasta and McCloud Ranger Districts.

Spotted Owl monitoring - Trinity Forest

Objective: The purpose of monitoring was to determine presence, nesting and reproduction status of Northern spotted owls for timber projects and known activity centers.

Methods: During FY 2006, 11,700 acres of suitable owl habitat were surveyed on the Trinity Management Unit. On the South Fork Management Unit, 2,800 acres of suitable owl habitat were surveyed. Owl habitat was evaluated by reviewing vegetation maps, aerial photos and conducting some field work. Night and day surveys of known owl pairs and /or single owl locations were surveyed in proposed timber sale areas using the standardized spotted owl protocol. Timber sale areas without known owl activity centers were also surveyed.

Results and Recommendations: Five spotted owl pairs were found on the Trinity Management Unit with nesting confirmed for two pairs. One spotted owl pair with confirmed nesting was found on the South Fork Management Unit. Recommend continuing monitoring owl territories and projects to assess breeding status.

Data location: Big Bar Ranger Station at the wildlife department.

Spotted Owl/OHV monitoring - Trinity Forest

Objective: Additional monitoring occurred through a Pacific Southwest Regional Northern

Spotted Owl Focused Study. The goal of the study is to properly assess the impact OHV users may be making.

Methods: In FY 2006, Shasta-Trinity and Mendocino National Forests, in conjunction with the University of Washington, U.S. Fish and Wildlife, and California Parks and Recreation had a study that focused on the potential effects of off-highway vehicles (OHV) on the northern spotted owl.

Results and Recommendations: In FY 2006, this study effort was in the 2nd full year of 4 years of data collection on Mendocino and Shasta-Trinity National Forests. On these Forests, 150 owl sites were surveyed (with 47 owls detected and 42 located) in 2006; 33 pairs and 18 nests were located. Continue with study and partnerships in 2007.

Data location: University of Washington, Seattle, WA.

Public Involvement: Volunteers from the BlueRibbon Coalition and local OHV Riders worked on the study which requires that owls in the test area are exposed to certain OHV riding activities while data is collected on behavior, physiology and reproduction effects.

Bald Eagle monitoring

Objective: To protect, monitor, manage and enhance the bald eagle population (35 pairs) and habitat on Shasta, Lewiston and Trinity Lakes within the National Recreation area (NRA).

Methods: Conducted at least 3 visits per nest to determine productivity and nest success as per Pacific State Bald Eagle Recovery Plan direction and California Dept. of Fish and Game protocol to determine occupancy, nest status and nest success.

Results and Recommendations: During FY 2006, 35 nest territories and 52,000 acres of eagle habitat were monitored at 3 reservoirs in the NRA. Monitoring revealed that 33 of 35 territories were occupied. Thirty-one bald eagles chicks were fledged. The fledging success was 0.94, which was just short of the objective in the Bald Eagle Recovery Plan of 1.0 chick fledged per occupied territory. Contributing to breeding success was implementation of a Forest Order to close and restrict access to 3 nest territories in the NRA to protect against visitor impacts. Continue yearly monitoring.

Data location: Shasta Lake and Weaverville Ranger Districts.

Peregrine Falcon monitoring - Shasta Forest

Objective: Monitor historical sites to conform nesting or occupancy.

Methods: Used Region 5 peregrine protocol as a guide for monitoring individual, known peregrine habitat. Several visits were made to each site.

Results and Recommendations: Two active sites were monitored in FY 2006. Biologists confirmed two young fledged at the Sacramento site, though it is unknown how many young fledged at the Castle Crags nest. Recommend to continue yearly monitoring.

Data location: Mt. Shasta and McCloud Ranger Districts.

Public Involvement: Information is shared with California Department of Fish and Game and adjacent land owners.

Peregrine Falcon monitoring - Trinity Forest

Objective: Cooperate with the State to meet objectives of State Listed Species to monitor our peregrine falcon territories. Most of the peregrine falcon eyries (nesting sites) have been monitored for over twenty years and an extensive database has been generated over this time.

Methods: Biologists surveyed 8 peregrine territories by following established peregrine falcon protocols. Obervation points were established where the observer can see the nesting area without impacting the birds using high powered spotting scopes. The observer watched the nesting area for 1 to 5 hours, depending on weather and activity. Any observations and all activities were recorded for data entry.

Results and Recommendations: Of the eight peregrine eyries, seven had adult peregrines present with confirmed nesting at one eyrie and probable nesting at another. A formalized database was developed at Big Bar Ranger District. In addition, peregrine occupancy and reproductive results were forwarded to a national database for distribution. It is important to continue monitoring efforts so that a complete data picture can be formulated.

Data location: Big Bar Ranger District.

Public Involvement: Information was collected in conjunction with Santa Cruz Predatory Bird Research Group and is shared with California Department of Fish and Game and adjacent land owners.

Northern Goshawk monitoring

Objective: McCloud Ranger District contains approximately 33 historical nesting territories. The standard is to protect the viability of the species and to assess individual territories on a project basis. Since 1992, 100-acre goshawk territories have been defined to include primary and alternate nest cores. During project preparation, habitat alteration is delayed or minimized in the 100-acre territories if nesting has occurred in recent years.

Methods: Acoustical walking surveys determined recent occupancy and nest success in 33 goshawk territories. Information was shared with California Department of Fish and Game and adjacent land owners.

Results and Recommendations: In FY 2006, nest searches were completed in 33 territories and 3300 acres. Eight territories were found to be occupied with nesting pairs; though one of these 8 was known to fail perhaps from severe winter conditions that delayed breeding. The validity of the 100-acre core territories will be visited on a project-by-project basis. Recommend to continue monitoring 100-acre nest territories.

Data location: Mt. Shasta Ranger District.

Public Involvement: Information is shared with California Department of Fish and Game and adjacent landowners.

Small Owl monitoring

Objective: Four owl species - Northern Saw-whet, Flammulated, Western Screech and Northern Pygmy - were monitored to gain information for analysis of small owl population trends. Information will be used to provide baseline information in project-level NEPA and Forest level wildlife analysis.

Methods: Methods follow the owl capture and census protocol designed by the Klamath Bird Observatory and Redwood Sciences Lab. Monitoring sites were selected in the interior of the forest where two mist-nets were placed parallel with a tape player in the middle to audiolure owls into nets. Owl capture and censusing occured from dusk to dawn. In addition, small owl populations were surveyed in two project areas on the Trinity River Management Unit and two project areas on the South Fork Management Unit.

Results and Recommendations: The owl capture and census survey resulted in detection of 3 species of small owls: saw-whet, screech, and pygmy owls. Project owl surveys documented locations of the small owl species across a survey area of 14,500 acres in and around project areas for use in project-level NEPA and forest level wildlife monitoring.

Data location: Big Bar Ranger District.

Fisher monitoring

Objective: Monitor fisher population by documenting presence of fisher, a Forest sensitive species and Federal candidate, on Forest lands to model habitat use and assess current distribution, including in project areas.

Methods: Establishment of track and camera stations on Forest Inventory Analysis plots or across project areas, with each station being run 16 days. Field work was conducted by U.S. Fish and Wildlife Service and South Fork Management Unit staff.

Results and Recommendations: In FY 2006, fishers were detected at 5 stations on the Trinity River Management Unit and 3 camera stations on the South Fork Management Unit. Locations will be added to a database of fisher distribution on the Forest, will be used in project-level NEPA and Forest level monitoring, and will be used as part of a larger study to model habitat selection of fishers in northwest California.

Data location: Big Bar Ranger District and U.S. Fish and Wildlife Service, Yreka office.

Public Involvement: Information for the Trinity River Management Unit was collected as part of larger survey effort incorporating private land, and is therefore shared with a variety of groups including private landowners, timber companies, and California Department of Fish and Game.

Wildlife Management: Neotropical birds

Forest Plan Standard: Manage habitat for Neotropical migrant birds to maintain viable population levels. (Ref: Forest Plan page 4-29, #25.c)

Objective: Continue to survey breeding birds and Neotropical migratory birds. Although this is not a Land & Resource Management Plan requirement, monitoring is part of the national Forest Service "Partners in Flight" program for Neotropical migratory bird management. Additionally, annual Breeding Bird Surveys are conducted to monitor range-wide trends in Neotropical migrant bird populations and distribution.

Methodology: In FY 2006, two methodologies were used. First, bird population and habitat data were collected at Indian Valley (INVA) and Hocker Road (HOCK) bird sites. Mist net captures were conducted 10 times from May-August according to the Monitoring Avian Productivity and Survivorship (MAPS) protocol. Partnerships include the Klamath Bird Observatory, the Institute for Bird Populations, and Forest Service PSW Redwood Sciences Lab.

Secondly, breeding bird surveys are a series of point counts along 25-mile road transects, surveying a total area of 130 acres per transect. Breeding bird surveys were conducted on 5 transects on the Trinity Management Unit and South Fork Management Unit: Hayfork, Burnt Ranch, Junction City, French Gulch, and Whiskeytown bird survey sites.

Results and Recommendations: MAPS captures were conducted at two locations, ten days per location. Breeding bird surveys were conducted on 650 acres. Results from over 30 bird species were integrated into the breeding bird survey analysis program at the US Geological Survey's Patuxent Wildlife Research Center and the MAPS analysis program PSW Redwood Sciences Laboratory and the Institute for Bird Populations.

Data located: Big Bar Ranger Station, USGS Patuxent Wildlife Research Center, PSW Redwood Sciences Laboratory, and the Institute for Bird Populations.

Biological Diversity: snag retention

Forest Plan Standard: Snags are to be retained within the harvest unit at levels sufficient to support species of cavity-nesting birds at 40 percent of potential population levels based on published guidelines and models or a minimum average of 1.5 snags per acre greater than 15 inches in diameter and 20 feet in height. Provide specified amounts of coarse woody debris in Matrix management well distributed across the landscape: (1) Provide a renewable supply of large down logs well distributed across the Matrix (2) Coarse woody debris already on the ground should be retained and protected. (Ref: Forest Plan, page 4-61)

Objective: Survey and maintain at least minimum management requirements for dead/down, hardwoods, and snags at both pre and post-project levels.

Methods: Data collected during visual surveys for snag and dead/down densities at timber sale projects. The public was involved during project level NEPA.

Results and Recommendations: For FY 2006, dead/downed wood minimum standards were met in all areas where the baseline level of snags met the minimum standards. Mt Shasta and McCloud District policy is to leave any tree or snag deemed a hazard on site as downed wood. Continue monitoring of salvage and green sales for dead standing/down woody material.

Data location: Data is in NEPA documents at the Ranger stations.

Botany: monitor projects

Forest Plan Standard: Analyze, mitigate, and monitor project impacts to sensitive plants. (Ref: Forest Plan pages 4-14 and 4-16, #4a, b, c, Sensitive and Endemic Plants).

Monitoring Objective: To ensure that the Forest sensitive plant program effectively maintains the viability of sensitive and endemic plants on the Forest at the project level.

Method: Biological evaluations based on preliminary potential habitat evaluation using existing soils and TES plant data; field surveys of potential habitat in the areas to be affected by project implementation. Mitigation measures are developed by interdisciplinary teams and made part of project designs. Monitoring site visits are taken 1-2 years after project implementation. GIS botany coverages are updated periodically as needed.

Data Collected: Population numbers, size, location, and habitat; potential project impacts and proposed mitigations. For monitoring, whether mitigations were implemented as prescribed, and whether populations recovered or persisted as predicted by BEs.

Results: Twenty-one new populations of sensitive plants and fungi were found and documented in FY 2006. Field surveys were performed for all large projects. A few small or dispersed projects likely to have no effect on sensitive plants because of lack of suitable habitat or lack of expected impacts were analyzed with existing data. Also, strategic surveys were done on the Forest for several species of fungi that were added to the R5 sensitive species list; four of our 21 new populations this year were of sensitive fungi. Plant Biological Evaluations were written for 53 projects forest-wide. No sensitive plants on the Forest were proposed for listing by USFWS. Mitigations were developed for 35 projects in FY 2006 to lessen or eliminate project impacts to sensitive plants. In general, mitigations were implemented as written and were effective.

Recommendations: Continue field surveys at project level. Assess forest wide effectiveness of existing data analysis of smaller, dispersed projects.

Public Involvement: Through the NEPA process. Also organizations including the California Native Plant Society and the California Department of Fish and Game are involved in reviewing status of sensitive species list.

Data location: Project NEPA files, headquarters, Ranger District botany files, and California Natural Diversity Database (Department of Fish and Game).

Botany: conservation strategies

Forest Plan Standard: Develop at least one conservation strategy per year. (Ref: Forest Plan page 4-16, #4f)

Monitoring Objective: To review compliance with our Forest standards, and effectiveness of our collaboration with other agencies in conserving sensitive plants.

Method: Office review of sensitive plant files.

Data Collected: Number and names of conservation strategies developed or signed in FY 2006.

Results: The conservation strategy process for serpentine endemics of the Rattlesnake Terrane (Yolla Bolla and Hayfork Ranger Districts) moved forward with refinement of habitat models for six species by the University of California, at Davis, CA.

Recommendations: Continue to focus on multi-species, rather than single species strategies. Continue with the Rattlesnake Creek Terrane conservation strategy and look next to the Shasta-McCloud Management Unit for an opportunity for a multi-species strategy.

Public Involvement: No public involvement.

Data location: Botany departments at Forest headquarters and Ranger Districts.

Noxious Weeds: participate in county and other collaborative programs

Northern Province Noxious and Invasive Weeds Program Strategy Objective/Action Item: 2A. Northern Province Forests will actively participate with other agencies and interested parties in county Weed Management Areas.

Monitoring Objective: To review compliance with Northern Province Weed Program Strategy, and effectiveness of our collaboration with other stakeholders in managing invasive plants.

Method: Phone conversations with district noxious weed coordinators; review of files at the Forest headquarters.

Data Collected: Weed Management Area (WMA) MOUs signed by Forest Supervisor; attendance by Forest Service representatives at WMA meetings and other events; informal contacts with WMA participants; inventory, prevention, and treatment projects with partners.

Results: Memoranda of Understanding for Shasta, Siskiyou, and Trinity Weed Management Areas were still in effect in FY 2006. Shasta-Trinity weed program coordinators cooperated with agencies and non-government organizations in Siskiyou, Shasta, and Trinity Weed Management Areas to develop and implement weed projects.

Recommendations: Continue regular involvement with Siskiyou, Shasta, and Trinity Weed Management Areas and their constituent organizations.

Public Involvement: Weed Management Areas include federal, state, county, and local agency representatives, non-profit groups, and private stakeholders.

Data location: Weed Management Area MOUs are on file at County Agriculture offices, the botany department at Forest headquarters, and Ranger Districts.

Noxious Weeds: databases

Northern Province Noxious and Invasive Weeds Program Strategy Objective/Action Item: 1B. Develop and implement automated databases for the storage and retrieval of information on noxious weeds. Ensure that the forests implement Forest Service inventory and monitoring protocols and that data is gathered and shared consistently across units and Forests**.**

Monitoring Objective: To review compliance with corporate inventory & monitoring procedures, and use of corporate databases for invasive plants.

Method: Review of Forest headquarter files.

Data Collected: Proportion of existing invasive plant records in corporate GIS layers and entered into NRIS Terra Invasives database.

Results: Existing NRIS weed spatial and tabular data were prepared in FY 2006 for migration to the National Data Center in 2007.

Recommendations: Continue entering tabular and spatial invasive plant data into NRIS Terra annually.

Public Involvement: None

Data location: Electronic data on local and national database servers; hard copy data in Botany departments at Ranger Districts and Forest headquarters.

Physical Environment

Soil and Water

Best Management Practices: BMPs

Forest Plan Standard: Implementation of Best Management Practices for protection or improvement of water quality. (Ref: Forest Plan 4-18 c.)

Objectives: To determine if BMPs were implemented as prescribed in the BMP handbook. To determine if BMPs were successfully implemented at selected sites where BMPs had been prescribed. To determine if the BMPs as implemented were effective for their intended purpose.

Methods: Evaluation procedures vary greatly based upon the management activity evaluated, but the overall evaluation process is similar. The type and number of management activities evaluated each year on the Forest are assigned by the Regional Office. The specific management activity sites evaluated are randomly selected from project pools. The criteria for sample pool development have been standardized by the Region for each activity type and are described in the BMP User's Guide (2002).

All BMP evaluations were carried out by unit hydrologists and/or hydrologic technicians. Whenever possible evaluators were accompanied by unit personnel responsible for implementing the BMP (i.e. range conservationist, contracting officer, etc.). Follow-up office reviews of each

BMP occurred with the evaluator and appropriate department representative in those cases when a representative could not accompany the evaluators to the field.

Results: The Forest monitored 83 randomly selected sites in FY 2006 for BMP implementation and effectiveness (Table 1). Successful implementation indicates the Forest implemented all planned BMP, and effectiveness monitors how successful each protection measure met its objective to protect water quality. Monitored activities were timber (27 sites), engineering (34 sites), recreation (6 sites), range (1 site), prescribed fire (5 sites), minerals (3 sites), and vegetation management (7 sites).

Table 1. Distribution of BMP Monitoring by Activity Category

BMP Practice	Total Evaluated Sites	Fully Implemented Sites	Fully Effective Sites
Timber Management	27	24	24
Road and Building Site Construction	34	19	26
Recreation	6	6	6
Range	1	1	0
Prescribed Fire	5	4	4
Minerals Management	3	2	3
Vegetation Manipulation	7	7	7
Totals	**83**	**63**	**70**

Conclusions and General Observations:

During FY 2006 the implementation of Best Management Practices allowed activities to occur on the forest meeting water quality and land management objectives. Observations from the 2006 BMP evaluations include the following:

The Shasta-McCloud Management Unit continues to meet BMP compliance. In following years, forest activities will occur on steeper slopes than in the past two years. Both Reynolds Basin and Mountain Thin timber sales have moderate slopes and activities that have responded to one winter. These areas will be ready for BMP implementation effectiveness analysis this coming year.

The Forest's sampling population is currently concentrated on gentle slopes, as mentioned in previous BMP reports, due to our timber sales predominantly occurring on the east side of the management unit. Partial stratification of the population used to select BMP evaluation sites provides greater opportunity to analyze proper implementation of forest practices that occur on steeper slopes that also occur on the Shasta-McCloud Management Unit. This stratification removes some of the bias introduced by the sampling population being concentrated on the more predominant gentle topography.

Recommendations:

- Seed landings with native species to help prevent the introduction of noxious weeds
- Preventative road maintenance (stormproofing) is needed throughout the Westside. Less maintenance funding is available each year.

- Rolling dips should be used to lower maintenance needs and decrease erosion via rilling and gullying.
- The forest needs OHV regulations for unclassified roads/trails.
- Botany survey is needed on native grass seed used on decommission and other watershed restoration projects to justify the high price and low root mass of this product. It is not an effective erosion control, but may help in preventing the spread of noxious weeds.
- Public education needed on human waste and trash disposal, especially during hunting season.
- There is a need to field check and update maintenance levels recorded in Infra.
- The Water Quality Control Board will be invited to participate in a variety of BMP evaluations in this coming year.
- BMP evaluations for 2007 will emphasize having the resource person responsible for a given project onsite during the evaluation.
- Where onsite review with the appropriate department representative is not possible, follow-up office reviews of each BMP will occur with the evaluator.
- Noxious weeds associated with ground-disturbing activities continue to be observed. Early Successional colonizers, St. Johns Wort, Common Mullein and Bull thistle, are present in the landings and roads. The botanist recommends that adding competition from native species should be enhanced by collecting native seed and spreading on sites where those invasive species occur. It is recommended landings be seeded with native bromes in order to curb non-native species introduction.
- Up to 90% of timber sale activity occurs on gently sloping terrain on the Shasta – McCloud Management Unit. The current random selection of monitoring sites therefore places emphasis on activities occurring on areas where BMPs are most easily obtained on gently sloping terrain. Because of this, when activities do occur on more sloped terrain than commonly occurs, stratified sampling will be incorporated into the random site selection.

General Comments and Recommendations for the Best Management Practices Program

- Adding a field to the database to track photo numbers would be helpful; they are currently included in the comment field.
- Sale-area boundaries are typically made to exclude meadows; however, evaluations are completed on meadows adjacent to the sale area boundary to monitor the result of these neighboring activities. The BMP database does not currently capture this information as response ratings are therefore sometimes rated as N/A for some implementations. The BMP form and database does not currently provide a field to reflect this situation.

Site specific recommendations were made for the sites where BMPs were found to not be effective.

BMP were fully implemented at 75% of the monitored sites and effective at 84% of the sites in FY 2006. This represents a slight improvement in BMP implementation and effectiveness compared to the six year average of being 73% fully implemented and 83% effective (Table 2). Most of the monitored deficiencies occurred on engineering activity sites. The Forest ecosystem management and engineering staffs are actively working to resolve these problems by updating the standard road maintenance practices and improving coordination. Additionally, the Forest is working to involve more disciplines in the BMP process through additional training and interdisciplinary field evaluation of activities.

Table 2. 1999-2005 BMP Evaluations on the Shasta-Trinity National Forest

Form	Practice	Number of Sites Evaluated	Number of Sites Implemented	Number of Sites Effective
T01	Streamside Management Zones	26	22	24
T02	Skid Trails	35	23	34
T03	Suspended Yarding	18	17	18
T04	Landings	47	40	46
T05	Timber Sale Administration	6	6	6
T06	Special Erosion Control and Vegetation	1	1	1
T07	Meadow Protection	12	12	12
E08	Road Surface, Drainage and Slope Protection	27	13	16
E09	Stream Crossings	21	9	10
E10	Road Decommissioning	13	9	10
E11	Control of Sidecast Material	17	9	8
E12	Servicing and Refueling	2	2	2
E13	In-Channel Construction Practices	11	11	10
E14	Temporary Roads	14	12	14
E15	Rip Rap Composition	3	2	1
E16	Water Source Development	2	2	1
E17	Snow Removal	11	9	9
E18	Pioneer road construction	0	0	0
E19	Restoration of borrow pits and quarries	0	0	0
E20	Management of Roads during Wet Weather	3	1	0
R22	Developed Recreation Sites	9	9	9
R23	Location of stock facilities in wilderness	0	0	0
G24	Range Management	6	5	4
F25	Prescribed Fire	15	13	14
M26	Mining Operations (Locatable Minerals)	4	2	3
M27	Common Variety Minerals	6	4	4
V28	Vegetation Manipulation	7	7	7
V29	Revegetation of Surface Disturbed Areas	3	3	3
R30	Dispersed Recreation Sites	10	9	10
	Totals	**329**	**252**	**276**

Public Involvement: occurs during the NEPA process for identified projects.

Data Location: The results of the BMP monitoring are stored in the Regional BMPEP Database as well as on a Forest database. The Hydrology department at Forest headquarters also has the original data collection forms.

Soil Quality Standards and Soil Productivity

Forest Plan Standards: Implement forest soil quality standards as they relate to soil productivity and soil erosion. (Ref: Forest Plan 4-25e. Forest Soil Quality Standards, in relation to soil erosion).

Objectives: On September 18th – 20th 2004, strong storms hit the Bear Fire area causing accelerated erosion and sedimentation above the main recreational road out to Jones Valley boat ramp (one of the main recreational roads on Lake Shasta) which caused sedimentation and plugging of main culverts. Watershed degradation would have continued throughout the winter unless emergency hillslope treatments were initiated. Weed-free rice straw mulching was selected as the preferred treatment and applied at a rate of 1.6 tons/acre over 210 acres. Monitoring was conducted over a period of two years to evaluate the effectiveness of mulching treatment at this rate and natural recovery.

Methods: Seven soil troughs to measure erosion were placed in mulched units and unmulched units in three levels of burn severity (low, moderate, high). Sediments were collected from each tray after each storm event greater than 1 in/day over a two year time span (2004 – 2006).

Results: Pre-mulch soil erosion monitoring with soil troughs measured erosion rates at 30 to 40 tons/acre, post-mulch (mulched on 10/05/2004) soil erosion at 3 to 4 tons/acre; therefore soil erosion was reduced by 10 fold (see table below). In areas of high burn severities (Wildcat and Painters Creek) where no mulch was applied, erosion was at high rates (from 44.5 to 54.2 tons/acre) after one hydrologic year. One year after application of mulch, erosion has been lowered to background levels (0.62 tons/acre) and vegetation has recovered. Without mulch, natural recovery took longer in these high severity burned areas which had vegetative cover of 30 to 50% and erosion rates that decreased for FY 2006 (with 2006 producing 3 to 4 tons/acre).

Monitoring continued to January 2007 little or no erosion collected and all areas with grass and brush cover. High burn severity areas had erosional pavement between brush where all fine soil was washed away leaving rock fragments as cover. Erosion recovery in these areas is complete but vegetative recovery is expected to recovery in the next 5 years.

Erosion rates for selected soil erosion troughs

Trough	Site Conditions	Slope %	Burn Severity	Pre-mulch Erosion Rate (t/a)	Post-mulch Erosion Rate (t/a)
1	water repellant gr- loam soil	60	high	34.6	2.6
2	water repellant loam soil	80	high	33.2	3.8
3	water repellant gr- loam soil	65	high	35.7	2.7
4	non-repellant gr- loam soil	45	moderate	3.91	natural*
5	repellant sandy loam soil	55	high	44.5	natural*
6	repellant sandy loam soil	60	high	50.3	natural*
7	repellant sandy loam soil	50	high	54.2	natural*
* natural recovery – was not mulched = 0.62 tons/acre after 2 years of monitoring. **note:** low burn severity erosion rate was <1 ton/acre and unburned was 0.62 t/ac					

Recommendation: Post monitoring after strong winds and a light storm one week after

application caused displacement on steep head-walls and on exposed ridgelines. Application rates were on the average of 1.6 tons/acre, which was very adequate for less exposed areas with vegetative cover. For areas that were very steep (greater than 65% slopes) and on exposed ridgelines a heavier application of 2.0 tons/acre would have been more effective. On these areas, cover was about 50 to 60% vs. less exposed areas, cover was about 80 to 90%.

Due to the steep topography (>40% slope) of inner gorges and head-walls, estimates on straw needed should not be based on acres only but should have a slope factor adjustment of 30%.

Public Involvement: occurs during the NEPA process for identified projects.

Where is data located: Soils department at Forest headquarters, Redding, CA.

Watershed Restoration

Forest Plan Standards: Identify and treat areas with degraded watershed condition. (Ref: Forest Plan 4-25, f.)

Monitoring Objectives: To establish baseline conditions prior to restoration implementation. To determine if watershed restoration projects were implemented as planned. To determine if the watershed restoration practices implemented were effective in achieving desired results.

Methods: Some larger projects have specific methods outlined in their monitoring plans. Other monitoring efforts include subjective on-site evaluations and photo point monitoring. Contracts through contract administration were monitored. The Forest monitored implementation of road decommissioning work by selecting a sample of road segments and following the monitoring methods of the Region's Best Management Practices Evaluation Process. The field sites were evaluated following the winter after the projects were completed.

Results:
Trout Creek Wetland Restoration Project: The Shasta-McCloud Management Unit completed 90% of the implementation work for the Trout Creek Restoration project. This project is a partnership consisting of the Forest Service, CalTrans, U.S. Fish and Wildlife Service, Hancock Forest Management, Sierra Pacific Industries, California Trout, River Exchange and multiple education partners. The overall value of this project is approximately $500,000. 1.25 miles of stream channel were restored by completely obliterating the gully that the stream was entrenched in and relocating the creek to a remnant channel on its floodplain. 92 acres of riparian meadow habitat were restored. A plug-and-pond technique was employed to restore the creek to its remnant channel. The remnant channel was excavated to design specifications and cleared of debris and seedlings. The top of the gully in the project area was plugged and flow diverted into the new design channel. The gully was then plugged by excavating 18 new ponds (7.12 acres) and using the fill to bring the gully up to grade matching the surrounding floodplain. The new design channel is 1.23 miles long. The Forest began implementation of a very comprehensive 10-year monitoring plan for the project that included vegetation plots, greenline surveys, watertable monitoring, stream dishcarge monitoring, photopoints, stream bioassessment and fish habitat surveys.

Swamp Creek Fish Passage Restoration Project: The Forest and its partners completed restoration of fish passage at two locations on Swamp Creek (redband trout stream) where the

culvert designs did not allow for migration of fish through the pipes. The Forest played a limited role in this project which was mostly accomplished by its partners that included the U.S. Fish and Wildlife Service, California Trout and the California Department of Fish and Game. The project was funded by the Siskiyou County Resource Advisory Committee and the U.S. Fish and Wildlife Service. The Forest administered the project funds, completed NEPA, prepared and executed the Agreement and funded monitoring activities which included photopoints and stream dishcarge measurements. Restoring fish passage at the 2 crossings effectively restored connectivity for fish over 3 miles of Swamp Creek.

Fender's Ferry Road Rocking Project (Phase 1): The Forest and its partners accomplished 2.0 miles of rocking and drainage improvements on the Fender's Ferry Road. Partners for implementation included the Forest Service, Pacific Gas and Electric and Sierra Pacific Industries. This project was implemented to respond to concerns from the California Department of Fish and Game and the Central Valley Water Quality Control Board regarding sedimentation into Bear Canyon Creek that was being generated from the native road surface. In addition to rocking 2.0 miles of the road, multiple cross-drains were added and the inside ditches were armored. The Forest accomplished numerous monitoring activities including BMP monitoring, turbidity monitoring and stream condition inventories in Bear Canyon Creek. The project was mostly funded by a grant from the Shasta County Resource Advisory Committee. The committee has also approved an addition $100,000 in funding for Phase 2 of the Fenders Ferry Road Improvement project that will be implemented in 2007.

Hotlum Burn Area Restoration: The Forest provided $20,000 to the Shasta Valley RCD for restoration activities following the Hotlum Fire on the North side of Mount Shasta. The RCD will use the funding to monitor and control the spread of invasive species on private lands.

Windrow Respreading: The Forest awarded one contract for the respreading of windrows for the purpose of encouraging early seral stages, improving wildlife habitat and restoring soil productivity. The contract will be implemented and monitored by Forest personnel with 75 acres to be restored.

Stream Condition Inventories (SCI): The Forest accomplished SCI on 4 streams tributary to the McCloud River for the purpose of establishing baseline conditions for the streams and to identify watershed improvement needs to be accomplished in conjunction with the Algoma Vegetation Management Project.

Recommendations: Continue to explore methods to make monitoring more efficient and accomplish more monitoring through the use of partnerships and outside funding sources. Explore ways to increase capability of watershed implementation and monitoring program. Personnel time for administering contracts, agreements and working with partnerships is only factor limiting restoration capability. Continue monitoring of watershed restoration activities.

Public Involvement: Public involvement for restoration projects occurred at a minimum during the NEPA process for identified projects. The Trout Creek Restoration Project included a large community involvement component. Four school field trips and one community outing to the site occurred in FY 2006.

Data location: Shasta-McCloud Management Unit, McCloud California.

APPENDIX B
Forest Monitoring Scales

Shasta-Trinity National Forests Monitoring System

Monitoring Scales - Information obtained through the monitoring and evaluation system was reported at several different geographic scales including individual project areas, management areas, watersheds, and the Forest as a whole. For this report, information was collected at both the District and Forest scale with District information aggregated up to the Forest level whenever possible.

Monitoring Levels - Information for this report was derived from 3 levels of monitoring:

1. Project Environmental Analysis
2. Single Resource--Forest Program Assessment
3. Forest-wide Multiple Resource Assessment

Each level consists of two components: data acquisition and administrative review. Data acquisition refers to the collection and processing of environmental data. Administrative review refers to program analysis after the information has been evaluated and compared with Forest Plan objectives, standards, and guidelines.

The Forest database will be updated periodically. Each of the above levels will contribute to the process, but project level assessments will be the most often used means of insuring that District level information is incorporated into the broader Forest data-base.

Project Environmental Analysis - One of the common processes available for monitoring is project environmental analysis where on-the-ground information is compared with the existing data-base. This information is used to verify assigned management area prescriptions, projected outputs, and objectives originating from the Forest Plan for updating, if necessary.

Single Resource -- Forest Program Assessment - The next level is a Forest-wide assessment of single resources and Forest programs. For example, single resources such as bald eagle habitat or anadromous fisheries are site-specific, but they may not coincide with project environmental assessments.

Forest-wide Multiple Resource Assessment - The Forest-wide scheme includes intensive field surveys and high resolution remote sensing data which provides the framework for monitoring single resources and Forest programs. As in the other two levels, information obtained in these assessments will be used for updating the existing data-base for multiple resources and comparing results with Forest objectives.

APPENDIX C

Location of Supporting Documentation

The supporting information for this report is on file at the Forest Headquarters and the Ranger District Offices. Refer to Appendix A for specific documents and their location by functional area.

Shasta-Trinity National Forest Headquarters
3644 Avtech Parkway
Redding, CA 96002
(530) 242-2360

Big Bar Ranger District
Star Route 1, Box 10
Big Bar, CA 96010
(530) 623-6106

Hayfork Ranger District
P.O. Box 159
Hayfork, CA 96041
(530) 628-5227

McCloud Ranger District
P.O. Box 1620
McCloud, CA 96057
(530) 964-2184

Mt. Shasta Ranger District
204 West Alma
Mt. Shasta, CA 96067
(530) 926-4511

Shasta Lake Ranger District
14225 Holiday Drive
Redding, CA
(530) 275-1587

Weaverville Ranger District
P.O. Box 1190
Weaverville, CA 96093
(530) 623-2121

Yolla Bolla Ranger District
HC01 Box 400
Platina, CA 96076
(530) 352-4211

Report Preparers

Arlene Kallis	Project leader
William Brock	Water, Best Management Practices
Steve Bachmann	Watershed Restoration
Brad Rust	Soil Quality Standards
William Brock	Fisheries
Paula Crumpton	Wildlife biology
Julie Nelson	Botany and noxious weeds
Julie Titus	Fuels management
Bob Ramirez	Timber management
Rhonda Bowers	Facilities
Leslie Ross	Potable water management
Pete Anguin	Forest pest management
Hide Wenham	Range
Rhonda Bowers	Road management
John Schuyler	Wilderness
Brenda Tracy	Recreation
Stephanie Joyce	Visual quality
Winfield Henn	Archeology
Charles Strong	Law enforcement
Anna Arnold	Hayfork AMA and Partnerships

Forest Website

A notice of the FY 2006 Monitoring and Evaluation Report will be posted on the homepage of the forest website. The complete report will be available for review on the forest website at: **http://www.fs.fed.us/r5/shastatrinity/publications/**