CLEARWATER NATIONAL FOREST

FY 2003 MONITORING AND EVALUATION REPORT

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TABLE OF CONTENTS

Section 1 – Introduction **1**

Section 2 – Monitoring Report **1**

Economics **1**

Item No. 1 – Quantitative Estimate of Performance Output or Services 1

Item No. 17 – Document Cost of Implementation Compared with Plan Cost 1

Effects **4**

Item No. 22 – Effects of National Forest Management on Adjacent Land and Communities 4

Item No. 23 – Effects of Other Agencies on National Forests 7

Fire **9**

Fisheries **14**

Item No. 8 – Water Quality and Stream Condition for Fisheries and Non-Fisheries 14

Beneficial Uses 14

Item No. 31 – Anadromous Fisheries 16

Item No. 32 – Inland Fisheries 28

Heritage Program **34**

Item No. 4 – Protection and Condition of Heritage Resource Sites 34

Lands **36**

Item No. 12 – Land Ownership Adjustments 36

Minerals **37**

Item No. 15 – Minerals Prospecting and Development 37

Item No. 36 - Minerals Resource Availability 38

Range **39**

Item No. 6 – Livestock Forage Available, Range in Good Condition Per Established Allotments 39

Recreation **40**

Item No 2: Wide Spectrum of Recreation Opportunities 40

Item No. 14 - Off Highway Vehicle Use Impacts 43

Research Natural Areas **45**

Research Needs **46**

Item No. 24: Research Needs 46

Riparian Areas **47**

Item No. 10 Riparian Area Condition 47

Road Decommissioning Program **56**

Roads **65**

Item No. 13: Miles of Road Open/Restricted 65

Scenic Resources **66**

Item No. 3: Visual Quality Objectives 66

Soil and Water **68**

Item No. 8 Water Quality and Stream Condition for Fisheries and Non-Fisheries Beneficial Uses 68

Item No. 9 Best Management Practice (BMP) Applications 73

Item No. 11 – Site Productivity 76

Timber **84**

Item No. 18: Harvested Land Restocked Within Five Years 86

Item No. 19 – Unsuited Timberlands Examined to Determine if they have Become Suitable 86

Item No. 20 – Validate Maximum Size Limits for Harvest Areas 87

Item No. 21 – Insect and Disease Status as a Result of Activities 87

Trails **89**

Item No. 16 – Trail Management 89

Wild and Scenic Rivers **91**

Wilderness **93**

Item No. 5: Wilderness 93

Wildlife **102**

Item No. 7: Provision for Plant and Animal Diversity 102

Item No. 25 – Big-Game Habitat Improvement 103

Item No.'s 26-35 – Population Trends of Management Indicator, Threatened and Endangered Species 104

Section 3 - Appeals and Litigation **105**

Section 4 – Implemented Changes **106**

Section 5– Planned Actions **107**

Section 6 – List of Contributors & Consultants **109**

Section 7 – Forest Supervisor Approval **110**

SECTION 1 – INTRODUCTION

The Clearwater National Forest Monitoring and Evaluation Report, Fiscal Year 2003 summaries the results of Forest Plan monitoring and evaluation activities during Fiscal Year 2003 (FY03) from October 1, 2002, through September 30, 2003.

Verifying data and assumptions through monitoring is a continuous process; analysis of this and prior year data helps us continue the process of preparing to revise the Clearwater National Forest Plan**.** Until the Forest Plan revision is complete, the current Forest Plan will remain the guiding document for management decisions on the Clearwater National Forest. The current Forest Plan will continue to be updated by use of amendments. Any anticipated amendments are described in Section 4; amendments implemented during FY03 are summarized in Section 5.

The **Monitoring and Evaluation Report** is organized into seven main sections.

Introduction – provides an overview of the report.

Monitoring Report – focuses on monitoring requirements by resource, in alphabetical order. Some resource reports contain more than one "Item No." that refers to the numbering system established in the Forest Plan for items to be monitored.

Appeals – lists unresolved Forest Plan appeals and project level appeals received in FY03, the status of each and the major issues associated with each. (The term "project" is used throughout this report and refers to any Forest Service activity on National Forest Land such as campground construction, trail maintenance and timber sales.)

Planned Action – identifies actions the Forest plans to take in FY03 – and beyond – to implement the Forest Plan.

Implemented Changes – discusses agreements and actions concerning ecosystem management, the Forest Plan and amendments to the Forest Plan.

List of Forest Contacts – includes acknowledgment of people who contributed to the development of this report.

Forest Supervisor Approval – signature by the Forest Supervisor.

SECTION 2 – MONITORING REPORT

ECONOMICS

Item No. 1 – Quantitative Estimate of Performance Output or Services

Frequency of Measurement: Annual
Reporting Period: Annual

MONITORING ACTION

Present resource outputs and activities for FY03.

ACCOMPLISHMENTS / FINDINGS

See **Table 1: Comparison of Outputs and Activities with those Projected in the Forest Plan** for outputs and activities occurring in FY03, along with the percent achieved compared with Forest Plan projections. It is becoming increasingly difficult to make a direct comparison of outputs and activities described in the Forest Plan to present day activities due to changes in operational and accounting methods.

Item No. 17 – Document Cost of Implementation Compared with Plan Cost

Frequency of Measurement: Annual
Reporting Period: Annual

MONITORING ACTION

The Forest Budget and Finance Officer will compile actual costs for comparison with Forest Plan projected costs.

ACCOMPLISHMENTS / FINDINGS

See **Table 2: Comparison between Yearly Expenditures (in thousands dollars) and Forest Plan Projections (in 2003 dollars)** for a display of cost comparison. It is becoming increasingly difficult to make direct comparisons of yearly expenditures described in the Forest Plan to present day expenditures due to changes in operational and accounting methods.

Table 1: Comparison of Outputs and Activities with those Projected in the Clearwater National Forest Plan

Output or Activity	Unit of Measure	FY99	FY00	FY01	FY02	FY03	First Decade Average Annual from Forest Plan	FY03 % of Forest Plan Predicted
RECREATION[1]								
Developed Use / Dispersed Use	MRVDs	366	304	456	467	483	201	240%
WILDLIFE & FISH								
Wildlife Habitat Improvement	Acres	900	1225	978	704	5000[2]	1,300	380%
Fish Habitat Improvement	Acres	238	29	87	54	41	219	19%
T&E Habitat Improvement	Acres	620	450	465	5	0	NA	NA
RANGE								
Grazing use	MAUMs	9.0	8.6	9.7	8.4	8.0	16.0	50%
Range improvement								
Non-structural[3]	Acres	300	313	275	495	486	7,000	%
Structures	Str.	1	2	1	0	0	NA	NA
Noxious Weed Control[4]	Acres	350	1,025	1,400	1,070	1,950	380	513%
MINERALS								
Minerals Management	Cases	92	107	104	100	100	265	NA[5]
TIMBER								
Volume Offered								
Roaded Primary	MMBF	21.2	8.1	20.1	5.8	29.6	90	33%
Roaded NICS	MMBF	2.7	2.6	2.2	0	0	10	0%
Unroaded	MMBF	0	0	0	0	0	73	0%
Volume Under Contract	MMBF	68.6	55.5	57.4	49.3	36.6[6]	NA	NA
Reforestation							14,416	15%
Appropriate Funds	Acres	656	636	505	465	1193	NA	NA
KV Funds	Acres	1,456	1,031	556	462	951	NA	NA
Timber Stand Improvement							1,928	45%
Appropriated Funds	Acres	782	0	36	0	765	NA	NA
KV Funds	Acres	1	0	40	0	109	NA	NA
FUELS MANAGEMENT								
Natural Fuels Treatment	Acres	3,744	2,478	1,938	4,040	3,083	NA	NA
Brush Disposal	Acres	1,075	942	538	844	504	NA	NA
Wildland Fire Benefit	Acres	2.411	1	2,262	696	7,544	NA	NA
FACILITIES								
Trail Constr/Reconstr	Miles	50.1	18.2	22.5	3.2	5.2	14.0	37%
Road								
Construction	Miles	1.4	8.6	0	0	0	69.0	0%
Reconstruction	Miles	33.3	33.1	11.6	5.7	0.5	NA	NA
Obliteration	Miles	83.5	47.4	64.0	40.4	24.5	NA	NA

[1] Updated monitoring standards and policy indicate there is not sufficient accuracy in recreation estimates to report a separate figure for developed and dispersed.

[2] Includes 2000 acres treated with cooperative funding.

[3] This figure represents the acres harvested by methods that provide a tempory forage base for range resources.

[4] FY02 monitoring report figure was in error, it is corrected here.

[5] Due to the changes in FY96 definitions of accomplishment, case numbers cannot be directly compared to Forest Plan estimates.

[6] Late in the fiscal year sell of 20 million still to be awarded.

NA = The Forest Plan did not project an average annual output for this output or activities or it is no longer comparable.

Table 2: Comparison between Yearly Expenditures (in thousand $) and Forest Plan Projections (in FY02 $)

ACTIVITY DESCRIPTION	FY99	FY00	FY01	FY02	FY03	FOREST PLAN	FY03 % of Forest Plan Predicted
General Administration	1207	599	NA	NA	NA	3333	NA
Fire Protection	2123	1899	2968	2849	3013	1347	227%
Fire Protection Fuel	376	259	624	520	408	386	107%
Timber Sale Prep/Admin	1602	1358	1059	1156	450	4011	11%
Timber Resource Plans	0	0	0	0	399	453	89%
Timber Silvicultural Exams	65	22	98	0	0	1330	0%
Range	40	34	31	46	101	161	63%
Range Noxious Weeds	97	94	78	107	142	44	324%
Minerals	99	118	142	137	337	261	131%
Recreation	1046	917	946	1241	1349	1608	85%
Wildlife and Fish	944	975	829	973	881	1685	53%
Soil and Water	778	458	241	390	490	607	82%
Maintenance of Facilities	255	275	550	290	347	746	47%
Special Uses	36	155	52	40	43	139	31%
Land Ownership Exchange	121	122	119	66	15	204	7%
Land Line Location	119	83	183	111	130	542	24%
Road Maintenance	1145	936	906	1174	1093	1263	88%
Trail Maintenance	336	265	195	566	867	668	132%
Co-op Law Enforcement	51	77	50	40	0	104	0%
Reforestation Appropriated	488	289	23	417	526	2708	20%
TSI Appropriated	270	40	51	128	260	635	41%
Tree Improvement[7]	450	404	176	139	158	92	174%
KV Reforestation	1478	928	586	459	755	4184	18%
TSI KV	2	13	18	2	37	130	29%
Other KV	10	0	0	0	0	900	0%
Other CWFS Trust Fund	1257	1597	4630	1194	1753	1023	174%
Timber Salvage Sales	2180	1574	2147	1019	1527	458	338%
Brush Disposal	408	342	281	205	342	2495	14%
Range Betterment	4	4	4	2	3	12	26%
Construction Recreation Facilities	272	94	88	344	355	130	276%
Facility Construction	0	0	0	0	53	868	6%
Engineering Construction Supp	156	207	580	19	0	2567	0%
Construction Capital Investment	651	6	0	0	121	3876	3%
Trail Construction/Reconstruction	392	401	495	82	321	450	72%
Timber Purchase Road C/R	0	0	0	0	0	6870	0%
Land Acquisition	40	42	15	1514	625	98	648%
Insect/Disease Sup	80	29	8	56	174	0	NA
Economic Recovery	10	66	29	11	105	0	NA
Appeals/Litigation	48	27	33	0	0	NA	NA
Ecosystem Management	1069	1255	1126	1049	888	0	NA
Federal Highway Relief	205	0	0	0	0	0	NA
Flood Repair	106	0	0	0	0	0	NA
TOTAL	20,017	15,964	19,361	16,346	18,068	46,389	39%

[7] Includes Lenore Seed Orchard management and genetic tree improvement program funds not in original Forest Plan projections.

NA = Either not originally planned for or discontinued accounting item.

EFFECTS

Item No. 22 – Effects of National Forest Management on Adjacent Land and Communities

Frequency of Measurement: Annual
Reporting Period: Annual

MONITORING ACTION

A report will be prepared to determine concerns and goals regarding Forest management.

ACCOMPLISHMENTS / FINDINGS

ISSUES AND CONCERNS: Primary concerns during FY03 included the following.

ROADS POLICY

Local interest continued in the agency's policy for managing road systems. A formal process and public discussion regarding Forest Service road management was initiated in 1998 with an interim rule that temporarily suspended road construction and reconstruction in certain unroaded areas.

A final rule was completed in January 2001. To ensure Forests made sound decisions regarding new road construction, reconstruction and decommissioning activities, it required Forests to conduct science-based roads analysis prior to issuing decisions that included the aforementioned activities. The requirement was effective July 12, 2001. It required Forests to complete a forest-scale road analysis by January 12, 2002.

After a review of the final rule and discussion with Forest Service units, timeframes were modified and interim direction issued. The requirement to conduct a roads analysis prior to issuing decisions regarding road construction, reconstruction, or decommissioning was extended to January 12, 2003. The Clearwater National Forest forest-scale roads analysis was completed on January 7, 2003.

LYNX FOREST PLAN AMENDMENT

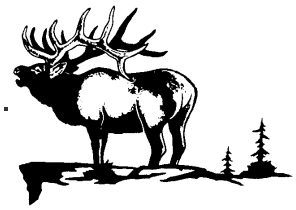
The Canada lynx, a rare, forest-dwelling cat, was listed as *"threatened"* by the U.S. Fish and Wildlife Service in March 2000. In September, the Forest Service and Bureau of Land Management unveiled a proposal to incorporate lynx conservation measures into existing land management plans. To help people understand what this could mean to Clearwater National Forest programs, the Forest issued a letter to individuals on a Forest Plan mailing list. It included information about the habitat needs of lynx, the proposed amendment, the amendment process and public involvement opportunities.

The Draft Environmental Statement was released in early January. In response, the Clearwater National Forest hosted an open house on February 12 in Orofino. This offered individuals an opportunity to speak with resource specialists about the DEIS.

The public comment period closed on April 15, 2004. The Final Environmental Impact Statement and Record of Decision are expected to be released in the Fall of 2004.

ELK HABITAT INITIATIVE

In portions of the Clearwater Basin, Idaho's renowned elk herd is in serious decline. Experts agree that habitat decline, hunting pressure, predators and harsh winters are the primary cause for the diminishing numbers.



The Clearwater Basin Elk Habitat Initiative was begun in 1998 to address the problem and to find solutions. It is a collaborative effort with state and federal agencies, and many private sector partners participating. A self-organized citizens group, the Clearwater Elk Recovery Team, is also working to find solutions.

The Clearwater National Forest continued a focused effort to improve wildlife habitat in the North Fork Clearwater sub-basin. The Forest decision on restoration options in the 156,000-acre Middle Black (Middle North Fork and Upper North Fork-Black Canyon area) were presented in the Middle-Black Final Environmental Impact Statement (FEIS) and Record of Decision (ROD). Implementation began in 2003 and is continuing.

Lewis & Clark Bicentennial Observance

From 2003-2006, thousands of visitors are predicted to visit Idaho to celebrate the 200th anniversary of the Corps of Discovery's voyage. In preparation for these visitors, the Clearwater National Forest is making plans to welcome visitors, to provide information and services, and to protect natural resources.

In FY03, the Forest implemented a permit system to manage use in the high elevation portion of the Lolo Trail corridor during the bicentennial years. This system is designed to protect the rich cultural and fragile natural resources in the area. The Forest began publicizing the permit requirement and implemented a lottery in January of 2003.

In addition, the Forest, the Clearwater-Snake Lewis and Clark Bicentennial Committee and the Clearwater Economic Development Association implemented a seven-county public safety plan, securing funding for some of the identified needs. The supplemental Fire Evacuation Plan was used during the fires of 2003. Motorway Rangers monitored and protected the cultural and natural resources along the Lolo Motorway. Rangers also educated visitors about the permit system, and encouraged Leave No Trace camping.

Work continued on information and interpretation efforts related to the Bicentennial, with employees implementing components of an interpretive plan, developing text for new interpretive signs to be located along U.S. Highway 12 and completing a brochure titled *Following Lewis and Clark along the Lolo Trail*. Construction was completed on the new visitor center and rest stop located at Lolo Pass. Dedication occurred in June 2003. Interpretive displays are scheduled to be completed in 2004.

Special Projects and Programs

Rural Community Assistance Program

The Forest continues to work with local communities to secure funds through the Farm Bill's Rural Community Assistance program. In FY03, grants were awarded to the following:

- Clearwater Unlimited, Inc.: $5,000 for Clearwater Country Visitor Center – Phase II (land transfer), to initiate and support tourism development by creating a regional visitor center.
- Kooskia Revitalization Committee: $20,000 for the Harpster Volunteer Fire Association building construction project to enhance response time to fires.
- City of Lapwai: $4,987 for "Welcome to Lapwai" Signs.
- City of Craigmont: $20,000 for construction of amphitheater and cedar band shell. This project is part of a total park renovation project and provides a location for the annual town picnic, summer concert series, picnics, meetings, and business promotions/appreciation barbeques.
- City of Kendrick: $20,000 for the depot renovation and development of an historical museum enhancing the quality of living within the community by providing economic and recreational opportunities.

Receipts to Counties

Through FY00, 25 percent of money received from the sale and use of a variety of national forest products and services was returned to the county on which the National Forest land was located. Those funds were dedicated to the upkeep and maintenance of roads and schools.

Due to changing programs, particularly a decline in federal timber sales, county receipts have been plummeting. This decline led Congress to pass the Secure Rural Schools and Community Self-Determination Act of 2000 (Public Law 106-393) to provide the opportunity for an increased, stable payment to local counties. The act gave counties the option of remaining with the current system or electing a payment based on an average of the state's three highest payments between 1986 and 1999. All counties represented on the Clearwater National Forest elected a payment based on the new formula.

Local counties receiving payments for FY03 include:

- *Benewah County* *$30,608*
- *Clearwater County* *$1,064,914*
- *Idaho County* *$854,103*
- *Latah County* *$318,298*
- *Nez Perce County* *$119*
- *Shoshone County* *$141,472*

Counties electing to receive full payment based on the new formula were required to reserve 15-20 percent of their funds for forest restoration, maintenance or stewardship if their payment exceeded $100,000. By law, they were also required to form consensus-based Resource Advisory Committees (RAC) to recommend the special projects funded with this money.

Secretary of Agriculture Ann Veneman appointed the following individuals to serve on the North Central Idaho Resource Advisory Committee which works with the Clearwater and Nez Perce National Forests:

NAME	TOWN	INTEREST
Paul E. Bartlett	Lewiston	Organized Labor
Ronald William Hartig	Pierce	Mining Interests
William Edward Mulligan	Lewiston	Timber Interests
Brett Thomas Bennett	Moscow	Timber Interests
Don Heckman	White Bird	Grazing Interests
David P. Bodine, Jr.	Grangeville	Replacement
Dennis William Baird	Moscow	National Conservation Interests
Porter (Kent) Henderson	Lewiston	Local Conservation Interests
Robert B. Hafer	Grangeville	Dispersed Recreation Interests
Donald D. McPherson	Kooskia	Dispersed Recreation Interests
Harlan Odell Opdahl	Pierce	Outfitter
Robert F. Abbott	Grangeville	Replacement
George H. Enneking	Cottonwood	Local Elected Official
David Louis Ponozzo	Orofino	Local Elected Official
John Allan Nelson	Troy	Local Elected Official
Susan Gail Borowicz	Elk City	School Official
Fred L. Trevey	Lewiston	Citizen at Large
David B. Johnson	Lewiston	Nez Perce Tribe

The RAC recommends public lands projects to the Secretary of Agriculture. (The public may suggest these to the RAC.) For a project to be recommended by the entire group, it must be approved by three of the five representatives in each membership category.

Projects identified for implementation on federal lands must comply with all federal laws and Forest Service land management plans. RAC meetings will be publicized and open to the public. The Forest continues to work with area counties and members of the RAC as this legislation is implemented.

Projects approved in FY03 included:

- Palouse Noxious Weeds - $18,000 for cooperative weed management involving the Clearwater National Forest and Latah and Clearwater Counties.

- Gezel Creek NEPA – $142,400 for planning restoration and forest management in Gezel Creek
- Clearwater Mark & Cruise - $90,000 for contracting sale preparation on the Clearwater National Forest.
- Prescription Contract - $27,000 for contracting silvicultural prescriptions on the Clearwater National Forest.

Item No. 23 – Effects of Other Agencies on National Forests

Frequency of Measurement: Annual
Reporting Period: Five Years

MONITORING ACTION

A report will be prepared to determine effects of the activities of other agencies on the Forest.

ACCOMPLISHMENTS / FINDINGS

The Clearwater National Forest believes in the value of coordination, cooperation and collaboration. Forest employees routinely work with many agencies through formal and informal processes. Key contacts include (but are not limited to):

Nez Perce Tribe: The Forest has a unique government-to-government relationship with the Nez Perce Tribe. The Forest communicates and consults directly with the Nez Perce Tribe regarding proposed projects and activities. The Forest and Tribe also partnership on an active road obliteration and monitoring program.

Idaho Department of Fish and Game (IDF&G): IDF&G routinely provides advice regarding projects affecting fish and wildlife resources. Department personnel also enforce IDF&G laws on the Forest.

Idaho State Historic Preservation Office (SHPO): Clearwater National Forest personnel consult with SHPO regarding the impacts of proposed activities and projects on heritage resources.

Idaho, Latah and Clearwater County Sheriffs' Departments: Through a cooperative agreement these departments patrol campgrounds and forest roads and assist Forest Service law enforcement officers. These counties participated in the development of a Lolo Motorway public safety plan.

Natural Resources Conservation Service: This agency monitors precipitation stations on the Forest.

Idaho Department of Lands (IDL): Forest Service personnel coordinate with IDL when issuing burning permits. In addition, the agencies work together to train firefighters and suppress wildland fires.

National Park Service: The Forest coordinates with the Nez Perce National Historic Park regarding the management of the Lewis and Clark National Historic Trail and the Lolo Trail National Historic Landmark. The Forest also works with the Park in the development of interpretive materials and plans for the upcoming Lewis and Clark Bicentennial.

Idaho Department of Parks and Recreation: The Forest continues to apply to the Department's grant program and participate in the Park 'n Ski program.

U.S. Army Corps of Engineers: The Forest shares resource management information and expertise with Corps managers. Forest Service offices routinely provide information about Corps recreation sites.

U.S. Fish and Wildlife Service - Dworshak Hatchery: Forest personnel provide information about visitor information at this site. The Forest participated in Free Fishing Day activities with agency personnel.

National Marine Fisheries Service: The Forest consults with this agency on resource issues that potentially affect listed anadromous fish under the requirements of the Endangered Species Act (ESA).

U.S. Fish And Wildlife Service: The Forest consults with the U.S. Fish and Wildlife Service on resource issues that potentially affect listed fish and wildlife under the requirements of the ESA.

Idaho Department of Transportation: The Forest coordinates with the Transportation Department primarily on issues related to U.S. Highway 12 and the Lolo Pass Visitor Center.

FIRE

GOAL

Prevent, suppress and manage fire commensurate with resource values to be protected, while recognizing the role of fire in the ecological processes.

Implement the five key points of the National Fire Plan (NFP), which are: firefighting, preparedness, restoration and rehabilitation of burned areas, hazardous fuels treatment, community assistance and accountability.

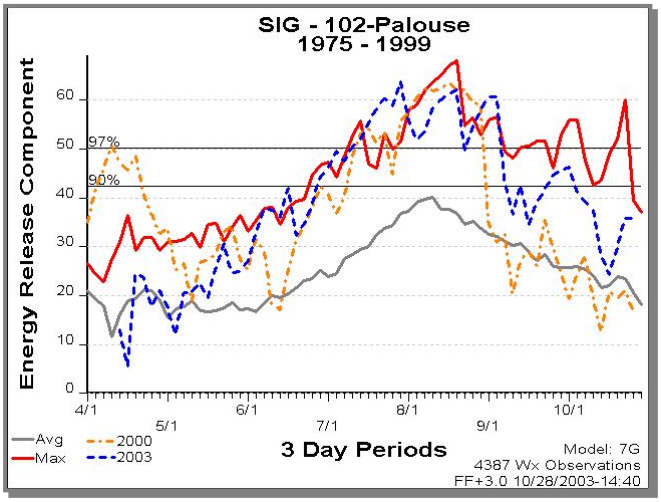
STRATEGY

- Analyze and display organizational needs using the National Fire Management Analysis System (NFMAS) to determine the most cost efficient fire management organization.
- Continue to stress **SAFETY** as the first priority in all fire management activities with special emphasis on the aviation program, firefighting and recurrent training in Standards for Survival.
- Continue the use of appropriate management responses under Federal Wildland Fire Policy to meet fire management objectives.
- Integrate Ecosystem Management concepts into fire management programs. Look at ways to utilize and incorporate fire treatment into sustaining healthy ecosystems, concentrating on restoration of fire adapted ecosystems
- Continue to use fire to accomplish management objectives for hazardous fuel reduction, site preparation, wildlife habitat improvement and ecosystem management through prescribed fire and wildland fire use programs. Continue wildland fire use implementation consistent with the Forest Plan and National Fire Policy.
- Continue cooperation with other fire protection agencies; evaluate fire protection boundaries to promote economic and efficient fire suppression. Work with communities to increase fire protection capability and support expansion of economic diversity.
- Provide a cadre of specialists with the knowledge and experience to accomplish prescribed fire programs and participate as members of the wildland fire Incident Command System.
- Ensure sufficient funds are collected from timber sales to abate activity created fuel hazards. Manage the trust fund account to ensure all work is completed.
- Continue to support and be involved in achieving the goals of habitat improvement and the restoration of elk under the Clearwater Elk Initiative.
- Continue to implement the North Idaho Smoke Management Airshed guidelines and coordinate prescribed burning and wildfire smoke impacts with this group and adjacent cooperators.
- Implement Fire and Aviation Management activities through the Fire Management Plan (FMP) including preparedness staffing, qualifications, initial action, large fire suppression, wildland fire use and use of Minimum Impact Suppression Tactics (MIST) for lands under the protection of the Clearwater National Forest.

MONITORING ACTION

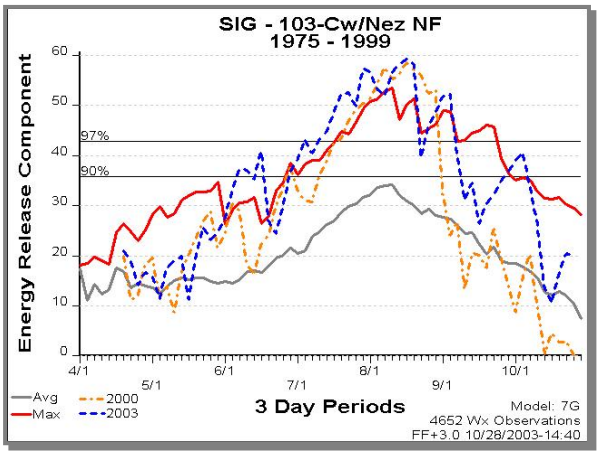
The Fire staff will annually prepare and implement a FMP that will provide specific direction for accomplishing national fire management policy and fire management objectives outlined in the Forest Plan. The primary elements used to monitor the program are: fire starts, acreage burned, wildland fire use events and acreage burned, hazardous fuels treatment acres, acres burned in riparian areas, and acres affected by high intensity fire, hours flown and aviation mission type.

ACCOMPLISHMENTS / FINDINGS



The summer of 2003 saw more acres burned by wildland fire on the Clearwater National Forest since 1921.

El Nino conditions in the Pacific Ocean, which have been responsible for four years of drought conditions in the Northern Rockies, diminished during the winter of 2002-2003. A winter that began quite mild with limited moisture and warm temperatures began to change in January when winter did arrive. During the ensuing 4-month period snow pack and moisture received approached normal values; however the near normal precipitation did little to replenish a four-year deficit. Burning windows were limited during April and May and only a part of the spring burning target could be accomplished. Widespread moisture generally ceased in early June and fire danger developed rapidly as a strong ridge of high pressure developed over the interior west in early July that brought widespread record warmth and record dryness that negated the beneficial effects of past spring rains. As expected, ERC values climbed steadily and exceeded recorded 30-year maximum values through July and most of August. The graphs display the fire danger for the 2003 season; average and maximum lines use 1975-1999 data while the 2000 and 2003 lines indicate the extreme conditions reached.



The hot dry summer set the stage for large and long duration fire events that began in early July. The Clearwater Forest was only brushed by several large storms that hit Western Montana hard in mid- to late July. The Forest did receive a full share of lightning ignitions in early August, with the majority occurring on the Powell District. The North Fork and areas protected by the Idaho Department of Lands escaped the brunt of these storms and in general had a below average season for number of fires.

The Clearwater and Nez Perce National Forests utilized 14 incident management teams (IMTs) in 2003 to manage large fire events. A Fire Use Management Team was stationed at Powell to deal with a full range of management options for fires on the Powell, North Fork, and Lochsa Districts. For the first time we had an Area Command Team stationed in Grangeville to coordinate the efforts of the various IMTs. We made extensive use of resources assigned to the various large incidents on the Zone in our suppression efforts. Our Fire Management Officers agree that the Forests would have experienced more large fires if crews and helicopters had not been readily available.

Expanded dispatch was staffed in Grangeville for 57 consecutive days to support large fires.

Precipitation the first week of September brought a dip in ERC's to below the 90th percentile for the first time in two months only to see a rebound to record setting levels again by the first of October. The rebound was short lived as some moisture associated with shorter days and good humidity recovery limited further fire activity.

PRE-SUPPRESSION / PREPAREDNESS

The Forest continued implementation of the Federal Wildland and Prescribed Fire Management Policy. This policy was adopted nationally in 1998 and incorporates nine guiding principles and provides consistent fire management direction for all federal agencies.

Funding to protect Forest resources from fire is based on the National Fire Management Analysis System, an analysis tool designed to determine the most efficient level of fire protection budget. This analysis is based on fire history, fire weather and past organizational levels. It then establishes the most cost efficient mix of personnel, equipment and budget needed to provide firefighting resources to met land management objectives. The program was last certified in 1997 and the most cost efficient organization was determined. Costs to produce MEL are updated annually through outyear budget submissions.

- The Forest's budget for FY03 was $3,404,000.
- The Forest received about 95 percent of the most efficient level of funding, slightly up from the $2,893,700 received in FY02.
- The Forest staffed a 10-person helitack crew and exclusive use helicopter at Musselshell Work Center in 2003.
- Idaho Department of Lands positioned 2 Single Engine Air Tankers in Grangeville this year which saw wide spread service on the Forest.
- The Clearwater/Nez Perce Fire Zone met with fire cooperators on a number of issues and programs including the development of county disaster plans, community protection, hazardous fuels treatment around communities, and economic development strategies.

WILDFIRE DETECTION AND STATISTICAL CAUSE

Wildfire detection on the Clearwater is primarily provided by our staffed Lookouts and fixed wing detection flights.

Staffed Lookouts during the 2003 fire season included Beaver Ridge, Rocky Point, Walde, Black Mountain, and Coolwater Lookout, a shared lookout with the Nez Perce Forest. Three very important lookouts, Bear Mountain, Osier Ridge and Hemlock Butte, could not be staffed in 2003 due to safety deficiencies that could not be corrected on short notice.

The type of detection, number of fires located and percentage of the total number of fires detected is displayed in Figure 1. Orofino Aviation provided three exclusive use and two optional use single engine light fixed wing aircraft for fire recon, relief air attack, fire mapping, detection and point-to-point passenger service for the Clear/Nez Fire Zone. During 2003, these fixed wing aircraft amassed 265 flight hours on the Clearwater Forest.

Figure 1. Fire Detection

Detector	Number of Fires	Percent
Lookout	36	31
FS Aircraft	57	48
Other Aircraft	2	2
FS Employee	19	16
Other	2	2
Permittee	0	0
Cooperator	1	1

Figure 2. Number of Fires by Cause – 2003

Cause	# Fires	Percent	Acres
Lightening	113	96	40,707.4
Equipment	0	0	0
Smoking	0	0	0
Campfire	1	1	2
Debris Burning	1	1	0.1
Children	1	1	0.1
Fireworks & Arson	1	1	0.1
Miscellaneous	0	0	0
Total	117	100%	40,709.7

The Clearwater National Forest had four person-caused fires that burned a total of 2.3 acres. Figure 2 displays the causes of fires for FY03.

Although very high fire danger indexes were common across the Forest, observed fire behavior did not always reflect this as most fires remained small and were suppressed at a small size.

FIRE SUPPRESSION

The Clearwater National Forest is responsible for the protection of approximately 1,715,726 acres of land. The **Idaho Department of Lands** and **Clearwater Potlatch Timber Protective Association** protect about 146,136 acres of National Forest lands. The three fires that occurred on national forest lands protected by these two agencies were suppression strategy wildfires.

Wildfires were attacked and suppressed in accordance with the Fire Management Action Plan. The intent of the **Clearwater National Forest Plan** standards and guidelines were met by implementing an array of suppression strategies (often called the appropriate management response). Each fire was assessed as to its fire potential and location within each land allocation, and a suppression strategy assigned to best fit each situation. Due to the number of fires and shortage of resources occurring in 2003, only those fires that posed the greatest risk received the limited available resources for suppression actions. In some cases, only portions of fires were contained or controlled to protect critical resource values. Where resource values and risk was low, i.e. backcountry and wilderness areas, many fires were managed under a confinement suppression response or as Wildland Fire Use (WFU) events.

The 2003 fire season was slightly below average on the Clearwater National Forest in terms of numbers of fires. The 10-year average (1994-2003) for number of fires is 147.5. However, the 2003 fire season was an exceptional year in terms of total acres burned on the Clearwater National Forest. The previous 10-year average (1993-2002) for acres burned was 4,444.4 acres.

- During FY03, the Forest had **117** fires.
- **40,709.7** acres burned on the Forest, the largest acreage since accurate record keeping began in 1921.

Significant fires during 2003 included:

- Beaver Lakes Complex @ 12,467 acres
- Wendover Fire @ 3,439 acres
- Hopeful #2 Fire @ 3,509 acres
- Pleasant and Rhoads Fires @ 3,868 acres
- Upper Twin WFU @ 1,362 acres

The Forest maintained a good safety record throughout the very tough 2003 fire season.

MIST guidelines were used for all lands protected by the Clearwater National Forest. MIST guidelines are specifically written to protect resource values within wilderness, research natural areas, cultural sites and any other sensitive areas from fire suppression impacts.

The Clear/Nez Fire Zone provided extensive support to the Southwest, Rocky Mountains, and Pacific Northwest areas during the spring and summer seasons. Our first crew dispatch was May 2 and the last crew out returned home on November 8. In total the Zone and its partners mobilized 88 crews, 95 engines and filled approximately 450 overhead positions.

AVIATION

Two 800 gallon 802 Single Engine Air Tankers (SEATs) (Evergreen Flying Service, Rayville, LA) under contract to the Idaho Department of Lands were managed by and based at the Grangeville Air Tanker Base in 2003 for retardant delivery in west central Idaho. These aircraft delivered 6,950 gallons of retardant for fire operations at Ashpile, Hopeful #2, and Beaver Lake fires on the Clearwater National Forest. 27,037 gallons were delivered to the Beaver Lake Complex on the Powell RD from Missoula, and the portable retardant plant established to support that complex provided an additional 70,234 gallons via helicopter.

The Clear/Nez Fire Zone exclusive use helicopter contract was renewed with Hillcrest Aircraft Company for the 2003 fire season. Two Bell 206 L-3 Type 3 helicopters, with high performance kits were provided. Heli-

copter N861H was based at the Musselshell Work Center, while the second helicopter was based at Grangeville Air Center. The Zone Call-When-Needed Contract was also renewed with Hillcrest. A total of 29 different helicopters were utilized on the Zone in 2003, 11 Type 1, 12 Type 2 and 6 Type III.

During the 2003 fire season, 446.4 Exclusive Use hours were flown on the Clear/Nez Fire Zone. Additionally, the Exclusive Use helicopters flew 61.4 hours for neighboring forests, and in Region 4, for fire and project work. Of the total hours flown 160 hours were on fire assignment on the Clearwater National Forest. The L3 and crew based at the Musselshell were committed to WY and UT for a two-week fire assignment during July. They spent the remainder of their time on-Zone. The exclusive use helicopters transported 191 passengers, 40,875 pounds of cargo and delivered 41,830 gallons of water to suppress Clearwater NF fires.

WILDLAND FIRE USE

This part of the FMP manages naturally ignited wildland fires to accomplish specific pre-stated resource management objectives in predefined geographic areas outlined in fire management plans. Each fire use event meets strict prescription criteria prior to line officer approval; and a site specific Wildland Fire Implementation Plan (WFIP) is developed.

- This option was selected for 19 fire starts in 2003, 14 within the Selway-Bitterroot Wilderness and 5 within the Clearwater Fire Management Unit. These fires burned a total of 7,544 acres.
- Many lightning ignitions did not meet wildland fire use prescription criteria due to high fire danger indexes in the Region and due to the National fire situation. However, resource shortages required fire managers to prioritize use of scarce resources and as a result many fires not specifically being managed for resource benefit were burning unchecked where risk to life and property were low. Significant resource benefit was realized on these fires as well.

FUELS REDUCTION

Brush disposal trust funds were used to treat 504 acres of timber harvest related fuels in fiscal year 2003. Conditions remained very dry through the end of the September increasing the risk of burning, particularly at the lower elevations.

The Hazardous Fuel budget for the Clearwater was $693,500 in FY03. With the dollars, the Forest treated 3,083 acres of natural fuels. Two environmental documents were completed and several new projects were initiated for out-year treatments. FY03 target was 4,890 acres. The North Fork District accomplished 55 acres, Powell treated 1,364 acres, and the Lochsa treated 700 acres, while the Palouse District treated hazardous fuels on 964 acres.

Extended dry conditions through September increased the risk of igniting additional acres before the end of the fiscal year, limiting the Forest's opportunity to meet its target acreage. The North Fork District took advantage of late season conditions igniting several landscape scale burn blocks in the Upper North Fork of the Clearwater, accomplishing almost 5,000 acres which will be credited toward the FY04 target.

AIR QUALITY

Prescribed burning was accomplished during the spring and fall burning periods. Smoke management from prescribed fires was managed within the guidelines of the North Idaho Airshed Group. Burn operations on the Forest were impacted on several occasions by smoke production limitations. No specific air quality monitoring was done within the Forest.

FISHERIES

GOAL

Manage the Forest's fisheries streams to achieve optimum levels of fish production by rehabilitating and improving streams on developed areas of the Forest and by maintaining high quality existing habitat.

STRATEGY

- Provide management direction during the planning and implementation of activities. Identify and implement rehabilitation projects on the Forest.
- Emphasis in habitat improvement will be directed toward the sensitive species of bull trout, steelhead trout, Westslope cutthroat trout and spring Chinook salmon.
- The Forest will focus the challenge cost-share program on anadromous fish habitat improvement associated with fisheries in the Columbia River Basin and the direction of the Northwest Power Act. The Forest will develop cost-share partners and projects.
- The Forest fisheries biologist will direct development of fisheries expertise and monitoring across the Forest. Information regarding restoration and monitoring projects and the results are available for anyone interested.
- Ensure Forest activities meet the Forest Plan standards, especially PACFISH and INFISH standards that were included in a Forest Plan amendment.
- Ensure Forest activities meet the terms and conditions as defined in the steelhead trout and bull trout biological opinions.

ACCOMPLISHMENTS / FINDINGS

PACFISH

No formal review by the PACFISH Implementation Review Team was conducted on the Forest in 2003. Since 1995, the Forest has been conducting the PACFISH/INFISH monitoring programs in conjunction with the annual Best Management Practices (BMP) reviews to determine project implementation compliance and effectiveness of resource protection measures on selected projects. Due to an active fire season, no PACFISH reviews were completed during 2003; the reviews were rescheduled for 2004.

INFISH

Similar to the PACFISH reviews, no INFISH reviews were completed in 2003; the reviews were rescheduled for 2004.

Item No. 8 – Water Quality and Stream Condition for Fisheries and Non-Fisheries Beneficial Uses

Frequency of Measurement: Annual
Reporting Period: Annual

Information for Non-Fisheries is included in the section entitled **Soil and Water** under **Item 8.**

MONITORING ACTION

The Forest fisheries biologist will coordinate the monitoring of critical anadromous and inland fish streams to determine habitat conditions and population trends. District field crews will measure key habitat char-

acteristics, such as cobble embeddedness (the degree to which streambed gravel has been infiltrated by sediment).

Streams supporting both anadromous and inland fish were monitored during 2002. During 1998, the 1997 monitoring program was expanded and intensified to include more monitoring of anadromous and inland fish streams that were impacted as a result of the high flows, flooding and landslides within the Palouse River, Lochsa River and the North Fork Clearwater River drainages. In 1999, this intensity was maintained or expanded in most drainages. However, similar to 2000-2002, monitoring efforts in 2003 were substantially decreased from previous years due to budget constraints.

ACCOMPLISHMENTS / FINDINGS

FOREST OVERVIEW

Stream Inventory Targets: Due to budget constraints and fire restrictions, the Forest did not complete any stream inventories in 2003.

Improvement Targets: Due to budget constraints, project targets in 2003 focused on riparian protection regarding grazing and fish passage improvement projects. Approximately 19 miles (41 acres) of fisheries habitat improvement were completed.

The 2003 stream improvement projects were completed on various streams throughout the Forest. As in past years, riparian fencing projects involving fence replacement, construction and maintenance were completed to meet Forest Plan Riparian Management Objectives (RMOs). Fisheries funds were used in several partnership projects in 2003 to improve fish passage. Forest funds and funds from the Nez Perce Tribe were used for culvert replacements in the Lolo Creek and Lochsa River drainages. Due to fire related closures on the Forest, the scheduled improvement work regarding inland fisheries on high mountain lakes was cancelled.

Stream Temperature Monitoring: The stream temperature-monitoring program was expanded in 2002 to approximately 300 sites across the Forest. This includes streams that were monitored during the summer of 2003 and additional multi-year units deployed during 2002 to collect 2002, 2003 and/or later years. This was a moderate increase over the 230 sites monitored during 1998-1999 and a substantial increase over the budget-reduced number of sites during 2000-2001. This monitoring report summarizes the data collected during 2003 on 301 sites on 260 streams. Temperature data for 54 sites are not available (instruments still instream, missing units, equipment failures, or exposed units prevented data collection). During 2003, only nine units were lost, vandalized or had equipment failures; this is approximately three percent of the units deployed in 2003. Dependent upon budgets, streams will be monitored for at least five consecutive years.

The 2003 summer showed slightly below average stream flows during the summer months. Preliminary air temperature analysis indicates that the summer of 2003 was an average summer that was slightly warmer than the summer of 2002. In comparison, the summer of 2002 was slightly cooler than the summers of 2000 and 2001. The below average stream flows coupled with the warmer air temperatures allowed stream temperatures to stabilize at warmer temperature during July through mid-September. In 2003, approximately seven percent of the streams monitored exceeded the State's cold water biota standard. This is a two percent increase over 2002 data (6.5% vs. 4.4%). While lower stream flows and warmer water temperatures most likely contributed to the higher number of streams exceeding the State cold water biota standard, some of this difference can be attributed to 39 additional monitoring sites in 2003.

Over the past several years numerous questions have been raised as to why streams are not meeting various standards. While stream flows and associated snow pack in the drainages and the average summer ambient air temperatures affect stream temperatures during the summer months, the maximum daily temperatures are also regulated by various other factors, some unique to individual drainages. However, these factors as well as favorable high stream flows and cooler summer air temperatures may not be enough to keep stream temperatures from rising above imposed numeric standards.

As an example, a comparison of available 2003 stream temperature data from streams (164 streams) located in wilderness/roadless/undeveloped areas and developed areas within the two major subbasins

(Lochsa River and North Fork Clearwater River) did not show any difference in streams meeting the State spawning standard of 13º C. Only eight streams out of the 71 streams (11%) within wilderness/roadless/undeveloped areas met State spawning standards for steelhead trout and westslope cutthroat trout. In comparison, only ten streams out of the 93 streams (11%) within developed areas met applicable State spawning standards (i.e. steelhead trout, westslope cutthroat trout, and spring chinook salmon). While various variables (i.e. stream size, fire history, riparian alterations, riparian recovery, mean elevations, etc) would influence conclusions if further comparisons are made, the overall outcome of the above comparison indicates the difficulty of attaining the State spawning standard of 13º C for the selected spawning periods. Data from 170 streams located in wilderness/roadless/undeveloped areas and developed areas within the two major subbasins (Lochsa River and North Fork Clearwater River) showed 70 out of 71 streams (99%) located in wilderness/roadless/undeveloped areas met the State cold water biota standard while 96 out of 99 streams (97%) in the developed areas of the drainages met the standard.

Fish Population and Habitat Monitoring: Fish population numbers and/or stream substrate conditions were monitored in selected drainages in the Lolo Creek, Lochsa River and North Fork Clearwater River watersheds. Personnel from the Idaho Department of Fish and Game, Nez Perce Tribe, U.S. Fish and Wildlife Service, and Idaho Department of Environmental Quality also monitored fish populations within various streams on the Forest; these monitoring projects were coordinated with the Forest programs to avoid unnecessary duplication of monitoring efforts.

Several larger monitoring projects included the post flood monitoring on established stream reaches and cooperative bull trout studies with the Idaho Department of Fish and Game (IDFG). As in 1997 and 1998, the Forest scheduled resurveys (via contract) of habitat and substrate conditions on selected sensitive stream reaches within 16 streams that were affected by the 1995/96 flood event. Due to time constraints in 2002, this monitoring project was re-scheduled to be completed in 2003. The cooperative bull trout study within the North Fork Clearwater River drainage was continued in 2003. The study was expanded to include the Lochsa River drainage in 2003. The IDFG marked and monitored movements of 150 and 20 adult bull trout within the North Fork Clearwater River and Lochsa River respectively. The Forest assisted in conducting fish population monitoring and spawning ground surveys

Item No. 31 – Anadromous Fisheries

POTLATCH RIVER WATERSHED

Watershed Status: No natural or anthropogenic events occurred on USFS lands in the Potlatch River watershed during 2003 that caused changes to the aquatic environment. Instream conditions and riparian conditions did not show any substantial changes due to climatic, spring stream flows, erosion (sedimentation due to surface and mass wasting events), and management activities (i.e. roads, vegetative treatments, mining and grazing). Various field reviews and monitoring activities have supported the conclusion that the habitat conditions are most likely similar to 1998-2002 conditions. Based on these assessments, the presence/absence and relative abundance of fish populations within the watershed are assumed to be similar to conditions observed during 1994-95 surveys. However, anadromous fish numbers may vary annually due to influences outside the watershed and fish supplementation efforts by the Nez Perce Tribe involving coho salmon.

Habitat Improvement: The fisheries (funded) enhancement and riparian fencing projects within the Potlatch River drainage assisted in the improvement and/or protection of approximately 8.5 miles of stream. In addition to the annual fence maintenance, permanent fences were constructed along the East Fork Corral Creek and East Fork Big Bear Creek to protect approximately 1.25 miles of stream. No other major watershed restoration activities (i.e. road obliteration, instream restoration projects) were scheduled in 2003.

Habitat Monitoring: The mainstem Potlatch River and various tributaries have been designated a "water quality limited segment" (WQLS) by the State of Idaho. The primary pollutant of concern is sediment although the Forest notes that water temperatures are also a concern in the Potlatch River drainage. Past, current, and future monitoring within the Potlatch River drainage will emphasize substrate conditions in terms of sediment and stream water temperatures. Since the stream inventories of all fish-bearing streams within the Potlatch River drainage on National Forest System lands have been completed within the last ten

years, no additional surveys were scheduled for 2003. Selected stream reaches within the mainstem Potlatch River and several tributaries are scheduled for survey in 2004

Water Temperature Monitoring: Stream temperature monitoring was conducted at 14 sites on 9 streams in the Potlatch River drainage in 2003 to evaluate habitat conditions for steelhead trout. From 1990-1996 and 1998-2003 the Forest has collected temperature data on selected stream within the Potlatch River drainage to determine if stream temperatures meet Forest and State standards, locate temperature problems, identify recovery trends, and prioritize riparian recovery efforts. Thirteen years of thermograph data indicate that most of the streams have summer stream temperatures that are higher than the desired objectives for salmonid rearing. In most years, all temperature sites within the Potlatch River system exceeded the desired future condition (DFC) for temperatures during the spring spawning period and all temperature sites within the Potlatch River system exceeded the State spawning standard of 13°C during the spring.

Nat Brown Creek (upper), Ruby Creek and the Potlatch River (upstream West Fork Potlatch River) exceeded the standard for four days respectively. Four of the 13 sites, Cougar Creek, Feather Creek, Moose Creek (upstream Moose Creek Reservoir), and West Fork Potlatch River (downstream Talapus Creek) met the DFC for steelhead trout rearing.

Four sites, mainstem Potlatch River (at Little Boulder Creek), West Fork Potlatch River (downstream of Stout property), East Fork Potlatch River (mouth), and Moose Creek (downstream of Moose Creek Reservoir) exceeded the State standard for cold-water biota of the daily maximum of 22°C and the maximum daily average of 19°C. The State temperature standard of 13°C or below for the spring spawning period (for steelhead trout) was not met at any of the 13 sites. All streams exceeded the bull trout maximum rearing temperature of 10°C (consecutive seven-day average of daily maximums during June-September) that has been promulgated by EPA as a final rule for water quality standards.

Fish Population Monitoring: Steelhead redds have been monitored in the East Fork Potlatch River since 1992 twice a year (April and May). These surveys have shown a consistently low number of redds from three to eight. During the 2003 spawning period, six steelhead redds were observed in the index area.

LOLO CREEK WATERSHED

Watershed Status: No natural or anthropogenic events occurred in the Lolo Creek watershed during 2003 that caused changes to the aquatic environment. Instream conditions and riparian conditions did not show any substantial changes due to climatic, spring stream flows, erosion (sedimentation due to surface and mass wasting events), and management activities (i.e. roads, vegetative treatments, mining and grazing). Various field reviews and monitoring activities have supported the conclusion that the habitat conditions are most likely similar to 1998-2002 conditions. Based on these assessments, the presence/absence and relative abundance of fish populations within the watershed are assumed to be similar to conditions observed in previous years. However, anadromous fish numbers may vary annually due to influences outside the watershed and fish supplementation efforts by the Nez Perce Tribe involving spring chinook salmon.

Habitat Improvement: Due budget constraints, aquatic restoration and enhancement work within the Lolo Creek watershed were primarily completed with engineering and Tribal cooperative funds in 2003. Fisheries funds were used to assist the projects in the environmental analyses, ESA consultations and project implementation and effectiveness monitoring. The projects were primarily associated with watershed restoration activities such as fish passage improvement, road decommissioning, and road maintenance work. In conjunction with the ongoing watershed restoration projects, the Forest concentrated fish enhancement efforts on two culvert replacement projects. The Nez Perce Tribe provided funds to purchase and installation of a culvert at Cedar Creek (mouth) and the removal of a culvert within lower May Creek (Cedar Creek drainage). The Forest provided funds for the project design, environmental analyses, consultations and monitoring. Fisheries, watershed and engineering funds were used in a cooperative Forest effort with funds from the Nez Perce Tribe in the decommissioning of approximately 10.1 miles of road within the Eldorado Creek drainage.

Habitat Monitoring - Lolo Creek Drainage: The mainstream Lolo Creek and nine tributaries have been designated a WQLS by the State of Idaho. The primary pollutants of concern are sediment and water temperature. Past, current, and future monitoring within the Lolo Creek drainage will emphasize substrate conditions in terms of sediment and stream water temperatures. Stream inventories of all fish bearing

streams within the Lolo Creek drainage have been completed on National Forest System lands between 1991and 1994. Resurveys of specific streams are planned every five to ten years dependent upon stream conditions and management proposals. In 1998, approximately 20 miles of the mainstem of Lolo Creek were resurveyed to assess any changes in habitat stream conditions from surveys conducted in 1988 and 1993. Due to budget constraints, Eldorado Creek and Musselshell Creek resurveys that were scheduled in 2002 and 2003 were not completed.

Water Temperature Monitoring - Lolo Creek Drainage: A cooperative arrangement to monitor selected key tributaries within the Lolo Creek system was initiated in 1990 between the Nez Perce Tribe and the Pierce Ranger District. In general, past monitoring data has indicated that stream temperatures in Lolo and Musselshell creeks exceeded the desired criteria (16-17°C) by several degrees and maintained these high temperatures for extended periods of time. However, the data shows that the number of days in which these systems exceeded the standard has decreased since 1990.

Stream temperatures were monitored throughout the summer at 21 sites on 19 streams (only USFS sites) within the Lolo Creek drainage to evaluate habitat conditions for steelhead trout, spring chinook salmon, westslope cutthroat trout and bull trout. The following data is for Lolo Creek tributaries operated by the Forest, as the data recorders operated by the Nez Perce Tribe (i.e. Camp Creek, Eldorado Creek etc.) have not been summarized. In addition, the temperature data for Lolo Creek is unavailable as the unit is still out in the field. Comparison of the 2003 stream temperature data from the 20 monitoring sites on the 19 streams with available data and the desired maximum temperatures as defined for appropriate standards in the Forest Plan revealed that:

1. The desired steelhead trout rearing temperature of 17°C was met at six streams (Dutchman Creek, Mike White Creek, Nevada Creek, Fan Creek, Lunch Creek, and Trout Creek) out of the ten streams monitored with a "high fishable" standard. Eldorado Creek, Musselshell Creek, Knoll Creek and Yoosa Creek did not meet the "high fishable" standard for steelhead trout rearing. Lolo Creek data is unavailable at this time.

2. The desired spring chinook trout rearing temperature of 17°C was not met at the current or potential spring chinook salmon streams (Eldorado Creek and Musselshell Creek).

3. The desired westslope cutthroat trout rearing temperature of 16°C or below was met at three streams (Brick Creek, Panther Creek, and White Creek) out of the seven streams monitored with a "high fishable" standard. Chamook Creek exceeded the standard for two days. Gold Creek and Mud Creek met the desired rearing temperature of 18°C or below (moderate fishable standard) while the desired rearing temperature of 20°C or below (low fishable standard) was met in Dan Lee Creek.

Overall, water temperatures within 18 of the 19 streams were under the State standard for cold-water biota; water temperatures did not exceed the daily maximum of 22°C and the maximum daily average of 19°C. The temperature data showed Musselshell Creek (at the mouth) exceeded the State cold-water biota standard. The State standard of 13°C for the spring spawning period (steelhead trout) was not met at any site. However, four streams (Dutchman Creek, Lunch Creek, Fan Creek and Trout Creek) exceeded the spawning period standard by eight days or less. All streams exceeded the bull trout maximum rearing temperature of 10°C (consecutive seven-day average of daily maximums during June-September) that has been promulgated by EPA as a final rule for water quality standards.

Fish Population Monitoring - Lolo Creek Drainage For the last 15 years, population assessments were conducted via snorkeling to document trends in Lolo Creek; 15 permanent transects established in 1988 were sampled (10 log weir pools and 5 control sites). In 2003, the Forest sampled the 15 permanent transects; fish density information showed that the low numbers of steelhead juveniles observed in 2003 followed the projected trends when compared to 1994-2002 population information. However, the numbers of spring chinook juveniles continued to be very high.

Steelhead trout (age 1+) densities of 2.11 fish/100 m^2 observed in 2003 were the highest observed by the Forest since in Lolo Creek since 1995 (Figure 1). However, the population data continues to indicate that steelhead trout production is very low in Lolo Creek. The low densities of steelhead trout (2.11 age 1+ fish/100 m^2) observed by the Forest were validated by the Nez Perce Tribe's snorkeling work. The Tribe's

monitoring project involves snorkeling similar stream reaches within the mainstem of Lolo Creek. The Tribe observed lower densities (1.22 fish/100 m²) within the same index area (Nez Perce Tribe 2003)[8].

Densities of spring chinook juveniles were the highest observed by the Forest during the 16-year monitoring period. In 2003, densities of spring chinook juveniles (age 0+) averaged 91.8 fish/100m² (Figure 3). The high densities of spring chinook salmon observed by the Forest were validated by the Nez Perce Tribe's snorkeling work. The Tribe's monitoring project involves snorkeling similar stream reaches within the mainstem of Lolo Creek. The Tribe observed higher densities (103.01 fish/100 m²) within the same index area (Nez Perce Tribe 2003)[9].

The high densities in 2003 were most likely the result of the high number of adults and resultant redds (206) during the 2002 spawning season. This is substantially higher than the lowest densities (0.21 fish/100m²) documented by the Forest in 1996 moderately higher than the highest densities (78.7 fish/100m²) documented in 1998.

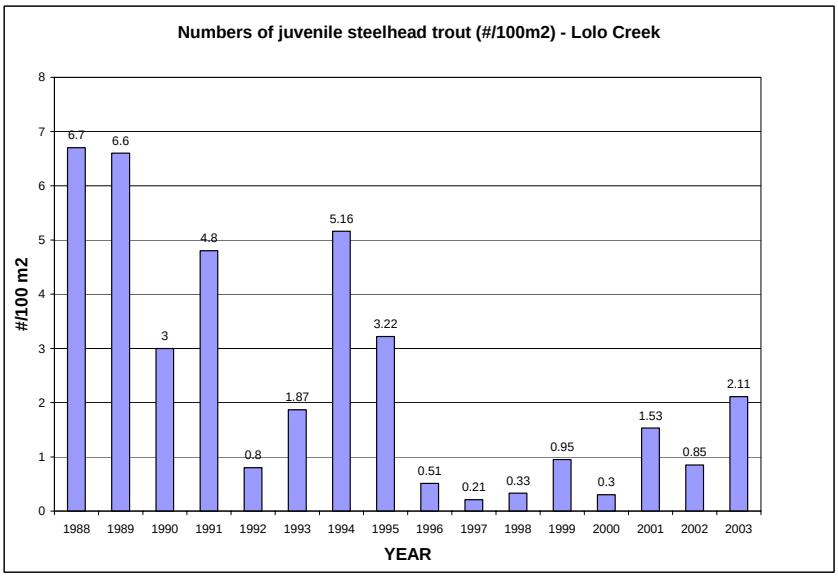
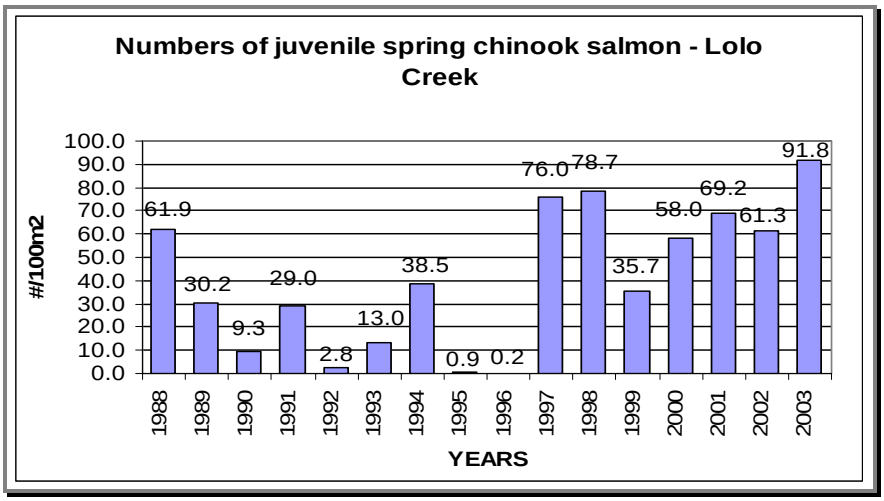


Figure 3: Average densities (#/100m²) of juvenile steelhead trout (age 1+) survey period 1988-2003.

Figure 4: Average densities (#/100 m²) of juvenile spring chinook salmon (age 0+) for survey period 1988-2003.



Since 1992, the Nez Perce Tribe has also conducted fish population assessments in Lolo Creek tributaries such as Yoosa Creek, and Eldorado Creek. The Tribal data supplements the Forest's data and is complementary in the establishment of trends for steelhead trout and spring Chinook salmon.

[8] Nez Perce Tribe 2003. Provisional data received via email from Scott Struhs, fisheries biologist, Nez Perce Tribal Fisheries Department, Orofino, Idaho.

[9] Nez Perce Tribe 2003. Provisional data received via email from Scott Struhs, fisheries biologist, Nez Perce Tribal Fisheries Department, Orofino, Idaho.

As part of the continuing Idaho Supplemental Studies being conducted in the Lolo Creek drainage, the Nez Perce Tribal Fisheries Department completed the 2003 Lolo Creek spring Chinook spawning ground surveys. These surveys were conducted in the main stems of Lolo, Eldorado, Musselshell, and Yoosa creeks.

Results of the 2003 surveys indicated that a total of 69 redds were located within the Lolo Creek drainage; 68 were located within mainstem Lolo Creek and one within lower Yoosa Creek No redds were observed in Musselshell Creek, and lower Eldorado Creek downstream of Eldorado Falls (Figure 3). The number of redds within the Lolo Creek drainage was about 14 percent of the 2001 redd count (the highest in the 16-year monitoring period). However the 2003 redd count was nearly twice as high as the 1988-2000 average of 36 redds. The reason for the relatively high number of redds in 2003 is the successful spawning of natural-returning spring chinook salmon. Unlike 1999-2001, no hatchery supplementation of adult spring chinook salmon was done by the Tribe during the 2002 and 2003 spawning seasons.[10] However, the redd count was expected to be much higher due to the high number of spring chinook adults migrating into Lolo Creek; based on Tribal fish trap counts. The Tribe observed high pre-spawning mortality of adults in Lolo Creek as well as in the holding ponds at the Tribal hatchery facility.[11]

OROFINO CREEK WATERSHED

Watershed Status: No natural or anthropogenic events occurred in the USFS drainages within the Orofino Creek watershed during 2003 that caused changes to the aquatic environment. Instream conditions and riparian conditions did not show any substantial changes due to climatic, spring stream flows, erosion (sedimentation due to surface and mass wasting events), and management activities (i.e. roads and vegetative treatments). No major fires occurred in 2003. Various field reviews have supported the conclusion that the habitat conditions for most drainages are most likely similar to 1998-2002 conditions. Based on these assessments, the presence/absence and relative abundance of fish populations within the watershed are assumed similar to conditions observed in previous years.

Habitat Monitoring – Orofino Creek Drainage: As in 2001-2002, stream surveys that were scheduled for Orofino Creek in 2003 were not completed due to budget constraints. Dependent upon funding, surveys will be re-scheduled for 2005.

Water Temperature Monitoring - Orofino Creek Drainage: Due to migration barriers in lower Orofino Creek, streams within the Forest's boundary are considered non-anadromous (no potential for steelhead trout or spring chinook salmon); only water quality and habitat conditions related to resident fish (i.e. westslope cutthroat trout) are monitored and analyzed. As in 1996-2002, Orofino Creek, at the Forest Service boundary, was monitored for summer stream temperatures in 2003. In addition, stream temperature data was collected at five tributary sites and upper Orofino Creek (upper Orofino Creek drainage) during 2003. Comparison of the 2003 stream temperature data and the desired maximum temperatures as defined for the "low fishable" standard in the Forest Plan revealed that the desired cutthroat trout rearing temperature of 20°C or below was met at all sites. State standards for cold water biota were also achieved; water temperatures did not exceed the daily maximum of 22°C and the maximum daily average of 19°C. State standards of 13°C for the spring spawning periods (for westslope cutthroat trout) was not met at any of the sites.

MIDDLE FORK CLEARWATER RIVER WATERSHED

Watershed Status: No natural or anthropogenic events occurred in the USFS drainages within the Middle Fork Clearwater River watershed during 2003 that caused changes to the aquatic environment. Instream conditions and riparian conditions did not show any substantial changes due to climatic, spring stream flows, erosion (sedimentation due to surface and mass wasting events), and management activities (i.e. roads and vegetative treatments). No major fires occurred in 2003. Various field reviews and monitoring activities have supported the conclusion that the habitat conditions for most drainages are most likely similar to 1998-2002 conditions. Based on these assessments, the presence/absence and relative abundance of

[10] Nez Perce Tribe 2004. Personal communication with Sherman Sprague, fisheries biologist, Nez Perce Tribal Fisheries Department, Orofino, Idaho.

[11] Nez Perce Tribe 2004. Personal communication with Sherman Sprague, fisheries biologist, Nez Perce Tribal Fisheries Department, Orofino, Idaho.

fish populations within the watershed are assumed similar to conditions observed in previous years. However, anadromous fish numbers may vary annually due to influences outside the watershed.

Habitat Monitoring - Middle Fork Clearwater River Drainage: Since the stream inventories of all fish bearing streams within the Middle Fork Clearwater River drainage have been completed on National Forest System lands during 1996, no additional habitat surveys were scheduled for 2003.

Water Temperature Monitoring - Middle Fork Clearwater River Drainage: Stream temperatures were monitored throughout the summer at the mouth of Big Smith Creek and Little Smith Creek to evaluate habitat conditions for westslope cutthroat trout. During 1997, the Forest started collecting water temperature data from these streams to determine temperature problems and prioritize riparian recovery efforts. Comparison of the 2003 stream temperature data from Big Smith Creek and Little Smith Creek sites and the desired maximum temperatures as defined for the "high fishable" standard in the Forest Plan revealed that:

> The desired westslope cutthroat trout rearing temperature of 16°C was met only at Little Smith Creek. These two streams are relatively small and do not contain any significant spring chinook rearing habitat. Minimal steelhead trout spawning and rearing occurs in these streams; the westslope cutthroat trout rearing standard and spawning period meets the "high fishable" standards for steelhead trout.

Both Big Smith Creek and Little Smith Creek met the State standard for cold-water biota; water temperatures did not exceed the daily maximum of 22°C and the maximum daily average of 19°C. The State standard of 13°C for the spring spawning periods for westslope cutthroat trout was not met at either stream. Neither stream contains spring chinook spawning habitat. As for bull trout, none of the streams have been designated potential bull trout spawning habitat; both streams exceeded the maximum rearing temperature of 10°C (consecutive seven-day average of daily maximums during June-September) that has been promulgated by EPA as a final rule for water quality standards.

LOCHSA RIVER WATERSHED

Watershed Status: In addition to numerous small fires, eleven major lightning-caused fires (approximately 27,000 acres) occurred in the upper Lochsa River watershed during 2003 that may have caused various changes to the aquatic environment. The Beaver Lakes (12,240 acres – Idaho portion), Hopeful II (1441 acres – Idaho portion), Wendover (3,439 acres), Bears Oil (883 acres), Pleasant (700 acres -20% in the Lochsa River drainage), Siah Lake (598 acres), Fish (3,483 acres), Big Sand (689 acres), McConnell (2,000 acres – Lochsa portion), Greenside Butte (348 acres) and Eagle Creek East (317acres) fires burned between August 8, 2003 and the fall rains in October within primarily headwater drainages. With the exception adjacent to private lands (i.e. Beaver Lakes and Hopeful II fires), suppression efforts were minimal and conducted only to "herd" the fire and keep it within the roadless areas. Suppression activities where taken were well-planned and located away from aquatic areas; post-fire restoration work was minimal.

With the exception of the fires within the wilderness areas (Siah Lake, Fish, Big Sand, McConnell, Greenside Butte and Eagle Creek East fires) the fires were field reviewed during September and October. The wildfires generally exhibited mixed severity mosaic burn patterns with the hottest burn areas located on ridges or dry slopes. Impacts of the reduced streamside cover and the resultant effects on stream temperatures during the summer months have not been quantified, but some increases in summer stream temperatures will most likely occur in the smaller tributaries. However, impacts to the main fish-bearing streams, such as Spruce Creek, Brushy Fork Creek, Storm Creek, Crooked Fork Creek, Wendover Creek, Fishing (Squaw) Creek, and Papoose Creek are expected to be minimal and non-measurable. Effects to the mainstem Lochsa River are most likely nonexistent. Sediment impacts to the fish-bearing streams should be relatively small and localized, and the impacts are expected to dissipate during high spring runoff in 2004.

Besides these fire events, no additional natural or anthropogenic events occurred within the Lochsa River watershed during 2003 that caused changes to the aquatic environment. Instream conditions and riparian conditions did not show any substantial changes due to climatic, spring stream flows, erosion (sedimentation due to surface and mass wasting events), and management activities (i.e. roads, vegetative treatments, mining and grazing). Various field reviews and monitoring activities have supported the conclusion that the habitat conditions are most likely similar to 1998-2002. Monitoring efforts have shown some improvement and degradation in specific drainages that were impacted by the 1995/96 floods. Based on these assessments, the presence/absence and relative abundance of fish populations within the watershed

are assumed similar to conditions observed in previous years. However, anadromous fish numbers may vary annually due to influences outside the watershed.

Habitat Improvement - Lochsa River Drainage: Due to changes in the budget process, most work regarding the aquatic resources were focused on watershed restoration (i.e. road decommissioning and culvert replacement). Aquatic funds supplemented Forest funds from the engineering and watershed and BPA funds from the Nez Perce Tribe to complete road decommissioning activities in several drainages and two culvert replacement projects in the Lochsa River drainage. The Nez Perce Tribe provided the Forest funds to replace the culverts. The Forest and Tribe participated in the design, implementation and monitoring of these two projects. These activities improved access for adult anadromous and inland fish and allowed for unimpeded access for juvenile fish and other aquatic species to an additional 7.5 miles of stream.

Lower Lochsa River Area: Two major watershed restoration activities involving culvert replacement and road decommissioning projects were scheduled during 2003. A culvert replacement project (USFS road #101) in the upper Pete King Creek drainage was completed in 2003. The large culvert replacement project provided an additional 3.5 miles of habitat for steelhead trout and resident fish. The Forest also decommissioned (converted road to trail) approximately 3.1 miles of road in the lower Pete King Creek drainage; this road decommissioning work will reduce the chronic road failures problems along the lower reach of Pete King Creek. Additional watershed restoration activities including substantial road obliteration and riparian planning projects are proposed under the North Lochsa Face analysis.

Upper Lochsa River Area: In conjunction with the ongoing watershed restoration projects, the Forest concentrated fish enhancement efforts on one culvert replacement project. The Nez Perce Tribe (as part of their fish habitat improvement projects funded by the Bonneville Power Administration) provided funds to remove an existing culvert and construct a bridge on the East Fork Papoose Creek. This culvert replacement project re-opened approximately four miles of stream for the migration of aquatic organisms, including juvenile and adult steelhead trout, bull trout and westslope cutthroat trout.

The main habitat restoration activity within the upper Lochsa River drainage involved the road decommissioning project in the Badger Creek and Parachute Creek (Papoose) drainages. Fisheries, watershed and engineering funds were used in a cooperative Forest effort with funds from the Nez Perce Tribe in the decommissioning of approximately 23 miles of road within the upper Lochsa River drainage. The road decommissioning work reduced potential erosion sources and mass wasting areas and is expected to accelerate the recovery (stream channel and habitat conditions) of approximately 2.1 and 2.0 miles of Badger Creek and Parachute Creek respectively (see *Road Decommissioning section*).

Habitat Monitoring - Lochsa River Drainage: Stream inventories of all fish bearing streams within the Lochsa River drainage have been completed on National Forest System lands during 1990-1997. Resurveys have been conducted on several streams (Pete King Creek, Deadman Creek and Walton Creek) in 1998-1999. As part of a research study regarding the effects of road obliteration on instream conditions, the Forest resurveyed Badger Creek in 2001. Due to the Crooked Fire in 2000, resurveys were completed on Rock Creek and Haskell Creek in 2002. In 2003, no re-surveys were scheduled within the Lochsa River drainage. However the Forest did continue the 1995-1996 flood monitoring project via contract and the substrate-monitoring project in the Pete King Creek and Deadman Creek drainages.

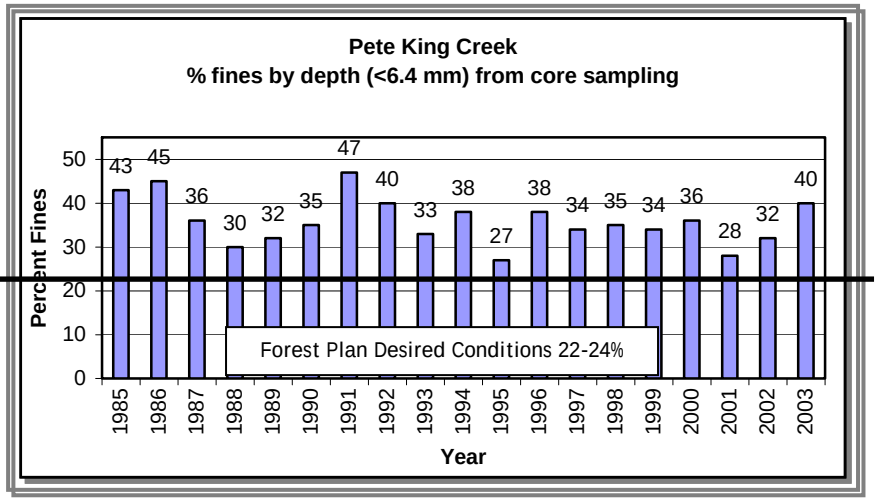
In addition, stream channel and substrate conditions were monitored at permanent sites on several streams (Boulder Creek – Lochsa tributary, Warm Springs Creek, Weir Creek, Postoffice Creek, and Badger Creek). See **Riparian section** for more information.

Lower Lochsa River Area: The Forest continued the substrate-monitoring project in Pete King and Deadman creeks to determine trends of sediment (% fines by depth) in steelhead trout spawning areas. This monitoring consists of measuring the substrate particles that are collected by digging a core into the stream bottom at permanent stations. These stations have been monitored for the last 15 years. Preliminary analysis of the data indicates that the percentage of sediment (fine sediment < 6.4 mm) within the substrate of both streams have ranged between 27% and 45% fines. After showing a decline in 1997, Pete King stabilized for three years (1998-2000) around 34-36% fines, but has recently shown an increasing trend (Figure 4). Deadman Creek showed a declining trend in percent fines between 1996 and 1998, but showed the percent fines increasing substantially between 1999 and 2000 and maintaining

the high level the past two years (Figure 5). Although budget constraints prevented data collection in 2001, data was collected during 2002 and 2003. At both streams, the levels are still above the desired conditions of 22-24% for the "high fishable" Forest Plan standard.

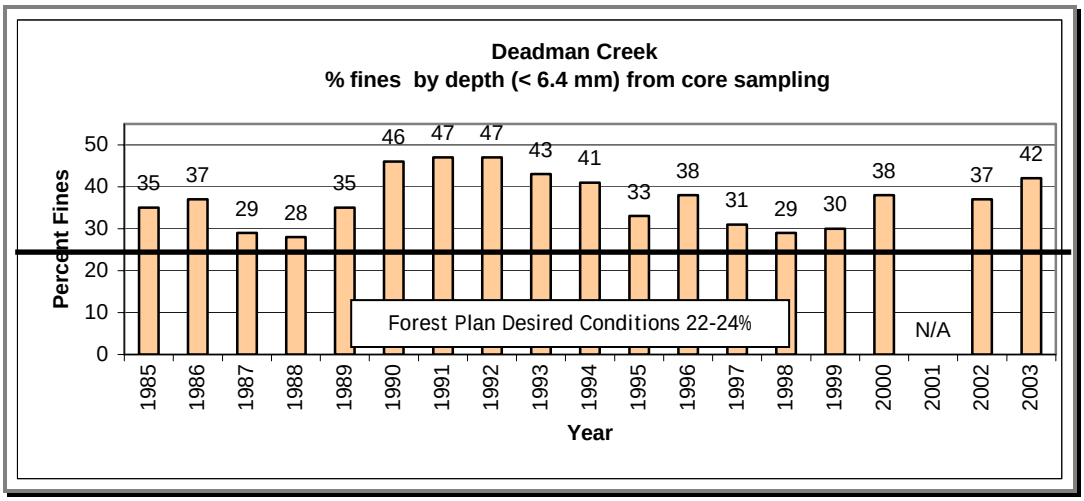
In Pete King Creek, the percent fines showed a moderate increase of eight percentage points in 2003. This increasing trend is most likely the result of excess sediment being transported through the system since no new sediment sources (i.e. landslides road failures) were identified during 2000-2003. During the next ten years, barring any flood events, substrate conditions are expected to slowly decrease, but still maintain the moderately high levels of percent fines (30-35%). Recent road obliteration and watershed restoration efforts reduced erosion potential in the upper drainages and reduced the probability of future increases in percent fines. Future road obliteration projects are expected to accelerate watershed recovery and improve substrate conditions.

Figure 5: Average percent fines by depth (< 6.4 mm) for years 1985-2003 at permanent substrate monitoring sites in lower Pete King Creek within the Lochsa River drainage.



At the Deadman Creek stations, the substrate conditions showed the percent fines increasing from 37% to 42% between 2002 and 2003 respectively (Figure 5). Comparison of the percent fines between two time periods, 1990-1994 and 1995-1999, showed that the decreasing trend over the last ten years was significant ($p<0.05$). However, the increases in 2000, 2002 and 2003 most likely shows that the decrease is temporary and that sediment impulses resulting from past anthropogenic activities are still present in the drainage.

Figure 6: Comparison of average percent fines (< 6.4 mm) for years 1985-2003 at permanent substrate monitoring sites in lower Deadman Creek within the Lochsa River drainage. No data was collected in 2001.



Upper Lochsa River Area: As in 1997 and 1998, the Forest completed resurveys of habitat and substrate conditions on selected sensitive stream reaches within 14 streams in the Lochsa River drainage that were affected by the 1995 floods (see *1997 and 1998 Forest Monitoring Reports* for more information). Surveys prior to and after the 1995-96 floods, indicated that the average cobble embeddedness levels increased in 16 of the 19 stream reaches surveyed on eleven of the streams surveyed in 1997.

These increases ranged from 5 to 23 percentage points with the average increase of approximately 14 percentage points; most of the stream reaches showed a substantial increase in cobble embeddedness. Of the 29 stream reaches that were resurveyed in the 1998 monitoring project, 16 reaches showed average cobble embeddedness levels decreasing from 1997 levels (or where 1997 data was not available 1996 levels).

Information collected during 2003 showed average cobble embeddedness levels increased between 1998 and 2003 in 19 stream reaches on nine streams[12]. In contrast, ten stream reaches on seven streams showed decreases in average cobble embeddedness levels during the same time period. The majority of the streams show substrate conditions improving slowly to pre-flood conditions prior to the 2003 survey. This recovery trend is most likely continuing in most of the streams with increased average cobble embeddedness levels as increases were minimal (1-6%) on 14 stream reaches. In addition, the averaged cobble embeddedness levels fluctuated (decreased or increased) between stream reaches within the same stream.

However, the 1998-2003 increases (average cobble embeddedness) in Parachute Creek (12%) and Pete King Creek (4-6% on four stream reaches) do not reflect a recovery trend. A specific caused to the substantial increase in the Parachute Creek drainage is not known at this time; surveys are planned in 2004. However, past road failures and subsequent sediment transport to the smaller tributaries are most likely contributing to the rising trend. The increasing trend in the Pete King Creek drainage is most likely the result of the ongoing transport of the landslide material from the smaller tributaries into the mainstem reaches. The results of the substrate-monitoring project (see above section) are consistent with the 2003 data.

Water Temperature Monitoring - Lochsa River Drainage: Stream temperatures were monitored throughout the summer at 113 sites on 95 streams within the Lochsa River drainage. Temperature data for 32 of these sites are not available (instruments still instream, missing units, equipment failures, or exposed units prevented data collection). The Forest has been collecting water temperature data from 1990-2002 to determine temperature problems and prioritize riparian recovery efforts. In past years, thermograph data revealed that temperatures exceeding the desired rearing temperature criteria by several degrees were maintained for extended periods of time. Comparison of the 2003 stream temperature data from the 81 monitoring sites on the 68 streams with available data with desired maximum temperatures as defined for the "*high fishable*" and "*no effect*" standard in the Forest Plan revealed that:

1. The desired bull trout rearing temperature of 12°C (no effect) was not met at Beaver Creek, the only bull trout designated stream within the Forest Plan.

2. The desired steelhead trout rearing temperature of 15°C (no effect) was met at five streams (Crooked Fork Creek (upstream Brushy Fork Creek), Fishing Creek (Squaw Creek upstream West Fork Squaw Creek), Dan Creek, Fern Creek and Fish Creek (upstream trail 224)) out of the 26 streams monitored with a "no effect" standard. The desired temperature of 17°C (high fishable) was met at 26 streams out of the 32 streams monitored with a "high fishable" standard.

3. The desired spring chinook trout rearing temperature of 15°C (no effect) was met at the one major stream with chinook habitat: Crooked Fork Creek (upstream Brushy Fork Creek).

4. The desired westslope cutthroat trout rearing temperature of 13°C was met at one stream (Stony Creek) out of the five streams monitored with a "no effect" standard while the desired temperature of 16°C (high fishable) was met at 12 of the 17 streams monitored with a "high fishable" standard. Upper Canyon Creek exceeded the standard on only three days.

Overall, water temperatures of 76 of the 81 monitoring sites within the Lochsa River drainage were under the State standard for cold-water biota; water temperatures did not exceed the daily maximum of 22°C and the maximum daily average of 19°C. Fish Creek (upstream Hungery Creek) exceeded the State standard for one day, while the four sites on the mainstem Lochsa River exceeded the standard for 16 to 22 days. The State standard of 13°C for the spring spawning period (steelhead trout) was met at three streams (Fern Creek, Spring Creek and Stony Creek). Two streams, Deadman Creek (downstream West Fork Deadman

[12] Clearwater BioStudies Inc., 2004. Preliminary data - summary of flood resurvey data.

Creek) and Weir Creek also met the standard, but had data collected for only an early portion of the spawning period. The State standard of 13°C for the spring period for westslope cutthroat trout was met at three streams (Bridge Creek, Muleshoe Creek and Stony Creek (partial year data). None of the monitored streams met the bull trout maximum rearing temperature of 10°C (consecutive seven-day average of daily maximums during June-September) that has been promulgated by EPA as a final rule for water quality standards.

Fisheries Population Monitoring - Lochsa River Drainage

Lower Lochsa River Area: As in previous years, fish population monitoring (via snorkeling) of selected streams continued at established long-term monitoring stations. However, budget constraints limited the number of sites to the Pete King Creek, Deadman Creek, Fish Creek and Hungery Creek drainages. Average steelhead juvenile densities at the Pete King Creek sites showed a substantial decrease while densities at the Deadman Creek sites were relatively stable. In 2003, densities at the lower Fish Creek sites were slightly higher than 2002. In comparison, the densities at the lower Hungery Creek sites rebound substantially. Fish species present in some or all of the study streams included spring chinook salmon, steelhead/rainbow trout, westslope cutthroat trout, mountain whitefish and sculpin. No bull trout were observed during the surveys.

Monitoring of age 1+ steelhead trout juveniles within the Pete King Creek and Deadman Creek drainages has been conducted over a number of years to assess the trend in steelhead production within developed watersheds within the lower Lochsa River drainage (Figures 8 and 9).

The 2003 data indicates steelhead trout populations within Pete King Creek have decreased to the lowest level during the 22 year monitoring period. The 2003 densities are substantially below the desired densities of juveniles (age 1+) >15 fish/100m^2 (Figure 8). Fish population data collected by the Forest showed densities of juvenile steelhead (age 1+) averaged about 2.1 fish/100m^2 in lower Pete King Creek. The average densities are about 50 percent lower than densities observed in 2000 and 2001. It is uncertain whether lower densities are a one-year decline or an overall declining trend. In past years, the low numbers of juvenile steelhead trout in Pete King Creek were most likely due to a two conditions: (1) fair-poor habitat conditions have reduced potential spawning and rearing, and (2) low number of adult spawners due to downriver adult and juvenile escapement problems. Habitat conditions are expected to recover slowly until proposed watershed restoration activities (i.e. road obliteration) are completed over the next ten years and vegetative recovery occurs in the riparian areas. Following watershed restoration projects, stream channels will need to undergo undetermined number of spring runoff events to reconfigure the stream channels to reflect more natural and stable conditions.

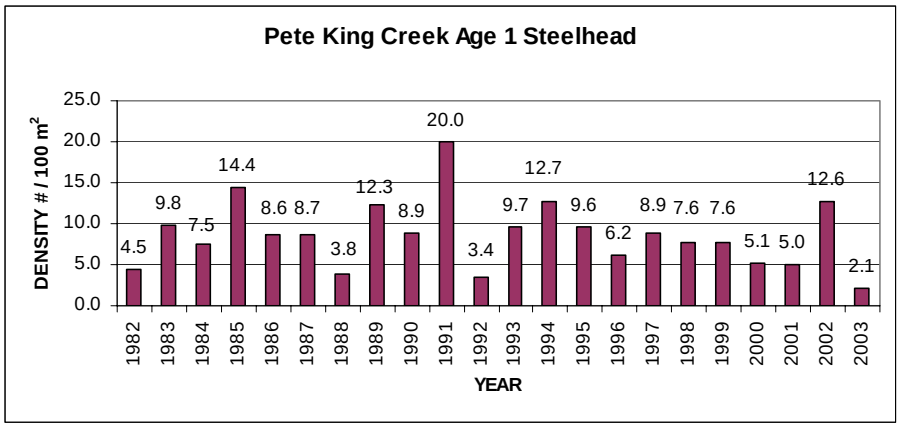


Figure 7: Average densities (#/100m²) of juvenile steelhead trout (age 1+) observed for survey period 1982-2003 permanent snorkeling stations.

The 2003 data indicates steelhead trout populations within Deadman Creek have remain stable since 2000; no sampling was conducted in 2001. Fish population data collected by the Forest showed densities of juvenile steelhead (age 1+) averaged about 15.7 fish/ 100m^2 in lower Deadman Creek; the densities are slightly higher than the desired densities of juveniles (age 1+) >15 fish/100m^2 (Figure 9) and higher than the 20-year average of 11.7 fish/100m^2. It is uncertain whether the relatively high densities observed during 2000, 2002, and 2003 indicate a stable population; data collected in 2004-2006 is needed to support any conclusion.

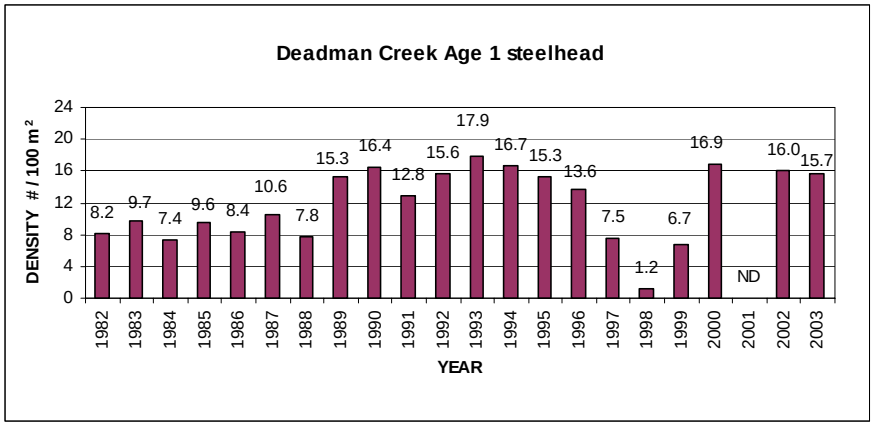


Figure 8: Average densities (#/100m²) of juvenile steelhead trout (age 1+) observed for survey period 1982-2003 at permanent snorkeling stations. No data was collected in 2001.

Monitoring of age 1+ steelhead trout juveniles within the Fish Creek and Hungery Creek drainages has been conducted over a number of years to assess the trend in steelhead production within undeveloped watersheds within the lower Lochsa River drainage (Figures 10 and 11). Budget and time constraints in 2003 limited fish population sampling to sites within lower Fish Creek and lower Hungery Creek. In comparison to the previous year, the average steelhead trout juvenile densities in 2003 showed a slight increase (11%) at the lower Fish Creek sites and a substantial increase (223%) at the lower Hungery Creek sites (Figures 10 and 11). Although juvenile steelhead densities within the Fish Creek and Hungery Creek drainages are relatively good when compared to drainages in the upper Lochsa River, the overall data maintains the downward trend in steelhead production in these streams. As these drainages are basically undeveloped and current habitat conditions appear to be stable, the lower densities are most likely a function of a low number of adult spawners due to downriver adult and juvenile escapement problems.

Juvenile densities (10.5 fish/100m^2) at the Fish Creek sites are below the desired densities of juveniles (age 1+) >15 fish/100m^2 (Figure 10); the densities observed in 2003 were the third lowest during the 21 years of surveys and substantially lower than the period of record (20-year average) of 18.7 fish/100m^2.

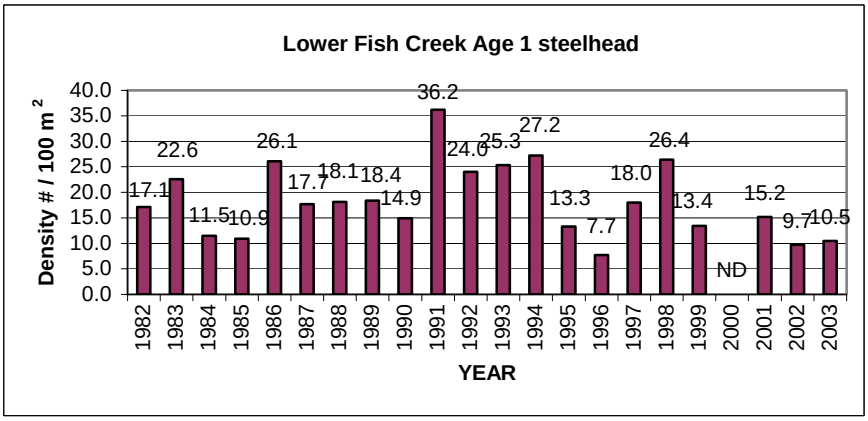
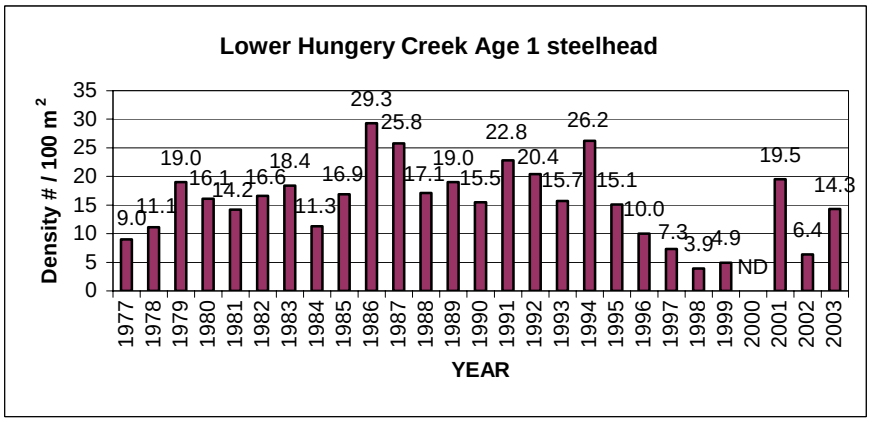


Figure 9: Average densities (#/100m²) of juvenile steelhead trout (age 1+) observed for survey period 1982-2003 at permanent snorkeling stations. No data was collected in 2000.



The densities at the Hungery Creek sites (14.3 fish/100m^2) rebounded to slightly below the desired densities of juveniles (age 1+) >15 fish/100m^2 (Figure 11). The densities observed in 2003 were slightly lower than the period of record (25-year average) of 15.7 fish/100m^2.

Figure 10: Average densities (#/100m²) of juvenile steelhead trout (age 1+) observed for survey period 1977-2003.

As part of the continuing Idaho Supplemental Studies being conducted in the Lochsa River drainage, the U.S. Fish and Wildlife Service completed the 2003 spring chinook spawning ground surveys in lower five miles of Pete King Creek. The survey

found no redds or fish during the 2003 spawning period (U.S. Fish and Wildlife Service 2003)[13]. Spring chinook spawning in Pete King Creek occurs infrequently as 0 redds were found during 1992-96, and 1998-99 survey period. One or two redds were documented during the 1997, 2000 and 2002 spawning seasons. The highest redd count during the 12-year monitoring period was during 2001 when the large spring chinook salmon run into the Clearwater River basin contributed 17 redds.

Upper Lochsa River Area: Due to budget constraints and fire restrictions, the Forest conducted limited fish population monitoring (via snorkeling) in the upper Lochsa River drainage during 2003. Permanent fish population monitoring stations were monitored via snorkeling in Badger Creek, Haskell Creek and Rock Creek. As part of a research study regarding the effects of road obliteration on instream conditions and two culvert replacements, the Forest has been monitoring Badger Creek since 2000. Data collected in 2003 indicates steelhead production is occurring annually with fair to moderate densities (6.20 Age 1+ fish/100 m^2) of juvenile steelhead observed upstream of the culvert replacements. Westslope cutthroat trout were also observed in Badger Creek, but in relatively low densities.

Due to the Crooked Fire in 2000, fish population surveys have been conducted on Rock Creek and Haskell Creek to determine any effects of the fire. Data collected in 2003, continue to show relatively strong populations of westslope cutthroat trout in Haskell Creek and Rock Creek. Juvenile steelhead trout were also observed in Rock Creek, but the numbers were very low. As in past years, the presence of bull trout (low numbers) was observed in the Haskell Creek drainage.

In 2003, the Forest continued bull trout spawning ground surveys on selected streams within the Lochsa River drainage. Approximately 17 miles of stream was surveyed during the spawning period of September through early October. Multiple surveys were conducted on some streams. Appropriate stream segments were selected in nine streams in the upper Lochsa River drainage. The streams included: Fishing (Squaw) Creek, West Fork Fishing (Squaw) Creek, East Fork Fishing (Squaw) Creek, Badger Creek, Haskell Creek, Wendover Creek, Warm Springs Creek, Brushy Fork Creek and Spruce Creek. Spawning (57 redds) was documented in two of the nine streams.

As part of the continuing Idaho Supplemental Studies being conducted in the Lochsa River drainage, the Nez Perce Tribal Fisheries Department completed the 2003 spring chinook spawning ground surveys in Legendary Bear (Papoose) and Fishing (Squaw) Creeks. Results of these surveys indicated that spring chinook spawning were above average in Legendary Bear (Papoose) Creek and Fishing (Squaw) Creek. A total of 21 and 9 redds were located within Legendary Bear (Papoose) Creek and Fishing (Squaw) Creek.

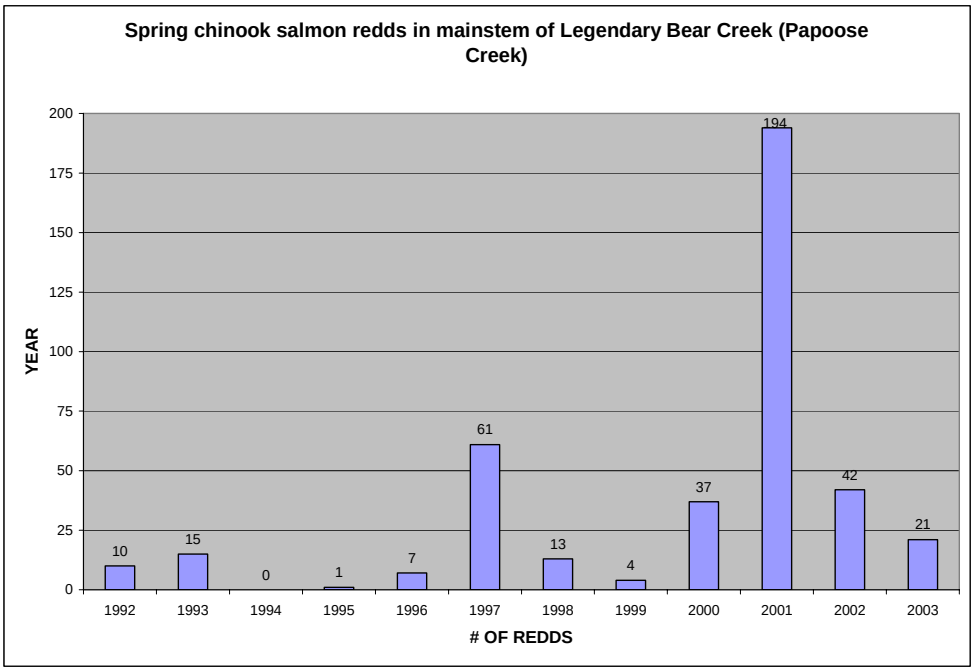
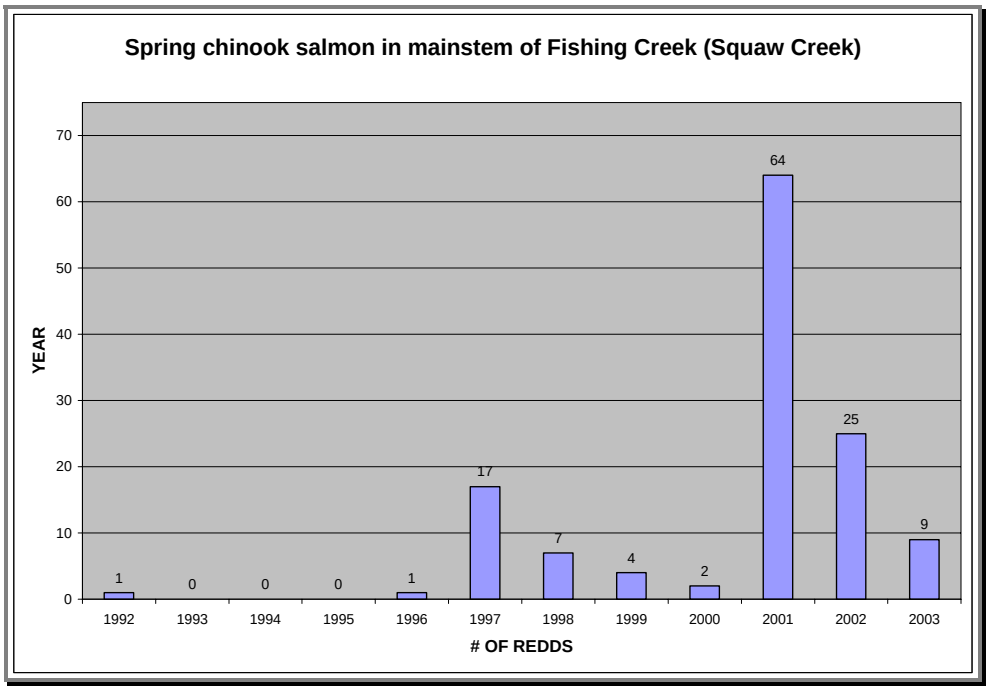


Figure 11: Spring chinook salmon redds observed during 1992-2003 spawning season.

[13] U.S. Fish and Wildlife Service. 2004. Provisional data from Idaho Fishery Resource Office, Dworshak National Fish Hatchery, Ahsahka, Idaho.

This compares to an average of 16.4 redds/year in Legendary Bear (Papoose) Creek and 3.6 redds/year in Fishing (Squaw) Creek during 1992-2000 survey period. The 2003 redd counts were substantially lower than redds counts observed during 2001 and 2002.

Figure 12: Spring chinook salmon redds observed during 1992-2003 spawning season.



Item No. 32 – Inland Fisheries

NORTH FORK CLEARWATER RIVER WATERSHED

Watershed Status: In addition to numerous small fires, four major lightning-caused fires occurred in the North Fork Clearwater River watershed during 2003 that caused changes to the aquatic environment. The Pleasant (3,168 acres - 80% in North Fork Clearwater River drainage), Rhodes (715 acres), Rock Garden (1,118 acres) and Upper Twin (614 acres) fires burned between August 8, 2003 and the fall rains in October within primarily roadless areas. Suppression efforts were minimal and conducted only to "herd" the fire and keep it within the roadless areas. The Upper Twin and Rock Garden fires were approved Wildland Fire Use (WFU) fires and were only monitored. The Pleasant and Rhodes fires were field reviewed during September and October. The wildfires exhibited mixed severity mosaic burn patterns with the hottest burn areas located on ridges or dry slopes. Impacts of the reduced streamside cover and the resultant effects on stream temperatures during the summer months have not been quantified, but some increases in summer stream temperatures will most likely occur in the smaller tributaries. However, impacts to the main fish-bearing streams, such as Cayuse Creek, Silver Creek and Mink Creek, are expected to be minimal and non-measurable. Effects to the mainstem North Fork Clearwater River are most likely nonexistent. Sediment impacts to the fish-bearing streams should be relatively small and localized, and the impacts are expected to dissipate during high spring runoff in 2004.

Following the Pleasant Fire which burned approximately 3,200 acres in the upper Cayuse Creek drainage during 2003, the Burned Area Emergency Response (BAER) review conducted by the Forest found 18 culverts along USFS road #581 (Toboggan Ridge Road) that were undersized within the burned area. Several storm events during September caused one culvert to plug and the perennial (non-fish bearing) stream to flow over the road prism. This culvert was replaced under the emergency funding in late September. The remaining culverts were providing adequate drainage and were not replaced during the late fall due to the worsening winter conditions. The BAER review noted that runoff from the burned area is expected to in-

crease during the next several years and the eighteen culverts identified during the review needed replacement during the summer 2004. Most of these culverts were installed when the road was constructed in the 1930's and were sized for marginal storm events (under 100 year events).

One natural event and one road-related event caused minor changes to the aquatic environment in the Skull Creek drainage. Several debris torrents occurred in the lower Skull Creek during a high precipitation event in the late fall of 2002. Most of these landslides and resultant debris torrents occurred in smaller drainages and caused no observable effects to fish bearing streams. Field review found one moderate sized debris torrent and one small landslide that affected USFS road # 252 and deposited unknown amounts of sediment and debris into fish bearing streams. The larger natural event started as a small slump which initiated a debris torrent in a smaller face drainage in lower Skull Creek. The impacts of the debris torrent occurred at the junction of USFS roads #252 and #710 and deposited a large amount of material each road and the flood plain. Field reviews in the spring of 2003 did not indicate any noticeable changes in substrate conditions in Skull Creek. The second event occurred on USFS road #252 in the Bim Creek drainage. The slide started adjacent to a older road and material slumped onto USFS road #252. Some sediment from this landslide moved across the road and flowed into a small tributary of Bim Creek. The impacts to Bim Creek were not evaluated.

The last event involved the debris jam washout and resultant substrate movement in the lower Elizabeth Creek drainage. Field reviews during the summer of 2003 indicated that a large debris jam located approximately 0.25 miles from the mouth of Elizabeth Creek was destabilized and substrate material stored above the structure released during high spring flows in 2003. Evidently the debris jam was an older structure that was burned during the Elizabeth Fire in 2000. After several spring flow events, the structure was eventually weakened. The substrate material from the debris jam and bank erosion associated with the wash out altered the habitat conditions in the lower 0.25 miles of Elizabeth Creek. The stream channel is expected to stabilize in the next year with habitat conditions improving over the next several years. Monitoring data regarding the evaluation of substrate conditions in Elizabeth Creek are presented in the *Riparian Areas* section of this report.

Besides these five natural events, no additional natural or anthropogenic events occurred in the USFS drainages within the North Fork Clearwater River watershed during 2003 that caused changes to the aquatic environment. Instream conditions and riparian conditions did not show any substantial changes due to climatic, spring stream flows, erosion (sedimentation due to surface and mass wasting events), and management activities (i.e. roads, vegetative treatments, mining and grazing). Various field reviews and monitoring activities have supported the conclusion that the habitat conditions are most likely similar to 1998-2002 conditions. Based on these assessments, the presence/absence and relative abundance of fish populations within the watershed are assumed to be similar to conditions observed during various surveys throughout the 1990's.

Watershed/Habitat Restoration: Due to budget constraints, no major watershed restoration projects (i.e. road decommissioning, culvert replacements) were completed in the North Fork Clearwater River drainage. Fisheries and engineering funds were used in a cooperative Forest effort in completing survey, NEPA and ESA consultation, and design work on several culvert replacement projects on Toboggan Creek, Jackknife Creek and Squaw Creek. The culvert on Toboggan Creek will be removed and replaced by a bridge in 2004. The Jackknife culvert will be replaced in 2004 to allow for fish passage.

Riparian Fencing: One temporary electric fence that was installed in 1996 around the sediment trap in the upper Elk Creek basin was maintained in 2003. This provided protection of the riparian vegetation and maintained the integrity of the sediment trap from stream bank alterations.

North Fork Clearwater River Tributaries: Due to budget constraints and fire restrictions, no new stream habitat and fish population surveys were completed by the Forest in 2003. However the Forest did continue the 1995-1996 flood monitoring project via contract and two substrate monitoring projects during 2003. The substrate-monitoring project in lower Moose Creek was continued by the Forest in 2003. In addition, stream channel and substrate conditions were monitored at permanent sites on several streams (upper North Fork Clearwater River, Elizabeth Creek, Lake Creek, Fourth of July Creek, Weitas Creek and Hemlock Creek). See **Riparian section** for more information.

The second year of the substrate-monitoring project in lower Moose Creek (mouth upstream to Little Moose Creek) was completed in 2003 to determine trends of sediment (% fines by depth) in westslope cutthroat trout spawning areas. The monitoring data will also help assess any impacts of small suction dredge mining which occurs upstream in Moose Creek, Independence Creek and Deadwood Creek. This monitoring consists of measuring the substrate particles that are collected by digging a core into the stream bottom at selected riffle and pool tail-out sites. Preliminary analysis of the data indicates that the percentage of sediment (fine sediment < 6.4 mm) within the substrate at the monitoring sites ranged between 23.0% and 18.7% fines for 2002 and 2003 respectively. The two-year average of approximately 20.9% fines is still above the desired condition of 12-14% fines for the "high fishable" Forest Plan standard for westslope cutthroat trout. Additional data is scheduled to be collected in 2004, 2005 and 2007.

As in 1997 and 1998, the Forest completed resurveys of habitat and substrate conditions on selected sensitive stream reaches within two streams that were affected by the 1995 floods.[14] Comparison of survey data collected prior to 1995-96 floods and during 2003 shows that the average cobble embeddedness levels at the two stream reaches in Orogrande Creek increased by 10 and 1 percent. In contrast, the stream reach in Isabella Creek showed average cobble embeddedness levels decreasing by from 36% to 18% between 1990 and 2003. The increases levels in the Orogrande Creek drainage most likely reflects the continued transport of the landslide material from the smaller tributaries into the mainstem reaches.

In addition to the two streams surveyed above, eight stream reaches within the Moose Creek drainage were re-surveyed via contract to determine changes in channel and habitat conditions between 1990 and 2003.[15] The monitoring data will also help assess any impacts of small suction dredge mining which occurs in these stream reaches in Moose Creek, Independence Creek and Deadwood Creek. Although the final report is not available at this time, the preliminary data analysis indicates that average cobble embeddedness levels in six reaches on the mainstem Moose Creek (downstream Deadwood Creek) fluctuated as three reaches showed slight decreases (1-8%) and three reaches showed slight increases (2-8%). The stream reaches on Deadwood Creek and Independence Creek both showed substantial increases as the average cobble embeddedness levels increased from 16% (1990) to 32% in both streams.

Mainstem North Fork Clearwater River: In 2002, the Forest continued the monitoring of substrate and pool conditions via contract to assess the effects of the 1995/96 floods on the fisheries habitat within the mainstem North Fork Clearwater River (Clearwater BioStudies Inc 2002).[16] Comparison of 2002 and 1998 data indicates that the substrate conditions have continued an improving trend from 1998 conditions (see *2002 Forest Monitoring Report* for more information). During 2003, the survey was completed with the collection of cobble embeddedness and surface fines data on five sensitive reaches on the mainstem North Fork Clearwater River (between Ermine Creek and Sprague Creek). Data analysis indicates that cobble embeddedness and surface fines varied substantially within and among the five monitoring sites.[17] However, the average cobble embeddedness levels were much higher than anticipated for the mainstem North Fork Clearwater River. Although the five reaches were selected to represent the most sensitive in terms of sediment deposition (low gradient stream segments with smaller substrate material) and sediment conditions expected to be generally higher, the mean values for the weighted cobble embeddedness for the five sites (range 25.1-84.4%) were higher than the desired condition of less than 25% cobble embeddedness for the "no effect" Forest Plan standard for westslope cutthroat trout.

The survey also noted that the most impacted stream reach within the North Fork Clearwater River in terms of sediment was at the site three miles downstream of Orogrande Creek (site 2).[18] The average cobble embeddedness and surface fines levels were 84.4% and 35.9% respectively. Since the site two miles upstream of Orogrande Creek (site 1) showed substrate conditions that were substantially better (33.7% and 8.0%),

[14] Clearwater BioStudies Inc. 2004. Preliminary data - summary of flood resurvey data.

[15] Clearwater BioStudies Inc. 2004. Preliminary data - summary of flood resurvey data.

[16] Clearwater BioStudies Inc. 2002. Draft data summaries. Residual pool depths, pool volumes, and particle size distributions of riffles in the lower North Fork Clearwater River, North Fork Ranger District, Summer 2002. Clearwater National Forest, Orofino, Idaho.

[17] Clearwater BioStudies Inc. 2004. Sediment sampling on the North Fork Clearwater River. Technical memorandum. March 30, 2004. Clearwater National Forest, Orofino, Idaho.

[18] Clearwater BioStudies Inc. 2004. Sediment sampling on the North Fork Clearwater River. Technical memorandum. March 30, 2004. Clearwater National Forest, Orofino, Idaho.

the majority of the sedimentation sources for site 2 and the downstream three sites are most likely located in the Orogrande Creek drainage. Additional surveys are planned for 2005 and 2007 to determine any trends.

Water Temperature Monitoring - North Fork Clearwater River Drainage: The Forest have been collecting water temperature data from 1992 to 2002 to determine temperature problems and prioritize riparian recovery efforts. Due to migration barrier at Dworshak Dam, streams within the Forest's boundary are considered non-anadromous (no potential for steelhead trout or spring chinook salmon); only water quality and habitat conditions related to resident fish (i.e. westslope cutthroat trout and bull trout) were analyzed.

In 2003, stream temperatures were monitored at 133 sites on 118 streams within the North Fork Clearwater River drainage. Temperature data for 20 of these sites are not available (instruments still instream, missing units, equipment failures, or exposed units prevented data collection). Comparison of the 2003 stream temperature data from the 113 monitoring sites on the 103 streams with available data with the desired maximum temperatures as defined for the appropriate standards in the Forest Plan Forest Plan revealed that:

1. The desired westslope cutthroat trout rearing temperature of 13°C (no effect) was monitored at ten streams. The standard was met at Birch Creek and Collins Creek. The standard was not met at any of the three sites on mainstem North Fork Clearwater River. Other streams monitored that are designated with a "no effect" standard, Toboggan Creek and Elizabeth Creek also did not meet the 13°C. In 47 out of 75 streams monitored with a "high fishable" standard, the desired temperature of 16°C (high fishable). In addition, five sites (Fisher Creek, Long Creek (upstream Short Creek), Meadow Creek, Spray Creek and Station Creek) exceeded the standard by five days or less.

2. The desired westslope cutthroat trout rearing temperature of 18°C (moderate fishable) was met at seven streams out of the eight streams monitored with a "moderate fishable" standard while the desired temperature of 20°C (low fishable) was met at 12 streams out of the 13 streams monitored with a "low fishable" standard.

3. The desired brook trout rearing temperature of 17°C (high fishable) was met at two streams, Johnson Creek and the West Fork Elk Creek. The other stream monitored for this standard, Elk Creek (upstream the town of Elk River) exceeded the standard. In addition, a temperature of 20°C (low fishable) was met at two streams, Oviatt Creek and Partridge Creek. The other stream monitored for this standard, Long Meadow Creek exceeded the standard.

Overall, water temperatures of 101 of 103 streams (with monitoring data) within the North Fork Clearwater River drainage were under the State standard for cold-water biota; water temperatures did not exceed the daily maximum of 22°C and the maximum daily average of 19°C. The temperature data included the lower mainstem North Fork Clearwater River; monitoring data showed that two sites on the mainstem North Fork Clearwater River with data available (downstream Beaver Creek and upstream Orogrande Creek) and Orogrande Creek (mouth) did not meet the State cold-water biota standard. The State standard of 13°C for the spring period for westslope cutthroat trout was met at ten streams (Cache Creek, Birch Creek, Collins Creek, Jap Creek, Laundry Creek, Niagara Gulch, Placer Creek, Shell Creek, Shake Creek and Slate Creek). Short Creek exceeded the standard for four days. None of the streams monitored met the bull trout maximum rearing temperature of 10°C (consecutive seven-day average of daily maximums during June-September) that has been promulgated by EPA as a final rule for water quality standards.

Fish Population Monitoring - North Fork Clearwater River Drainage: Due to budget constraints, fish population monitoring stations were only monitored via snorkeling at four sites in the upper Cayuse Creek in conjunction the Idaho Department of Fish & Game (IDFG) and US Forest Service (USFS) bull trout study. No bull trout were observed at the four permanent monitoring sites; however spot checks upstream of the monitoring area documented two juvenile bull trout. IDFG also conducted fish population monitoring via snorkeling 25 sites in nine streams (Isabella Creek, Beaver Creek, Collins Creek, Skull Creek, Quartz Creek, Orogrande Creek, French Creek, Little Moose Creek, and Ruby Creek); bull trout were found in Isabella Creek, Quartz Creek, and Skull Creek.

Bull trout spawning surveys were conducted on 14 streams within the North Fork Clearwater River drainage. Approximately 27 miles of stream within the upper North Fork Clearwater River, Moose Creek, Skull Creek

and Isabella Creek drainages were surveyed by the Forest and IDFG during the spawning period of September through early October. The streams included: Isabella Creek, Skull Creek, upper North Fork Clearwater River, Moose Creek, Swamp Creek, Osier Creek, Lake Creek, Long Creek, Bostonian Creek, Niagara Gulch, Placer Creek, Hidden Creek, Pollock Creek and Vanderbilt Creek. Bull trout spawning (72 redds) was documented in ten of the 10 streams. As in 2001-2002, the surveys found major concentrations of fluvial or adfluvial bull trout spawning activity in the Lake Creek and Vanderbilt Creek drainages. Multiple surveys on these streams and other potential bull trout streams are scheduled for survey in 2004.

As part of their ongoing monitoring program, personnel from the IDFG conducted fish population monitoring via snorkeling and creel census activities within the mainstem North Fork Clearwater River and selected tributaries.

North Fork Clearwater River Bull Trout Studies: In 2003, the IDFG and the Forest continued a partnership project regarding bull trout studies within the North Fork Clearwater River subbasin. The five year project is primarily designed to determine the movements of bull trout collected from Dworshak Reservoir. In 2003, the IDFG marked and monitored movements of 150 adult bull trout. The Forest assisted in conducting fish population monitoring and spawning ground surveys. Genetic information from tissue samples from bull trout were processed and analyzed by the University of Idaho. In 2004, IDFG will continue to work with the Forest and U.S. Corps of Engineers in the last year of this partnership project. Besides validating known spawning areas, the tracking of over 575 adult bull trout during the past four years has identified other streams where bull trout migration and spawning are occurring in the North Fork Clearwater River drainage. The IDFG has published several reports summarizing the information collected during the past four years; contact the IDFG Lewiston's Office for more information.

PALOUSE RIVER DRAINAGE

Watershed Status: No natural or anthropogenic events occurred on USFS lands in the Palouse River watershed during 2003 that caused changes to the aquatic environment. Instream conditions and riparian conditions did not show any substantial changes due to climatic, spring stream flows, erosion (sedimentation due to surface and mass wasting events), and management activities (i.e. roads and vegetative treatments). No major fires occurred in 2003. Various field reviews and monitoring activities have supported the conclusion that the habitat conditions for most drainages are most likely similar to 1998-2002 conditions. Monitoring efforts have shown some improvement and degradation in specific drainages that were impacted by the 1995/96 floods. Based on these assessments, the presence/absence and relative abundance of fish populations within the watershed are assumed similar to conditions observed during 1997-98 surveys.

Habitat Improvement - Palouse River Drainage: No major watershed restoration activities (i.e. road obliteration, new riparian fence construction, instream restoration projects) were scheduled in 2003.

Habitat Monitoring - Palouse River Drainage: Since the stream inventories of all fish-bearing streams within the Palouse River drainage on National Forest System lands have been completed within the last 10 years, no additional habitat surveys were scheduled for 2003.

Water Temperature Monitoring - Palouse River Drainage: Stream temperatures were monitored throughout the summer at 11 sites on 10 streams within the Palouse River drainage to evaluate habitat conditions for brook trout and rainbow trout. The upper Palouse River is not accessible to anadromous fish. In addition, bull trout and westslope cutthroat trout have not been observed in the upper Palouse River drainage. Comparison of the 2003 stream temperature data from the 11 baseline sites and the desired maximum temperatures as defined for the "low fishable" standard in the Forest Plan revealed that:

1. The desired rainbow trout and brook trout rearing temperature of 20°C was met at six sites (Big Creek, Big Sand Creek, Little Sand Creek, Gold Creek, Palouse River (at gage and downstream Wagner Gulch) and Strychnine Creek. However, Mannering Creek, Meadow Creek (downstream Blakes Fork Creek) and North Fork Palouse River exceeded the standard for three days or less.

2. The Palouse River (upstream Laird Park) and East Fork Meadow Creek exceeded the standard.

Overall, water temperatures at eight streams were under the State standard for cold-water biota; water temperatures did not exceed the daily maximum of 22°C and the maximum daily average of 19°C. The

Mannering Creek and East Fork Meadow Creek exceeded the standard for one and ten days respectively. The State standard of 13°C for the spring spawning periods for rainbow trout was not met at any site. Water temperatures were not recorded throughout the fall spawning period for brook trout. However, the stream temperatures are most likely below the State standard of 13°C.

Fish Population Monitoring - Palouse River Drainage: Due to the absence of sensitive fish species (i.e. steelhead trout, westslope cutthroat trout, bull trout, spring chinook salmon), fish population monitoring is not scheduled on an annual basis within the Palouse River drainage; no monitoring was conducted in 2003.

Heritage Program

Goal

Manage and interpret heritage resources in accordance with Federal laws and Forest Service direction. Ensure that Indian tribal rights, as retained in treaties and other agreements with the tribes, are protected. Manage the Lolo Trail system to protect heritage resource values while enhancing public use and awareness. Nominate significant heritage sites to the National Register of Historic Places.

Strategy

Examine and conduct inventories on all proposed project areas, document findings and provide direction for project implementation to ensure compliance with State and Federal regulations. Improve relations and develop working partnerships with the Nez Perce Tribe to facilitate communication, consultation and cooperation. Identify and enhance resource values on the Lolo Trail system. Work with the public to improve values and increase awareness of heritage resources. Continue to assess heritage sites for nomination to the National Register of Historic Places.

Item No. 4 – Protection and Condition of Heritage Resource Sites

Frequency of Measurement: Annual
Reporting Period: Annual

Monitoring Action

Compare project effects to environmental analysis documents and project cultural resource reports to determine if projects have caused adverse effects on cultural resources. If this determination is made, necessary mitigation will be prescribed.

Accomplishments / Findings

A total of 50 projects/sites were stabilized, rehabilitated, monitored, or protected. Much of the monitoring done in FY03 was done as part of deferred maintenance activities where the current condition of sites documented and the cost to bring the sites up to a minimal standard of protection was assessed.

The National Historic Preservation Act directs federal agencies to consider the effects of their planned activities on heritage resources. In compliance with that law, the Forest surveys proposed projects such as timber sales, recreation facilities development and others to identify heritage resources and develop plans to protect significant sites during project implementation.

Table 3 shows the number of projects surveyed and the number of sites identified during the course of project planning in FY03. Results of these surveys are then coordinated through a consultation process with the Idaho State Historic Preservation Office and the Advisory Council on Historic Preservation.

Table 3. Heritage Resource Surveys

Year	Projects Tested*	Projects Surveyed	Acres Surveyed (Cleared)	Number Of Sites Identified
1999	2	16	1,742	56
2000	2	49	1,232	14
2001	60	33	7,371	31
2002	11	55	4,527	36
2003	3	16	964	4

*Archaeological test excavations are conducted in areas within or near site locations, or on landforms that have a high probability of containing evidence of human activity. Tests indicate the absence, presence and/or amount of subsurface cultural material in project areas and help Forest officials decide where ground-disturbing developments may or may not take place.

PROGRAM HIGHLIGHTS

The Clearwater National Forest contains the largest segment of the overland route taken by the Corps of Discovery during 1805 and 1806, and several significant heritage resources are located in the vicinity of the route, including campsites used by Lewis and Clark. In January of 2002, the Forest Supervisor, Zone Archaeologist, Law Enforcement Officer and the Bicentennial Coordinator visited Washington D.C to conduct briefings on the preservation of significant heritage resources during the upcoming Lewis and Clark Bicentennial. Clearwater personnel briefed the Chief and his staff, Undersecretary of Agriculture Mark Rey and the House and Senate Bicameral Committee on the importance of these resources and efforts to preserve them during the upcoming event. The Forest has been involved in identifying and protecting these sites in advance of the anticipated increases in recreation use and potential for vandalism during the bicentennial event.

A series of public lectures were also presented as part of the heritage public interpretation program at a variety of venues that included Washington State University, University of Idaho, local grade schools and local civic organizations. The topics presented ranging from Lewis and Clark to aboriginal and Euro-American settlement systems.

LANDS

Item No. 12 – Land Ownership Adjustments

Frequency of Measurement: Annual
Reporting Period: Annual

MONITORING ACTION

The Forest Lands staff will prepare a report specifying the number of acres acquired, traded or sold. The report will contain the purpose of the land exchanges and how they contribute to the satisfaction of the Forest Plan objectives.

FINDINGS

During FY03, the Forest completed the purchase of 16 acres of trail easements from Plum Creek Timberlands. This is the second phase of a four-phase transaction involving Plum Creek lands. The purchases and trail easement acquisitions are in support of the Lewis and Clark Bicentennial. Dollars appropriated for Phases 1, 3 and 4 are intended for the fee purchase of Plum Creek lands while in Phase 2 the Forest acquired Lewis and Clark Trail easements across Plum Creek fee lands. These transactions are taking place on the Powell Ranger District. Phase 2 was completed in 2003 while Phase 3, acquisition of 212.5 acres in fee, will be completed in 2004. If money is appropriated, Phase 4 will be completed in FY 2005.

One Small Tract Act case was completed in 2003. The Forest sold 1.06 acres to a private party eliminating an encroachment on National Forest System land.

The *PITS EXCHANGE/BOISE FRONT EXCHANGE* involves 4,124 acres of Federal land and 2,827 acres of non-Federal lands. The Pits Exchange is being incorporated with the Boise Front Land Exchange. Participants include the Clearwater National Forest, Idaho Panhandle National Forest, Idaho Department of Lands and the BLM. All of the lands in both exchanges have been identified, fieldwork is completed and the appraisal is being prepared at this time. Draft legislation should be finalized by March 2004.

The *BROWNS MEADOW LAND EXCHANGE* involved Federal land on the Palouse Ranger District. Isolated Federal lands on the Palouse Ranger District were exchanged to the Idaho Department of Fish & Game for some State lands on the south Fork Salmon River. Subsequently, the Fish and Game sold their interest in these former Federal parcels to the University of Idaho, as they are located within the University of Idaho Experimental Forest. The deeds were exchanged in October 2003. This case is now completed.

The overall objective of these exchanges is to consolidate Federal ownership for more efficient and cost-effective land management. These exchanges were consistent with the management area objectives identified in the Forest Plan and the land adjustment criteria also within the Forest Plan.

Completion of these exchanges satisfied several objectives identified in the Forest Plan. Costs for surveying and posting boundary lines; acquiring access easements and constructing access to manage national forest land; acquiring/granting other use permits; and trespass will be reduced. Implementation of these exchanges contributed considerably to the management objectives and administrative efficiency of the Forest.

Over the past ten-year period, the Forest has been involved in seven land exchange cases. During that time, 34,182.87 acres have been acquired while 23,551 acres have been exchanged. Completion of these exchanges has saved the government in excess of $1,000,000 through savings in administrative costs such as landline location, rights-of-acquisition, and trespass cases.

MINERALS

GOAL

Encourage and facilitate the orderly exploration, development and production of the energy and mineral resources on the Clearwater National Forest. Ensure that this exploration, development and production are conducted in an environmentally sound manner.

STRATEGY

Process all notices of intent, operating plans, exploration permits and lease applications in a timely manner. Monitor to ensure compliance with State and Federal regulations. Develop adequate reclamation plans to return disturbed land to other productive uses, and monitor to ensure that reclamation is performed to specified standards. Maintain close coordination with local mining groups as well as applicable State and Federal agencies.

Item No. 15 – Minerals Prospecting and Development

Frequency of Measurement: Annual
Reporting Period: Five Years

MONITORING ACTION

The Forest geologist will prepare a report detailing the status of the minerals program. The report will be based on a review of all projects and mining activities that may have an effect on minerals management. The number of case files, status of case files, estimated quantity and value of mineral production will be evaluated.

ACCOMPLISHMENTS / FINDINGS

OPERATIONS

A total of 102 operations were processed on the Forest during FY03. Of these, 85 were non-bonded, non-energy operations; 17 were bonded non-energy operations. All 17 bonded non-energy operations were administered to standard.

In FY96, the Washington Office issued new definitions for accomplishment indicators. Due to the difference in definitions of accomplishment, the 265 average annual number of cases predicted in the Forest Plan should not be compared to the 102 total operations processed and administered during FY03.

LOCATABLE MINERALS

The only significant locatable mineral mined from the Forest is gold. Miners are not required to report their production to the Forest Service. However, the Forest minerals geologist has estimated that approximately 30 ounces of gold were mined from the Forest during FY03. The value of this amount of gold would be approximately $9,000 at an average gold price of $300/oz.

COMMON VARIETY MINERALS

The Forest provided mineral materials for road surfacing to county and state agencies, for national forest roads and for use in private industry. Forest records show that 86,235 tons of materials were produced from national forest lands in FY03 with an estimated value of $21,559.

MONITORING

All active earth-disturbing minerals activities and suction dredge mining were monitored for compliance with operating plans, Forest Plan standards, and State and Federal regulations. No impacts on mining activities from other resources were identified.

Item No. 36 - Minerals Resource Availability

Frequency of Measurement: Annual
Reporting Period: Five Years

MONITORING ACTION

The Forest geologist will prepare a report on the probable effect of renewable resource prescriptions and management direction on mineral resources and activities, including exploration and development. Denial of proposed mineral activities and changes in land status affecting mineral availability will be documented. Examples include designation as wilderness or recommended wilderness, legislation such as the Threatened and Endangered Species Act, executive orders and special resource stipulations or management direction. Changes in land status or restrictions on minerals availability; exploration and development will be documented.

ACCOMPLISHMENTS/FINDINGS

The Clearwater National Forest consists of a total of 1,825,318 acres. Of these acres, 259,167 (approximately 14%) are in the Clearwater portion of the Selway-Bitterroot Wilderness and are withdrawn from mineral entry. In addition to wilderness, the Forest currently has 52 individual sites withdrawn from mineral entry. This figure has remained the same since FY94.

RANGE

GOAL

Manage livestock grazing land consistent with the protection and management of other resources.

STRATEGY

Complete range environmental studies analyzing present management. Prepare allotment management plans for all active allotments. (An allotment is an area of land where one or more individuals graze livestock.)

Item No. 6 – Livestock Forage Available, Range in Good Condition Per Established Allotments

Frequency of Measurement: Annual
Reporting Period: Five Years

MONITORING ACTION

Forest range personnel will annually monitor each grazing allotment for use, condition of range, forage availability and protection of other resources. Data will be entered into the INFRASTRUCTURE database generating one source of information about the Clearwater National Forest Range Program.

ACCOMPLISHMENTS/FINDINGS

Range allotments are routinely monitored for use, possible resource damage and maintenance needs. Current range conditions overall are good. There are 17 cattle allotments and 19 grazing permits on the Forest. Two grazing permits were inactive this year. There were 1,320 cattle (cow/calf pairs) permitted to graze on the Forest. This amounted to approximately 6,035 head months (HMs) in FY03. A HM is the use and occupancy of the range by one animal for one month. There were also 416 horses permitted to graze on the Forest in 2003. These numbers reflect the permitted animals on cattle allotments and Outfitter and Guide Permits and do not include animals associated with recreational visitors.

NEPA was initiated on three allotments in the Palouse Drainage and will be completed in FY04.

The National Forest land within the Hatter/Flat Creek allotment is in the Browns Meadow land exchange, which will be completed inFY04. Upon the completion of this land exchange, this allotment will be eliminated.

RECREATION

GOAL

Provide a range of quality outdoor recreation opportunities within a forest environment that will meet the public needs now and in the future. Provide opportunities for a broad spectrum of dispersed activities and developed facilities.

STRATEGY

The Clearwater National Forest has developed several strategies to meet Forest Plan goals in recreation. These strategies can be summarized as follows:

Identify Recreation Areas: The Forest has been divided into seven areas with unique opportunities – the Palouse Plateau, the North Fork Clearwater River Corridor, the Lolo Trail Corridor, the Highway 12 Corridor, the Selway-Bitterroot Wilderness, roadless areas and roaded areas. Each of these areas has identified recreation opportunities and challenges, as well as visitor use patterns and needs.

Reconstruct Existing Recreation Facilities to Standards Appropriate: Facilities at all sites will be evaluated for safety, repair and accessibility. Facilities will be maintained or reconstructed as funding and feasibility allow.

Provide for Construction of New Recreation Facilities: Add new facilities to provide a diversity of recreation opportunities if funding is available. New facilities at all sites will be constructed to meet the needs of people with disabilities if possible.

Continue to Request Funding: Funding is needed to operate, maintain and reconstruct sites to full service standards.

Item No 2: Wide Spectrum of Recreation Opportunities

Frequency of Measurement: Annual
Reporting Period: Five Years

MONITORING ACTION

The Forest recreation staff will monitor recreation opportunities. Monitoring and evaluation will:

1. Compare recreation use on the Forest with the broad range of opportunities that could occur and are supported in the Forest Plan,
2. Identify changes or conflicts in existing recreation use, and
3. Identify directions for changes and alternatives for conflict resolution.

ACCOMPLISHMENTS / FINDINGS

GENERAL FOREST AREA USE

Inquiries regarding the route of Lewis and Clark crossing the Clearwater National Forest continued to increase in number Forest-wide during FY03. Forest personnel are continuing to prepare for the Lewis and Clark Bicentennial, 2005 and 2006 mark the anniversary years of this observance. Planning and implementation is occurring for interpretive signing, brochures, facility upgrade and construction, road repairs, re-

source monitoring, and a lottery permit system that is being implemented to manage visitor use and protect resources along the Lolo Trail.

Recreation use within the North Fork Clearwater River corridor continued to increase in 2003. More visitors were observed throughout the Memorial Day through Labor Day summer season, particularly those fishing. Increasing impacts are apparent in disperse campsites along major rivers and streams of the North Fork Clearwater drainage. The increasing volume of carelessly treated human waste in and near dispersed campsites and beaches is of particular concern. Not only is human waste an aesthetic issue at campsites, but it can result in unacceptable resource impacts and public health issues when treated responsibly. No noticeable change in the number of boaters was observed. The low numbers of elk in the North Fork Clearwater watershed continued to reduce the number of hunters visiting this area.

Information regarding boating use on the Lochsa River is located in the Wild and Scenic Rivers section.

DEVELOPED AREA USE

Fees collected in FY03 increased about 8% at developed campgrounds. The number of visitors to campgrounds, as reported on their fee envelopes, totaled approximately 22,483, an increase over the previous year. Fee compliance checks remained low in FY03 due to a lack of availability of compliance personnel. Use of a better tracking system for campground fees (in place since 2000), is allowing more accurate trends for fee sites to be assessed for the present and the future.

Recreation Use And Fees Collected*	FY98	FY99	FY00	FY01	FY02	FY03
Recreation Use (M Visitor Days)	1808	1600	1328	1347	1576	1702
Fees Collected	$96,763	$85,907	$95,347	$96,664	$113,760	$124,000
Recreation Use Change from Previous Year (%)	+13	-11	-17	+1.5	+17	+8

RECREATION FACILITY IMPROVEMENT

Emphasis continues to be placed on improving existing campground facilities. These improvements focus on reducing critical deferred maintenance items with emphasis on health and safety concerns such as water system upgrades and sanitation improvements. Site upgrades that improve access to recreation facilities for disabled visitors are also a priority of the facility improvement program. The Forest will be focusing on rehabilitating facilities expected to be in demand during the Lewis and Clark Bicentennial.

Construction was completed on a multi-year project to reconstruct the Lolo Pass Visitor Center. Lolo Pass Visitor Center construction was a joint effort between the Idaho Transportation Department, the Montana Department of Transportation and the Forest Service. This multi-million dollar project resulted in improved visitor services, convenient parking, improved road safety and improved interpretive displays. This project was completed in December 2002 with the grand opening and dedication occurring June 2003.

RECREATION SPECIAL EFFORTS

PARTNERSHIPS

Partnerships continue to be important to the success of the Forest's recreation program. In FY02, as in previous years, partners contributed a significant amount of labor and funding to improve recreational facilities, and help meet Forest visitor expectations by providing interpretive and "Good Host" programs.

The Forest continues to have valuable partners with the Nez Perce Tribe and the Nez Perce National Historic Park in planning for the Lewis and Clark Bicentennial.

Partnerships with the Forest Fee Demonstration Program, Idaho Outfitters and Guides Licensing Board, and the Idaho Department of Fish and Game enabled the Forest to initiate a statewide GIS mapping project to facilitate public knowledge and administration of the Forest's Outfitters and Guides.

NOXIOUS WEED CONTROL

The Clearwater National Forest and the Idaho Transportation Department (ITD) coordinate noxious weed treatment in the Highway 12 corridor from Kooskia to Lolo Pass. For the fifth year, the ITD treated noxious weeds in the highway right-of-way from Kooskia to Lolo Pass. The Lochsa Ranger District, with assistance from the Moose Creek Ranger District, treated weeds in administrative and developed sites from Tukaytespe to White Sands campground. Noxious weed treatments on the west end of the Highway 12 corridor are in a moderate to low maintenance range while efforts on the east end are at the initial attack phase. The Powell compound was treated for the third time in FY03. Developed sites along the North Fork Clearwater River and elsewhere on Clearwater NF lands were also treated to reduce the spread of noxious weeds.

Treatment is aimed at reducing noxious weed occurrence and invasion, and include pulling, introducing biological controls, and herbicide application. Grass seeding in treatment areas helps to out-compete new weed starts. Monitoring has shown that most sites treated are exhibiting significant decline in the level of infestation. After repeated treatments, weed proliferation appears to be reduced and treatment can then be less intensive. New sites have been identified for treatment as older sites a maintenance stage.

The Student Conservation Association provided a team of students to survey portions of the Selway-Bitterroot Wilderness for areas with noxious weeds as well as areas without weeds on all three forests -- Clearwater, Bitterroot and Nez Perce. The surveys within the Clearwater NF were conducted on the Powell and Lochsa Ranger Districts. This will be the start of an annual survey crew for the Wilderness area combined with survey information from the wilderness rangers, trail crews and various field personnel.

FEE DEMONSTRATION PROGRAM

Revenue from the fee demonstration program continued to play a vital role in providing valued added products and services to Forest visitors.

Campgrounds

- The Clearwater NF hosted fireside interpretive programs in partnership with the Idaho Humanities Council.
- Hired hosts and workers to assist campers and maintain campgrounds.

Outfitters and Guides

- A river ranger was provided on the Lochsa River for the whitewater season.
- Two sessions of the Lochsa Guide Education Series were hosted. These sessions covered the internment camp history at Canyon Creek and local fire ecology.
- Hosted 5th Annual Partners Afloat.
- Trails 627, 649, 594 &117: cleared trail, repaired slide damage, installed waterbars & repaired drainage and brushed
- Trail 20: cleared trail, blasted 30' of rock hazard, installed/repaired 29 waterbars to limit erosion, brushed 2.5 miles
- Trails 567 & 650: cleared trail, brushed 2500', installed numerous log & rock waterbars repaired bridges & retaining walls
- Trail 651: opened: trail had not been maintained for 15-20 yrs.

Lolo Pass - The Lolo Pass winter operation was funded with the fee demonstration funds collected on site.

- Approximately $12,000 was contributed to grooming eight miles of cross-country ski trails.
- Approximately $3,000 was contributed to the State of Montana (MDOT) for parking lot plowing.
- About $2,500 was contributed to the local snowmobile club for snowmobile trail grooming.
- For 95% of the days the visitor center was open, a full-time compliance/information officer was on-site.
- Contributions were given for weekly avalanche testing and reporting.

Frequency of Measurement: Annual
Reporting Period: Five Years

MONITORING ACTION

The Forest recreation staff will prepare a report displaying the effects of off highway vehicles (OHVs) on Clearwater National Forest resources. Monitored items include complaints and conflicts between user groups, impacts to trails from motorized use, snowmobile activity in the Great Burn recommended wilderness and in the Selway-Bitterroot Wilderness, changes in trail and campsite conditions at Fish Lake, citations for violations of closure regulations, and resource damage occurring on the Forest.

ACCOMPLISHMENTS/FINDINGS

COMPLAINTS AND CONFLICTS BETWEEN USER GROUPS

Observation of recreation activity on the Forest indicates that use of OHVs continued to increase in FY03. OHVs are routinely observed on most Forest roads. Although most use occurs on roads, a significant amount of OHV use on trails and off roads has been observed, in some instances, in violation of restrictions.

The rapid growth of OHV ownership, particularly of ATVs has led to increased demands for trail facilities on which to ride them. Lack of public facilities suitable for OHV use has resulted in motorized use on trails not constructed for mechanized use. Such use has resulted in widening of tread from a single track to a double tack, damage to vegetation, tread erosion and creation of unauthorized trails. Off road/trail use has also raised concerns over damage to young trees in reforested areas and soil disturbance on Forest, State and private lands.

Observations in recent years had seemed to indicate a decline in the use of trail motorcycles. However, there appears to be a recent resurgence with an increased percentage of riders seeking a "performance riding" experience. Several trails, including Trail 144 to Pot Mtn and Trail 20 along Weitas Creek, are developing banked turns and showing other effects of high speed riding.

Instances of reported conflict are still related primarily to the objection by non-motorized visitors to the presence of motorized users on the Forest. Motorized use and conflicts are most prevalent on the Palouse and the North Fork Ranger Districts.

Complaints from Forest visitors continue to be received, particularly with respect to use of OHVs on trails in the Great Burn roadless area. Visitors reported seeing motorcycle tracks on several trails where motorized use is prohibited. A number of complaints were received from the public about the presence of OHVs at Fish Lake within the Great Burn area contending use of OHVs in the area was inappropriate since the area has been recommended for wilderness classification in the Forest Plan. However, the Forest Plan does not prohibit motorized access to Fish Lake (which has been occurring for 40+ years). The Forest is monitoring use at Fish Lake to ensure that resource values are adequately protected. Each reported instance of a violation was investigated at the site of the reported violation; however, the violators could not be identified and no citations were issued. No long term effects of motorized use in the Great Burn area were identified.

Actions taken in response to complaints included increased visits by Forest administrative and law enforcement officials to confirm reported use, identify points of entry and installation of signing found to be inadequate.

Emphasis in 2003 was placed on ensuring that restrictions on use of OHVs are adequately signed and increased monitoring by law enforcement personnel. All trails in the Great Burn area where motorized use is restricted were signed.

Snowmobile And Other Motorized Activity In The Great Burn Roadless Area

Action in winter 2002-2003 was directed at ensuring that information about restrictions is available to the public and determining the extent and location of snowmobile activity in the Great Burn. The Lolo and Clearwater National Forest Supervisors' sent a joint letter to snowmobile groups and vendors discussing illegal snowmobile activities on both Forests within the Great Burn, as well as the 800 miles of trail available for snowmobile use. Safety issues, State snowmobile registration tags, and self-policing were also discussed. The Great Burn Snowmobile Closure Law Enforcement Plan was updated. The Lead Wilderness Ranger was able to patrol on snowmobile during this season with an LEO to make public contacts. The District Ranger and Lolo Pass staff also attended snowmobile club meetings to discuss the upcoming winter season.

Thirty observations were made in 2003 from January to December in the areas of Elk Summit, Blacklead at the Crooked Fork, Tom Beal, Granite Pass, Beaver Ridge, Brushy Fork, Spruce Creek, and Kooskooskia. Five overflight attempts were made with three of those successful over Elk Summit, Tom Beal, Beaver Ridge, and portions of the North Fork District. For ground observations, illegal tracks were found at the Blacklead Trail at the Crooked Fork, with six citations written in March 2003. The Crooked Fork entrance to Trail 35 had sign vandalism as in previous years, and the sign was replaced again, but much higher to prevent damage. For overflight observations, illegal tracks were found at Cedar Log Lakes. Observation and overflight reports are filed from a variety of Forest workers.

Changes In Trail And Campsite Conditions At Fish Lake

Monitoring of OHV activity on the trail to Fish Lake and at the lakeside campsites continued in FY03 with one or more visits to the lake during the July 4 through Labor Day holidays. Snow melt in 2003 was a little late. Trail #419 was closed through July 30 to prevent damage to meadows and other wet areas caused by riders leaving the trail to get around the remaining piles of snow.

Visitors observed at the lake during administrative visits appeared to be about the same as in previous years during the fishing season. No actual counts of persons camping or traveling to the lake were made.

Resource Damage And Incidents Of Unauthorized Construction Of A Trail

Resource damage to trails and other resources resulting from motorized use is still considered to be minimal and relatively easily corrected though concerns over the effects of OHV use are increasing – particularly on the Palouse Ranger District. Incidents of unauthorized creation of OHV trails by cutting vegetation and repeated use of a route continue to occur throughout the Forest, and particularly in the North Fork of the Palouse River drainage. There have also been incidents of widening of Forest system trails by OHV users. As these incidents are found they are evaluated and action taken to deter further use.

Response To Demands For OHV Opportunities

Based on a FY01 Forest-wide review of all trails, those trails suitable for travel with OHVs will be designated in the Forest Access Guide as permitting travel with OHVs less than 50 inches in width. Trails not "Open" for use with OHVs are described in the 2003-2004 Access Guide as "Prohibited" or "Restricted".

The extent of OHV use on the Palouse Ranger District on public and private ownerships prompted the initiation of a "focus group" of landowners to discuss use of OHVs in that area. Discussions by the group have led to clarification of landowner and user concerns. Group discussions and involvement of user groups continued in FY03 directed at resolving land owner concerns and providing direction for future management of OHV use on the public and private lands.

One outcome of these discussions on the Palouse Ranger District is a proposal to "create" a designated, signed system of OHV routes utilizing existing roads, trails and new trails that will provide an estimated 100 mile system of connected loop riding opportunities on federal, state and private lands. Planning for this action is progressing.

Construction of an OHV system of loop routes (Deception/Cedars OHV trail) following existing and abandoned roads was begun in 2002 in the upper area of the North Fork Clearwater River drainage with completion anticipated in 2004. This system includes trailhead parking and camping facilities for OHV users. The project was funded cooperatively with State OHV grant and federal monies.

Research Natural Areas

Goal

Identify and manage unique and/or outstanding botanical, geological and historical areas of the Forest for public enjoyment and use.

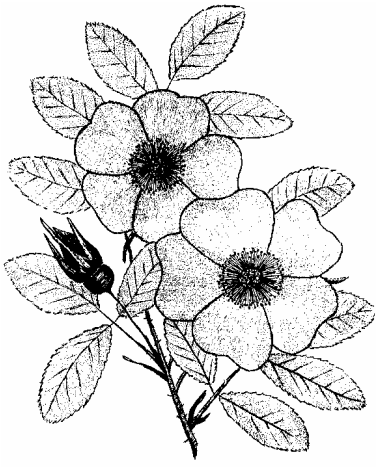
Monitoring Action

Establish a sufficient number of Research Natural Areas (RNA) on the Forest. Each should include at least two or three examples of major habitats and at least one example of a minor habitat. Major habitats are widespread, whereas minor habitats are unique, with little occurrence on the Forest.

Accomplishments/Findings

There are twelve RNAs identified in the Forest Plan on the Clearwater National Forest. The Lochsa River RNA was officially designated before the release of the Forest Plan in September 1987. Since then, nine additional RNAs have been designated.

Aquarius	**Chateau Falls**	**Grave Peak**
Bald Mountain	**Dutch Creek**	**Sneakfoot Meadows**
Bull Run Creek	**Four-Bit Creek**	**Steep Lakes**



Fenn Mountain and Rhodes Peak are in application process for official designation. Official designation occurs when an "Establishment Report" (a complete botanical flora and fauna report) is finished for the proposed RNA. This report should be completed when funding is available.

During FY03 no reports were prepared addressing Research Natural Area issues.

RESEARCH NEEDS

MONITORING ACTION

The Forest Planning staff will maintain a list of research needs. The initial list of approved research needs appears in the Forest Plan (pages II-15, 16). As additional research needs are identified, they will be added to this list.

Item No. 24: Research Needs

Frequency of Measurement: Annual
Reporting Period: Five Years

FINDINGS

Lolo Pass Redevelopment Project: composed of multiple studies including, Impact of Hwy 12 on Fishers and Evaluating Wolverine and Lynx movements: USDA FS, Rocky Mountain Research Station: 2000-2005. Data is being collected to help understand populations, home ranges and movement patterns of fishers, wolverines and lynx in relation to the highway and other landscape features. The Selway-Bitterroot Wilderness is part of this study area. Contact: Mike K. Schwartz (406) 542-4161

Temperature Monitoring for Fish Bearing Streams*:* Clearwater National Forest: 1999-2005. Monitoring provides year-round temperature data on creeks within the S-BW to determine if the streams meet Cold Water Biota Standards. Streams monitored include Upper Storm Creek, North and South Forks of Storm Creek, and Maude were started for testing in 2002 and will go through 2005. Big Sand Creek had data collected in 1998, 1999, 2003 and will go through 2004. Dan, Fern, Pedro and Wind Lakes Creeks were collected from 1998 through 2003. Wag, Queen, Tom Beal, Dodge, Upper Warm Springs, and Hungry Creeks were started in 2003 and will continue through 2007. This monitoring information can be reviewed in the annual Clearwater NF Monitoring Plan. Contact: Pat Murphy (208) 476-4541

Idaho Department of Fish & Game (IDFG) surveys high mountain lakes on the Forest for location, size, depth, and fish/amphibian data. IDFG has a Fisheries Management Plan started in 2001 through 2006, and can be obtained from the Fisheries Bureau Headquarters in Boise, ID at (208) 334-3791.

IDFG also tagged Bull Trout last summer 2003 in the Lochsa River to see where the fish go to spawn. They were found in SBW locations. For more information, you can call Dan Schiff at IDFG in Lewiston as the primary contact at 208-799-5010.

Riparian Areas

Goal

Manage riparian areas under the principles of multiple use as areas of special consideration for distinctive values. Integrate riparian management with the management of adjacent areas to ensure the protection of the water resource and other dependent resources.

Strategy

Evaluate on-site and cumulative effects of proposed actions, resolving conflicts in favor of riparian-dependent resources. Define and identify riparian areas and their values. Develop direction and techniques to protect or enhance these values.

Item No. 10 Riparian Area Condition

Frequency of Measurement: Annual
Reporting Period: Five Years

Monitoring Action

Riparian monitoring stations have been established to determine baseline and current riparian conditions and also to determine the effects of road construction, timber harvest, site preparation and grazing.

Accomplishments/Findings

Baseline or current conditions, including channel characteristics, are monitored annually on several streams. This monitoring is repeated on a three to five-year cycle to determine trend in channel condition. Permanent channel cross sections are established in which gradient (channel slope), instream sediment concentration, channel substrate (rock size) composition and photo points are established. Channel type and stability are determined for each of the streams. An attempt is made to associate cause with effect when conditions do not appear as natural. Beginning in 2000 and continuing into 2002, much of the scheduled riparian monitoring could not be done due to inadequate funding for Forest Plan monitoring.

Instream sediment was analyzed using the Wolman pebble count technique. (A Wolman pebble count classifies the size of stream substrate.) Channel cross-sections were measured to determine changes in deposition (sediment deposits) or scour (removal of channel rock) over time.

In 2003, the Forest measured channel geometry and instream sediment at 13 streams across the Forest. Data collected at each site may be obtained by contacting the Forest Hydrologist at the Supervisor's Office.

Table 4. Channel Morphology Sites – 2003.

Basin	Stream	Beneficial Use	Activities	Year(s) Data Collected
Palouse River (17060108)				
Lochsa River (17060303)	Boulder Creek (Tributary)	Steelhead, Cutthroat, Brook trout	Baseline	1989, 1992, 1994, 1999, 2003
	Warm Springs Creek	Steelhead, Cutthroat trout	Baseline	1989, 1995, 2003
	Weir Creek	Steelhead, Cutthroat trout	Baseline	1989, 2003
	Postoffice Creek	Steelhead, Cutthroat, Bull trout	Road Obliteration	1989, 1997, 1998, 2003
	Badger Creek (below Trib CC)	Steelhead, Cutthroat, Bull trout	Road Obliteration	1989, 1994, 2001, 2002, 2003

Basin	Stream	Beneficial Use	Activities	Year(s) Data Collected
	Badger Creek (above Trib CC)	Steelhead, Cutthroat, Bull trout	Baseline	2001, 2002, 2003
	Badger Creek Trib CC	Steelhead, Cutthroat, Bull trout	Road Obliteration	2001, 2002, 2003
Clearwater River (17060306)				
Upper North Fork Clear-water River (17060307)	Upper North Fork Clear-water River (Above Long Creek)	Rainbow, Cutthroat, Bull trout, Mountain Whitefish	Baseline	1990, 1998, 2003
	Elizabeth Creek	Cutthroat, Brook trout	Baseline	1989, 1992, 1996, 2003
	Lake Creek	Rainbow, Cutthroat trout, Moun-tain Whitefish	Timber Harvest	1989, 2003
	4th of July Creek	Cutthroat Trout	Baseline	1988, 2003
	Weitas Creek	Kokanee, Rainbow, Cutthroat, Bull trout	Baseline	1990, 1998, 2003
	Hemlock Creek	Kokanee, Rainbow, Cutthroat	Baseline	1990, 1998, 2003

Table 5. Summary of Wolman Pebble Count Data Collected in 2003. Channel type, gradient, percent fine sediment, D50 (mean particle size), and D84 (two standard deviation from mean).

Stream	Channel Type	Gradient %	% Fines[19] 0-2mm	% Fines[20] 0-4mm	D50 in mm[21]	D84 in mm[22]
Boulder Creek (Trib of Lochsa)	A2/A3	4.1	3.2	3.4	256 (Large Cobble or Small Boulder)	866 (Medium Boulder)
Warm Springs Creek	B2	2.4	5.6	6.3	271 (Small Boulder)	489 (Small Boulder)
Weir Creek	A2	5.7	10.4	13.9	169 (Large Cobble)	465 (Small Boulder)
Postoffice Creek	B3	2.4	12.1	14.0	94 (Small Cobble)	350 (Small Boulder)
Badger Creek (below Trib CC)	A4	5.2	20.7	25.9	28 (Coarse Gravel)	128 (Large Cobble)
Badger Creek (above Trib CC)	B4	3.2	12.9	16.9	31 (Coarse Gravel)	108 (Small Cobble)
Badger Creek Trib CC	A4/A5	7.4	45.6	47.1	8 (Fine Gravel)	149 (Large Cobble)
Upper North Fork Clearwater River (Above Long Creek)	C3	1.4	4.8	4.9	125 (Large Cobble)	241 (Large Cobble)
Elizabeth Creek	A3	8.0	10.3	11.3	111 (Small Cobble)	333 (Small Boulder)
Lake Creek	B3	2.7	5.9	6.5	121 (Small Cobble)	256 (Small Boulder)
4th of July Creek	B3c	1.6	3.3	5.0	152 (Large Cobble)	441 (Small Boulder)
Weitas Creek	B3a	1.4	5.1	5.5	192 (Large Cobble)	528 (Medium Boulder)
Hemlock Creek	B3	2.8	8.3	9.0	115 (Small Cobble)	384 (Small Boulder)

SUBSTRATE MONITORING IN THE LOCHSA RIVER SUB-BASIN

Boulder Creek (Lochsa River Tributary): Wolman pebble count information was collected in Boulder Creek in 1989, 1992, 1994, 1999, and 2003. A complete channel survey was done in 1993.[23] The pebble count data has been collected in Reach BO-19, the lowest reach in the watershed.[24] The channel type is an A2/A3

[19] Clay, silt, and sand.

[20] Clay, silt, sand, and very fine gravel.

[21] The mean particle size. The stream classification is based on the D50.

[22] The diameter that is equal to 84% of the bed particles. The choice of 84% value is arbitrary; it is two standard deviations larger than the mean size, assuming a normal distribution. Experience has shown that particles larger than the median size play an important role in flow resistance, and therefore a singel parameter to describe bed particle size should be some size larger than the median.

[23] Clearwater BioStudies, Inc., Canby, Oregon. Habitat Conditions and Salmonid Abundance in Boulder and Huckleberry Creeks, Lochsa Ranger District, Summer 1993. February 1994.

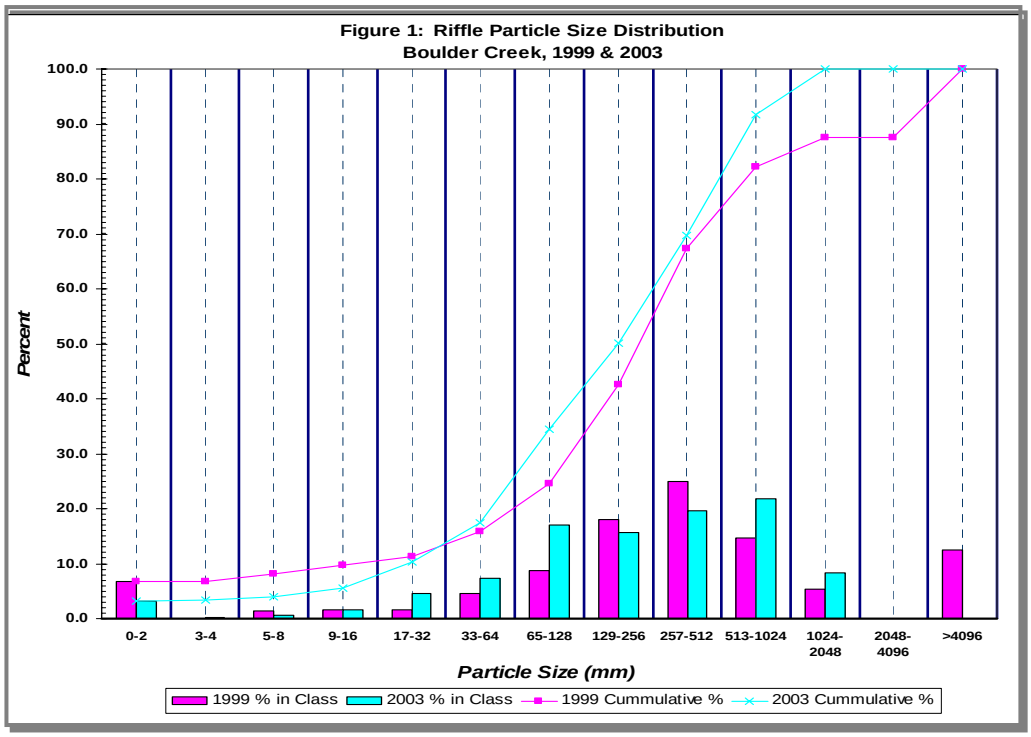
[24] The 1994 measurement was done above Surprise Creek, Reach BO-11.

(steep gradient, confined, boulder/cobble substrate stream) with a gradient of 4.1 percent. Bank stability was measured at 5.0 (no bank erosion) and cobble embeddedness was 14 percent. Boulder Creek is located within the Selway-Bitterroot Wilderness and is not roaded or logged. In 1999, higher levels of sand and boulders were measured with less gravel and cobble (see figure below). These channel changes may have been associated with the 1995-97 floods, with recovery occurring by the 2003 survey.

Table 6. Boulder Creek Wolman Pebble Count Data; 1989 – 2003.

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1989	2.1	2.8	226 (Large Cobble)	482 (Small Boulder)
1992	3.4	4.8	159 (Large Cobble)	489 (Small Boulder)
1994	2.6	3.7	94 (Small Cobble)	216 (Large Cobble)
1999	6.7	6.7	330 (Small Boulder)	1,320 (Large Boulder)
2003	3.2	3.4	256 (Large Cobble)	866 (Medium Boulder)
Mean	3.6	4.3	213 (Large Cobble)	675 (Medium Boulder)

Additional channel stability testing was done in Boulder Creek using the Riffle Stability Index procedure.[25] With this procedure, the mobile fraction of the riffle can be estimated by comparing the relative abundance of various particle sizes present on the riffle with the dominant large particles on an adjacent bar. Riffle particles that are smaller than the dominant large particles on the bar are interpreted as being mobile. The mobile percentile of particles on the riffle is termed the "Riffle Stability Index" (RSI) and provides a useful estimate of the degree of increased sediment supply to riffles in mountain streams. The RSI procedure can also be used as an indicator of stream reach, water shed condition, and aquatic habitat quality. From RSI measurements in numerous streams in Northern Idaho and Virginia, Kappesser has determined that values less than 70 are indicative of watersheds in good condition. Values between 70 and 85 indicate watersheds in fair condition, and values greater than 85 indicate poor watershed condition.



The RSI was determined on two separate riffles in Boulder Creek in 1999 and repeated in 2003. On the first riffle (T1), the RSI was 23 in 1999 and 25 in 2003 (i.e. approximately 25% of the channel substrate is mobile during bankfull streamflows). On the second riffle (T2), the RSI was 13 in 1999 and 28 in 2003. These measurements and calculations indicate that the Boulder Creek watershed and stream reach are stable and in good condition.

[25] Gary B. Kappesser. A Rifle Stability Index to Evaluate Sediment Loading to Streams. In Journal of the American Water Resources Association, August 2002.

Warm Springs Creek: Wolman pebble count information was collected in Warm Springs Creek in 1989, 1995, and 2003. A complete channel survey was done in 1994 and 1995.[26] The pebble count data has been collected in Reach WSP-37, the lowest reach in the watershed. The channel type is a B2 (moderate gradient, moderately confined, boulder substrate stream) with a gradient of 2.4 percent. Bank stability was measured at 4.9 (20 meters of raw bank per kilometer) and cobble embeddedness was 10 percent. Channel stability rating was 52, or good. Warm Springs Creek is located within the Selway-Bitterroot Wilderness and is not roaded or logged. No apparent trends in the data have been observed to date.

Table 7. Warm Springs Creek Wolman Pebble Count Data; 1989 – 2003.

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1989	11.2	12.6	155 (Large Cobble)	419 (Small Boulder)
1995	2.9	4.0	378 (Small Boulder)	886 (Medium Boulder)
2003	5.6	6.3	271 (Small Boulder)	489 (Small Boulder)
Mean	6.6	7.6	268 (Small Boulder)	598 (Medium Boulder)

Weir Creek: Wolman pebble count information was collected in Weir Creek in 1989 and 2003. A complete channel survey was done in 1991.[27] The pebble count data has been collected in Reach WE-7, the lowest reach in the watershed. The channel type is a B3a (steep gradient, moderately confined, cobble substrate stream) with a gradient of 5.7 percent. Bank stability was measured at 5.0 (20 meters of raw bank per kilometer) and cobble embeddedness was 26 percent. Weir Creek is roadless and there has been no logging in the watershed. No apparent trends in the data have been observed to date.

Table 8. Weir Creek Wolman Pebble Count Data; 1989 and 2003.

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1989	11.8	12.7	80 (Small Cobble)	384 (Small Boulder)
2003	10.4	13.9	175 (Large Cobble)	445 (Small Boulder)
Mean	11.1	13.3	128 (Small Cobble)	415 (Small Boulder)

The Riffle Stability Index was determined on one riffle in Weir Creek in 2003. The RSI was 38 (i.e. approximately 38% of the channel substrate is mobile during bankfull streamflows). This measurement and calculation indicates that the Weir Creek watershed and stream reach are stable and in good condition.

Postoffice Creek: Wolman pebble count information was collected in Postoffice Creek in 1989, 1997, 1998, and 2003. A complete channel survey was done in 1992.[28] The pebble count data has been collected in Reach PO-12, the lowest reach in the watershed. The channel type is a B3 (moderate gradient, moderately confined, cobble substrate stream) with a gradient of 2.4 percent. Bank stability was measured at 5.0 and cobble embeddedness was 35 percent. Postoffice Creek has had minor timber harvest (3.2% of the watershed) and road construction (0.8 miles/sq. mi.). There appears to be a downward trend in sediment and an increase in the mean particle (D50) size indicating an improving trend from, perhaps, past timber management without adequate BMPs, landslides, or floods.

Table 9. Postoffice Creek Wolman Pebble Count Data; 1989 – 2003.

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1989	27.7	27.7	42 (Very Coarse Gravel)	368 (Small Boulder)
1997	15.2	17.4	51 (Very Coarse Gravel)	155 (Large Cobble)
1998	20.6	21.5	70 (Small Coble)	250 (Large Cobble)
2003	12.1	14.0	94 (Small Cobble)	350 (Small Boulder)
Mean	18.9	20.2	64 (Very Coarse Gravel)	281 (Small Boulder)

[26] Clearwater BioStudies, Inc., Canby, Oregon. Habitat Conditions and Salmonid Abundance in the Warm Springs Drainage, Powell Ranger District, Summer 1994 and 1995. March 1996.

[27] Clearwater BioStudies, Inc., Canby, Oregon. Habitat Conditions and Salmonid Abundance in Selected Streams Within the Weir Creek Drainage, Powell Ranger District, Summer 1991. March 1992.

[28] Clearwater BioStudies, Inc., Canby, Oregon. Habitat Conditions and Salmonid Abundance in Postoffice and W. Fk. Postoffice Creeks, Powell Ranger District, August 1992. April 1993.

RSI was measured in Riffle T2 in Postoffice Creek in 1997 and repeated in 1998. No RSIs have been done since that date. In 1997, the RSI was measured at 195 mm and was moving approximately 86% of the channel substrate at bankfull flows. This high RSI indicated a channel that was unstable and moving large amounts of bed material. This measurement was taken immediately after the floods in 1995-1996 when Postoffice Creek experienced three landslides upstream from the study reach. The measurement was repeated in 1998, when the RSI was determined to be moving cobbles 76 mm in size, and 62% of the substrate. This measurement indicated the channel had stabilized. Measurements at T1 and T3 of 49% and 67%, respectively, validated this determination. We were unable to find sufficient channel bars in 2003 to do a RSI. This indicates the channel has scoured of excess depositional materials. In 2003, the channel appeared to be stable.

Badger Creek: Badger Creek is being studied to determine the effects of road decommissioning being done by the Nez Pierce Tribe and Clearwater National Forest. Prior to 2003, there were 85.2 miles of roads in this 5.6 square mile watershed. Road density was 15.3 miles/mile^2. This is the highest road density on the Clearwater National Forest. Two landslides occurred from these roads in the 1995-1996 flood event. In 2003, road decommissioning began. Forty-two miles of roads have been decommissioned with plans to obliterate another 20 miles in 2004 and 2005. Current road density has dropped to 7.7 miles/mile^2, with the goal of reducing road density to 4.1 miles/mile^2. The purpose of the study is to determine the level of short term bedload sediment increases from road decommissioning.

A complete channel survey was done in the summer of 1994.[29] The pebble count data has been collected in Reach BG-5, the lowest reach in the watershed. The channel type is an A4 (steep gradient, confined, gravel substrate) stream with a gradient of 5.2%. It is possible this channel type was historically an A3, with a natural cobble substrate. Bank stability was measured at 4.9, with 24 meters of raw streambank per kilometer. Cobble embeddedness was 44%, or higher than the DFC of 35%.

Table 10. Badger Creek Wolman Pebble Count Data; Badger above cc, trib cc, and Badger below cc; 1989 – 2003.

Stream	Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
Badger (Above CC)	2001	21.0	23.5	36 (Very Coarse Gravel)	108 (Small Cobble)
	2002	15.2	20.0	40 (Very Coarse Gravel)	114 (Small Cobble)
	2003	12.9	16.9	31 (Coarse Gravel)	108 (Small Cobble)
Tributary CC	2001	52.4	52.8	2 (Sand)	81 (Small Cobble)
	2002	48.1	49.6	5 (Fine Gravel)	113 (Small Cobble)
	2003	45.6	47.1	8 (Fine Gravel)	149 (Large Cobble)
Badger (Below CC)	1989	14.8	14.8	68 (Small Cobble)	248 (Large Cobble)
	1994	11.7	14.1	79 (Small Cobble)	143 (Large Cobble)
	2001	30.2	32.7	39 (Very Coarse Gravel)	239 (Large Cobble)
	2002	24.0	25.8	25 (Coarse Gravel)	158 (Large Cobble)
	2003	20.7	25.9	28 (Coarse Gravel)	128 (Large Cobble)

Wolman pebble count information was collected at three stations: Above Tributary CC, Tributary CC, and Below Tributary CC. The control station has little or no road decommissioning above the study reach. Tributary CC has numerous road fills being removed above the study reach. Badger Creek is the impact reach below all the activities. Trends in this reach will be compared to the control reach.

Creek shows a declining trend in sediment from 2001 to 2003. Tributary CC also shows a declining trend in sediment, with no apparent effects of the road decommissioning that has occurred to date. Wolman pebble counts in Badger Creek began in 1989 and continued through 2003. There appears to have been a spike in sediment after the 1994 measurement. This is most likely the result of the two landslides and 1995-1996 flood effects. There are no apparent increases in sediment as a result of the road decommissioning in this reach, as fine sediment has continued to decline.

[29] Clearwater BioStudies, Inc., Canby, Oregon. Habitat Conditions and Salmonid Abundance in the Wendover and Badger Creek Drainages, Powell Ranger District, Summer 19964. March 1995.

RSI monitoring has occurred at Badger Creek (Below CC) in 1994, 2001, 2002, and 2003. The data indicated the stream moved from a low of 51% of the substrate in 2001 to a high of 67% of the substrate at bank full flow in 2002. These measurements show a stable channel without an apparent trend.

Badger Creek Baer Survey: An 18 inch relief culvert in the headwaters of Badger Creek on Forest Road 5615 will be cleaned to handle increased peak flows.

Spruce Creek Baer Survey: A 24 inch culvert on Cost Share Road 373 (T38N, R16E, Sec. 25) will be upgraded to a 48 inch pipe to handle increased runoff from the fire. The new culvert will exceed the design storm peak flows. The Forest will also clean, replace, or repair six plastic culverts on cost share roads in Section 35 to handle increased runoff expected from the fire.

Crooked Fork Creek Baer Survey: Twin, misaligned and undersized 30 inch culverts on the 595 Road at T38N, R14E, Section 2, will be replaced (See Photo 1). The culvert will be designed to handle increased peak flows and accommodate fish passage. Removal of a 24 inch aluminum culvert on Road 75522, Spur 1 will be done to handle increased peak flows expected after the fire. A log culvert on Road 75222 at Station 40+25 will be removed before peak flows increase and the fill saturates and fails. At the head of an old debris torrent on Road 75226, the remainder of a previously failed log culvert will be removed before peak flows increase and a fill failure results.

Photo 1. Twin culverts proposed for replacement in Crooked Fork Creek tributary. September 3, 2003.

SUBSTRATE MONITORING IN THE NORTH FORK CLEARWATER RIVER SUB-BASIN

Upper North Fork Clearwater River (above Long Creek): Wolman pebble count information was collected in the Upper North Fork of the Clearwater River in 1990, 1998, and 2003. A complete channel survey was done in 1998.[30] The pebble count data has been collected in Reach UNF-20, immediately above Long Creek. The channel type is a C3 (low gradient, unconfined, cobble substrate stream) with a gradient of 1.4 percent. Bank stability was measured at 5.0 (3 meters of raw bank per kilometer) and cobble embeddedness was 22 percent. Channel Stability Index was 55 or "good." The North Fork Clearwater River has a very low harvest history and road density. 208 acres, or 0.4% of the watershed has been harvested and 34.9 miles of roads have been constructed in the 73.7 square mile watershed. The road density is 0.5 miles/mile^2. There are no known landslides within the North Fork Clearwater watershed. Table 11 shows the Wolman pebble count data for the three years. No apparent trends in the data have been observed to date.

Table 11. North Fork Clearwater River Wolman Pebble Count Data; 1990 to 2003.

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1990	7.9	7.9	174 (Large Cobble)	414 (Small Boulder)
1998	0.4	1.6	75 (Small Cobble)	251 (Large Cobble)
2003	4.8	4.9	125 (Large Cobble)	241 (Large Cobble)
Mean	4.4	4.8	124 (Small Cobble)	302 (Small Boulder)

[30] Clearwater BioStudies, Inc., Canby, Oregon. Habitat Conditions and Salmonid Abundance in the Upper North Fork Clearwater River From Meadow Creek Downstream to Kelly Forks, North Fork Ranger District, Summer 1998. April 1999.

The Riffle Stability Index was determined on the North Fork Clearwater River in 1998 and 2003. In 1998, bankfull flow was moving a 158mm large cobble for a RSI of 74%. In 2003, RSI was measured at 54% and moving a 138mm cobble. This measurement and calculation indicates that the North Fork Clearwater River watershed and stream reach are stable and in good condition.

Elizabeth Creek: Wolman pebble count information was collected in Elizabeth Creek in 1989, 1992, 1996, and 2003. A complete channel survey was done in the summer of 1996.[31] The pebble count data has been collected in Reach ELI-10, the lowest reach in the watershed. The channel type is an A3 (steep gradient, confined, cobble substrate) stream with a gradient of 8.0 percent. Bank stability was measured at 4.9 (stable) and cobble embeddedness was 21 percent. Elizabeth Creek is essentially roadless. Less than 0.1% of the watershed has been harvested (4 acres) and road density is 0.2 miles/mile^2. Recent impacts in the watershed include two landslides that occurred during the 1995-1996 flood; a portion of the watershed was burned in the Elizabeth Fire in 2000; and sometime in the winter or spring of 2002-2003, a large debris jam failed near the mouth and above the study reach. Table 11 shows the Wolman pebble count data for the four years.

Table 12. Elizabeth Creek Wolman Pebble Count Data; 1989 – 2003.

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1989	0.9	0.9	221 (Large Cobble)	467 (Small Boulder)
1992	3.5	3.5	198 (Large Cobble)	458 (Small Boulder)
1996	3.5	5.3	211 (Large Cobble)	768 (Medium Boulder)
2003	10.3	11.3	111 (Small Cobble)	333 (Small Boulder)
Mean	4.6	5.3	185 (Large Cobble)	507 (Small Boulder)

From 1989 through 1996, the channel remained stable and consistent with a small level of sediment. The flood and landslides appear to have had no effect on the mouth reach of Elizabeth Creek. However, the 2000 Elizabeth Fire resulted in increase peak flows and a subsequent debris jam failure in 2003 which has caused channel adjustments, at least in Reach ELI-10. Sediment in the reach has increased from approximately 5% to over 11% and the channel is scoured bright. Also, the D50 and D84 particle size has decreased by approximately 50%. Sediment behind the debris jam was 10 to 15 feet deep and backed up several yards upstream. It appeared that the debris jam pre existed the fire was probably weakened when one side partially burned. Much of this material would have been delivered to the North Fork of the Clearwater River.

RSI monitoring is recommended in 2005 to verify future recovery. We also failed to identify the debris jam hazard during the Elizabeth Fire Burned Area Emergency Response Survey. Future BAER surveys should identify large debris jams in mountain streams.

There were no depositional bars present in 1996, so a RSI was not done. With the new deposition in 2003 a RSI measurement was possible at two transects. Transect A was moving a 250 mm cobble at bankfull flows and Transect B was moving a 268 mm boulder. The calculated RSI for both transects indicates that 81% of the channel substrate is moving at bankfull flow. This is borderline instability.

Photo 2. Elizabeth Creek recent debris dam failure. August 14, 2003.

[31] Clearwater BioStudies, Inc., Canby, Oregon. Habitat Conditions and Salmonid Abundance in Selected Streams Within the Black Canyon Area, North Fork Ranger District, Summer 1996. March 1997.

Lake Creek: Wolman pebble count information was collected in Lake Creek in 1989 and 2003. A complete channel survey was done in 1990.[32] The pebble count data has been collected in Reach LK-13, near the mouth. The channel type is a B3 (moderate gradient, moderately confined, cobble substrate stream) with a gradient of 2.7 percent. Bank stability was measured at 3.5, indicating there were bank stability problems in 1990. Although bank stability was not measured during the 2003 Wolman pebble count measurements, we did not observe any bank erosion in the reach (See Photo 5). Cobble embeddedness was 23 percent. The Lake Creek watershed has a harvest density of 18.8% and a road density of 1.8 miles/mile^2. Timber harvest and road construction began in 1958 and continued until 1993. There was one landslide during the 1995-1996 flood event. There is insufficient data to determine if a trend in sediment exists.

Table 13. Lake Creek Wolman Pebble Count Data; 1989 to 2003.

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1989	0.0	0.0	102 (Small Cobble)	419 (Small Boulder)
2003	5.9	6.5	121 (Small Cobble)	256 (Small Boulder)
Mean	3.0	3.3	112 (Small Cobble)	338 (Small Boulder)

The Riffle Stability Index was determined on Lake Creek in 2003. The RSI indicated that 67% or a 176mm large cobble was moving at bankfull streamflows. The RSI measurement indicates that the Lake Creek watershed and stream reach are stable and in good condition.

4th Of July Creek: Wolman pebble count information was collected in 4th of July Creek in 1988 and 2003. A channel survey was not been done. The pebble count data has been collected in the lowest reach, immediately upstream of the mouth. The channel type is a B3c (low gradient, moderately confined, cobble substrate stream) with a gradient of 1.6 percent. The 4th of July Creek watershed is unroaded and unlogged. There were two landslides in the watershed during the 1995-1996 flood event. There are an insufficient number of years of data to determine if a trend in sediment exists.

Table 14. 4th of July Creek Wolman Pebble Count Data; 1988 to 2003.

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1988	0.0	0.0	76 (Small Cobble)	286 (Small Boulder)
2003	3.3	5.0	152 (Large Cobble)	441 (Small Boulder)
Mean	1.7	2.3	114 (Small Cobble)	364 (Small Boulder)

The Riffle Stability Index was determined on 4th of July Creek in 2003. The RSI indicated that 49%, or a 148mm large cobble was moving at bankfull streamflows. The RSI measurement indicates that the 4th of July Creek watershed and stream reach are stable and in good condition.

Weitas Creek: Wolman pebble count information was collected in Weitas Creek at the mouth in 1989, 1998, and 2003. A complete channel survey has not been done. The data was collected in the lowest reach, near the mouth. The channel type is a B3a (moderate gradient, moderately confined, cobble substrate stream) with a gradient of 1.4%. The Weitas Creek watershed is relatively unroaded and unlogged. Harvest density is 2.1% and road density is 0.7 miles/mile^2. There were 29 landslides during the 1995-1996 flood event giving a landslide density of 1 slide per 7.5 square miles. There appears to be a downward trend in sediment; there also appear to be no effects from the 1995-1996 flood event in this reach.

Table 15. Weitas Creek Wolman Pebble Count Data; 1989 to 2003.

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1989	12.3	16.7	136 (Large Cobble)	444 (Small Boulder)
1998	5.2	10.3	129 (Large Cobble)	432 (Small Boulder)
2003	5.1	5.5	192 (Large Cobble)	528 (Medium Boulder)
Mean	3.0	3.3	152 (Large Cobble)	468 (Small Boulder)

[32] Clearwater BioStudies, Inc., Canby, Oregon. Habitat Conditions and Salmonid Abundance in Selected Streams Within the Lake Creek Drainage, North Fork Ranger District, Summer 1990. January 1991.

The Riffle Stability Index was determined on Weitas Creek in 1998. The 1998 RSI indicated that bankfull streamflows were moving 67% of the channel substrate, or a 206mm cobble. This measurement indicates that the Weitas Creek watershed and stream reach are stable and in good condition.

Hemlock Creek: Wolman pebble count information was collected in Hemlock Creek in 1990, 1998, and 2003. A complete channel survey was done in the summer of 1991.[33] The pebble count data has been collected in Reach HM-25, the lowest reach in the watershed. The channel type is a B3 (moderate gradient, moderately confined, cobble substrate) stream with a gradient of 2.8 percent. Bank stability was measured at 4.8 (minor bank erosion) and cobble embeddedness was 28 percent. Hemlock Creek is predominately roadless. Seven percent of the watershed has been harvested and road density is 1.5 miles/mile^2. Harvest took place between 1960 and 1997. Table 16 shows sediment in Hemlock Creek spiking in 1998 and recovering to 1990 conditions in 2003. The 1998 sediment levels are most likely the result of the 1995-1996 flood event. Three landslides occurred above the sample reach in those storms.

Table 16. Hemlock Creek Wolman Pebble Count Data; 1990 – 2003.

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1990	8.8	9.8	80 (Small Cobble)	224 (Large Cobble)
1998	18.5	21.0	67 (Small Cobble)	202 (Large Cobble)
2003	8.3	9.0	115 (Small Cobble)	384 (Small Boulder)
Mean	11.9	13.3	87 (Small Cobble)	270 (Small Boulder)

A RSI was measured in Hemlock Creek, Reach HM-25 at T1 and T2 in 1998 and in 2003. In 1998, the T1 RSI was 165 mm, moving approximately 75% of the channel substrate at bankfull flow. The T2 RSI was 282 mm and was moving approximately 95% of the substrate. T1 indicated borderline stability and the T2 transect was unstable. The effects of the flood and landslides above this reach are most likely the cause of the instability. In 2003, the same transects were re-measured. T1 was moving a 100 mm cobble, or 56% of the substrate and T2 was moving a 119 mm cobble, or 59% of the substrate at bankfull. These recent measurements indicate the channel has recovered from past flood and landslide effects.

Cayuse Creek Baer Survey: Seventeen undersized and plugged culverts, including everything from 12 inch relief pipes to fisheries crossings on Forest Road 581 will be replaced to handle increased peak runoff from the fire. These sites will all be monitored after construction is completed in August 2004. Photo 3 shows a plugged culvert on Road 581 that filled with ash during a fall rainstorm after the Pleasant Fire. This culvert was replaced immediately due to the risk of scouring or loosing the road fill if a large rainfall event occurred.

Photo 3. Plugged culvert with ash washed over road 581; September 17, 2003.

[33] Clearwater BioStudies, Inc., Canby, Oregon. Habitat Conditions and Salmonid Abundance in Selected Streams Within the Hemlock Creek Drainage, Pierce Ranger District, Summer 1991. March 1992.

Road Decommissioning Program

Goal

The goal of road decommissioning on the Clearwater National Forest is to reduce watershed impacts by reclaiming roads that are no longer a necessary part of the Forest's transportation system. The primary objectives are:

- Reduce erosion from road surfaces and slopes and related sedimentation of streams.
- Reduce the risk of mass failures and subsequent impact on streams.
- Restore natural surface and subsurface drainage patterns.
- Restore vegetation and site productivity
- Restore stream channels at road crossings and where roads run adjacent to channels
- Use road maintenance funds more effectively - concentrate the available funds on roads that are needed for long-term access.
- Protect and restore fish habitat.

Accomplishments/Findings

Road decommissioning includes activities that stabilize and restore unneeded roads to a more natural state. In most cases, road decommissioning involves using heavy equipment to decompact road surfaces, remove drainage structures and fill material from streams and draws, recontour through unstable areas, and revegetate.

The Clearwater National Forest and the Nez Perce Tribe have worked together since 1996 to decommission roads on National Forest under a watershed restoration partnership. Over 480 miles of problem roads have been decommissioned since 1996. Approximately half of these have been decommissioned in partnership areas where the Tribe contributes funds and labor directly to the project.

Based on field information about the road's condition, a road to be decommissioned is targeted either for abandonment or some level of decommissioning (previously referred to as obliteration). A road to be *abandoned* is already stable and is revegetating naturally. No physical work is required for abandonment, just a change in the database to reflect the fact that it no longer will be tracked as a road. However, roads to be *decommissioned* will require some physical work in addition to the database change. The extent of decommissioning work required is classified in four levels.

- Level I. Recontouring at the start of the road to restrict vehicle access.
- Level II. Some work required along the road to address mass failure or erosion risk factors.
- Level III. Substantial work required along the full length of the road.
- Level IV. Recontouring of most of the road.

Decommissioning roads to Levels 2 through 4 includes several standard approaches to treatment. Treatments along the road prism range from decompaction in areas with stable fill but reduced infiltration and productivity, to strong outslopes or complete recontours in areas requiring fill stabilization. For every road, all culverts and ditches are pulled. Revegetation of treated areas combines seeding with a non-persistent grass mix, scattering duff excavated from natural ground above road cutslope, and transplanting native forbs and shrubs which are growing on-site either adjacent to or on the road surface. Natural mulch consisting of onsite woody debris, logs and stumps as well as imported weed-free straw mulch (used in areas

where natural mulch is scarce) cover all disturbed ground. Treatments along stream crossings require a complete recontour of all fill material with stream channels restored to natural grade and dimensions. Each stream crossing receives the same revegetation prescription as the roadbed with a special emphasis on transplants of riparian vegetation. At completion, the area will no longer convey vehicle traffic, and requires no maintenance.

In FY03, 33.3 miles of road were decommissioned at a cost of $7,000 per mile. This cost includes equipment, materials, labor and project administration and inspection. The Nez Perce Tribe contributed funding and labor under a Watershed Restoration Partnership for the decommissioning of 23 miles on the Powell Ranger District.

Year	Reconstruction (Miles)	New Construction (Miles)	Decommissioning (Miles)	Intermittent Service (Miles)
1998	85.3	1.1	134	8.6
1999	19.8	1.0	83.5	10.6
2000	33.1	8.6	47.4	4
2001	11.6	0	64	8.3
2002	0.0	0.1	40.4	3.0
2003	24.4	0	33.3	4.6
TOTAL	**174.2**	**10.8**	**402.6**	**39.1**

Roads that are needed for the long-term transportation system but are not being used now (and probably won't be needed for at least 10 to 20 years) are put into "intermittent service" (IS) status. This requires ensuring that the road is stable and will not need to be maintained for the non-use period. Roads put into IS status typically have their culverts and associated fill removed. The road may be outsloped and fills in unstable areas may be pulled.

MONITORING ROAD DECOMMISSIONING

GOAL

The Clearwater National Forest and the Nez Perce Tribe monitor road decommissioning projects in order to track the effectiveness of the Forest's decommissioning program. The Nez Perce Tribe and the Forest Service cooperatively fund the monitoring of road decommissioning projects on the Forest. The monitoring crew is made up of employees of both the Tribe and the Forest. Monitoring protocols are designed to answer questions pertinent to decommissioning goals (listed above) and provide feedback to the decommissioning program on treatment effectiveness.

This monitoring plan looks to provide some feedback to the program goals by looking for answers to the following questions:

- Is there surface erosion associated with the decommissioned road segment and how much?
- Are there mass failures present?
- Are natural surface and subsurface drainage patterns restored?
- Is there vegetation coverage? Is there succession to native plants?
- Are stream channels restored to the point that subsequent adjustments are minimal?
- Is the treatment appropriate for the site/landtype where it was used?

MONITORING ACTION

Field methods include both qualitative assessments and quantitative measurements on selected ¼ mile segments of decommissioned roads. Approximately one monitoring segment will be set up for every 10 miles of road decommissioned. These segments are established in the year they were decommissioned (year 0). Data is collected along the segments in the first year after decommissioning (year 1), the second year after decommissioning (year 2), and the fifth year after decommissioning (year 5). The intent is to revisit these sites in the tenth year (year ten) after decommissioning. The findings and discussion below apply only to monitoring segments that were visited in 2003 with the exception of mass failures, which are reported annually for all monitoring segments.

ACCOMPLISHMENTS/FINDINGS

1. **Surface Erosion**: How much surface erosion was observed on the decommissioned road segments? Define the feature or treatment associated with the recorded erosion.

   Any surface rilling or gullying or sheet erosion is noted and, as of 2002, the dimensions recorded. Prior to 2002, the monitoring crew made qualitative observations of "significant" or "insignificant". "Significant" was defined as highly visible and likely to get worse while "insignificant" was defined as visible but minor. In 2002, protocol was changed to a more quantitative method of estimating the percent of surface area of a feature affected by surface erosion. Mass failures less than 10 cubic yards are tracked as surface erosion.

   Findings:

   - 46% of segments monitored (11 of 24 total) exhibited at least one instance of surface erosion.
   - Only one segment showed signs of surface erosion was noted outside of channel areas in the interfluvial zones. The Road 729 segment exhibited spotty surface erosion (mostly pedestalling) over approximately 5% of the entire segment. This segment lays on extremely erodible Revett Quartzite soils the Deception point area on the North Fork District.
   - There were 8 instances (32% of the surface erosion observed) where the surface erosion was associated with stream grade channels. In 5 cases, the surface erosion affected 25% or less of the total surface area of the channel. In the remaining 3 cases, the surface erosion affected more than 25% of the total surface area of the channel.
   - There were 16 instances (64% of the surface erosion observed) where the surface erosion was associated with cross drain channels. In 12 cases, the surface erosion affected 25% or less of the total surface area of the channel. In the remaining 4 cases, the surface erosion affected more than 25% of the total surface area of the channel.

   Discussion: Surface erosion occurs as a function of concentrated flow. It appears within interfluvial zones, adequate infiltration of precipitation and snowmelt occurs to prevent excessive surface runoff and related erosion. Mulch and vegetation help control surface erosion in these interfluvial zones (see revegatation, below)

   Both cross drain channels and stream grade channels are areas of concentrated flow. Stream grade channels, if done correctly, are fully recontoured. The reconstructed channel bottom should be on original channel bed material. Because streams are dynamic by nature, we expect to see some movement of the channel, both vertically in the way of aggradation and degradation, and laterally by meanders reflecting channel adjustment.

   Cross drain channels function to drain intercepted subsurface water, such as in a wet ditchline, Unlike Stream Grade Channels, cross drain channels are not necessarily in a topographic feature such as a draw or swale. Thus, when we construct a "channel" to drain this intercepted water, we concentrate flow in a feature that has not evolved to handle concentrated flow. We are currently working on techniques, such as brush blankets, to help this converted subsurface water reinfiltrate (see Cross Drain Channels, below). These techniques should help reduce surface erosion in the cross

drain channels. As most of our instances of surface erosion occur in cross drain channels, we recommend that we continue to focus on revegetation of these areas.

In the past, erosion control blankets were often used in these cross drain areas; however, we found that, though they were effective at reducing erosion, the blankets inhibited revegetation. Brush blankets appear to be successfully reducing erosion as well as encouraging infiltration and revegetation. There may be places where brush is not readily available where erosion control blankets are a good choice.

2. **Mass Failures**: Are there any mass failures along the decommissioned road? How large are they (cubic yards)?

For monitoring purposes, any slide, slump or debris flow larger than ten cubic yards that initiates on a road after it has been decommissioned is monitored as a mass failure. An attempt is made to identify the cause of the failure, the feature it is associated with, and the likelihood of it continuing or becoming larger. Any decommissioned road segment with a known mass failure is designated as a monitoring segment.

Findings:

- From a total of over 450 miles of road decommissioned on the Clearwater National Forest since 1992, there are 10 known mass failures over 10 cubic yards in size (Table 17). Three of these are new this year.
- One new road fill failure was noted at the beginning of a monitoring segment on an abandoned segment of road (Road 5540-Canyon Creek).
- Another new fill failure into an intermittent stream was identified on an unmonitored portion of road 729 in "intermittent storage" indicates that the treatment (outslope) was too light. We will monitor in the future.
- New movement associated with a pre-existing rotational slump ona Road 830476 segment recontoured in 2002 is being tracked as a 10 cubic yard failure. There is also new tension cracking at this site, indicating potential future movement.
- Five of these mass failures are associated with historic or pre-existing landslides.
- One growing slump area was noted on Road 564 of 26.6 cubic yards associated with glacial till.
- There are two existing failures on Road 4773 (340 cubic yards and 370 cubic yards), both associated with one historic landslide. These were not visited in 2003.

Table 17. Mass Failures on Monitoring Segments.

Road	Drainage	District	Year Deco	Year Noted	Size (Cy)	Associated Feature / Treatment
5540	Canyon Cr	Lochsa	1997	2003	510	Fill failure into stream; abandoned section
729	Deception	North Fork	1999	2003	35	Fill failure into intermittent stream, light outslope
830476	Deception	North Fork	2002	2003	10	Preexisting - 10cy movement in 2003
729B	N. Fk. Face	North Fk	2001	2002	10	Small slump in stream grade channel; stable
564	Post Office	Powell	2001	2001	27	Strong outslope in glacial till
4773	Schwartz	Palouse	1995	1999	340	Outslope near top of preexisting landslide
4773	Schwartz	Palouse	1995	1999	370	Cross drain channel, crosses preexisting slide
6056	Fish Cr	North Fk	1998	1998	12	Top preexisting failure, stream grade channel
4801	Salmon Cr	North Fk	1998	1999	531	Preexisting debris torrent, stream grade channel
5540	Canyon Cr	Lochsa	1997	1998	27	Sideslope saturation, outslope

Discussion: Most of our large mass failures are associated with landslides that were evident prior to decommissioning the road and probably prior to road construction. However, we observed at least three failures (on road 5540 and road 729) on high risk segments where the treatment was probably too light. All mass wasting is on high risk landtypes. The segment on road 830476 is not mapped as a high risk landtype, however this road crosses a large rotational slump.

Based on these observations, one might suggest that lighter treatments such as abandonment or minor (±10%) outslope are inappropriate treatments for high risk landtypes. Prior to decommissioning a road, we should record the mapped land type and then ground truth. Prescriptions for treatment should account for high risk landtypes, both mapped and observed in the field.

3. **Cross Drain Channels:** Are the cross drain channels associated with surface water drainage or converted (intercepted) groundwater? Do the cross drain channels function to restore natural surface and subsurface drainage patterns? How well are they mimicking natural function while minimizing risk?

   Cross drain channels promote the drainage of saturated hillsides, seeps, natural swales, subsurface water, and other areas that may accumulate water. When monitoring cross drain channels, we note whether they lie in a natural topographic feature such as a draw or swale, we determine whether they primarily drain surface water or intercepted subsurface water (such as wet ditches) and we note any surface erosion or mass wasting associated with the channel. In addition, we note any other problems observed.

   Findings:

   - 12 (36%) in swales (draining primarily surface water),
   - 16 (48%) in seeps (draining primarily converted ground water),
   - 5 (15%) channels were identified as draining both seeps and swales.
   - Mass Movement: 4 incidents (12%), 1 predating road decommissioning activities
     - Most mass movement is small, less than 5 CY
     - One channel (Road 4773) was associated with a landslide
   - Surface Erosion: 17 incidents (52%)
     - Most of the surface erosion in cross drain channels is minor sheet erosion
     - Two channels exhibit rilling
     - Two channels exhibit gullies

   Discussion: Primarily, construction of cross drain channels provides a drain for seeps or saturated areas resulting from road construction. In addition, cross drains provide drainage at minor swales and undefined draws. Forest roads can intercept shallow subsurface flow paths, converting groundwater to surface water. True restoration of the natural slope hydrology would necessitate reconstruction of the pre-existing subsurface flowpaths; however, because of the complexities of flowpath development and extensive alteration of the hillside during road construction, it is unlikely that these flowpaths could be recreated through a simple recontour of fill material. In fact, case studies demonstrate that burying converted subsurface water through recontour or outslope may cause saturation of the reconstructed hillslope resulting in landslides. While, true restoration may not be possible, the most effective treatments should return groundwater exposed as surface flow back to subsurface. The goal is to encourage infiltration of the shallow subsurface water without causing saturation and subsequent landslides.

   We see both mass wasting and surface erosion associated with cross drain channels. The mass failures tend to be associated with saturation, while the surface erosion tends to be associated with concentrated overland flow. Over half (52%) of monitored cross drain channels exhibit some surface erosion. This may be a result of concentrating flow in a feature that never evolved to handle concentrated flow. Revegetation of these channels and reinfiltration of converted subsurface water should continue to be a major emphasis of the road decommissioning program.

Brush blankets can be used in cross drain channels to encourage infiltration of water in boggy or saturated areas. The excavator operator uses the bucket and thumb to transplant existing vegetation from the untreated road or adjacent slopes. Transplants are planted in strips across the constructed channel at 4' to 8' intervals from the top to the bottom of the channel. Vegetation slows surface water movement and breaks up the soil serving the dual purpose of filtering suspended sediment and increasing infiltration. The risk of mass failure is much reduced since the fill is removed and a runoff path is available. Brush blankets have been widely used on decommissioned roads on the Clearwater National Forest since the year 2000. We expect to have some monitoring results for brush blankets in 2004.

Erosion control blankets can also be used to decrease surface erosion in cross drain channels. The blankets can be laid out down the center of the channel perpendicular to the water flow. Unfortunately, our monitoring shows that while erosion control blankets are quite effective at decreasing erosion, they appear to inhibit revegetation. In addition, erosion control blankets can preclude the use of brush blankets and other vegetative techniques.

4. **Revegetation**: Is there sufficient ground cover to control surface erosion? Is there succession of native plant species?

Revegetation goals are twofold: Short-term erosion prevention and long-term conversion to the native vegetation of the slope. The road decommissioning seed mixture is designed to be aggressive in the short term and less persistent over time, promoting native species succession. All disturbed areas are seeded with a non-native seed mix of annuals and non-persistent perennials for short-term erosion prevention and soil amending properties.

During road decommissioning, the excavator transplants clumps of native brush and sod during the treatment of the prism. The excavator operator conserves vegetation growing on the untreated sideslopes as well as on the untreated roadbeds. The excavator operator uses the bucket and thumb to plant the conserved vegetation, including the root mass and surrounding soil, on the treated prism. The operator can also scatter some of the duff layer from the top of the cutslope across the treated road prism. This incorporates organic material on the newly treated slope, recruiting seeds, nutrients, soil microbes and other organisms. In areas of specific need, we plant nursery-grown stock, either trees or shrubs. We also sprig wet areas with willow, cottonwood, dogwood and other species that grow from cuttings.

Methods for monitoring vegetation and ground cover are borrowed from ECODATA (USDA Forest Service, 1992). The point cover method is used to measure the amount of ground cover after decommissioning. Ground cover is important in controlling surface erosion. Most ground cover is in the form of mulch or planted vegetation.

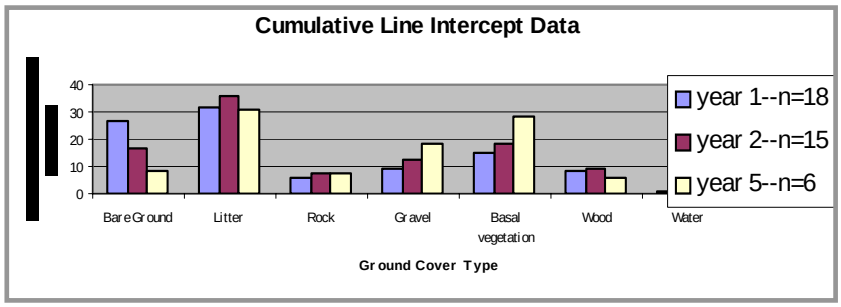


Figure 13. Changes in ground cover type over time on decommissioned road monitoring segments.

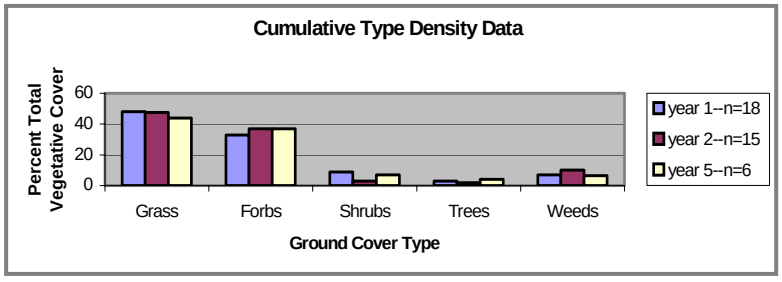


Figure 14. Breakdown of vegetative cover on segments monitored in 2003.

Discussion: On average, the percentage of bare ground on monitoring segments decreased from 26.5 percent to 8.3 percent from the first year after decommissioning to year 5 after decommissioning while the amount of vegetative cover increased from 15 percent to 28.5 percent in the same timeframe (Figure 13). The overall drop in litter and wood after year 0 is probably due to decomposition of straw and native wood mulch (the apparent rise in the amount of litter in year 2 is probably due to differences in sampling techniques). Ground cover appears to be sufficient as little surface erosion was noted (with the exception of erosion in channel structures and, presumably due primarily to concentrated flow).

There appears to be moderate succession to native species, although nonnative grasses are persistent to 5+ years (Figure 14). This trend may be influenced by the fact that a seed mix with more persistent nonnative grasses was used prior to 1999. Due to this, future monitoring may show a trend toward better succession of native species.

5. **Stream Grade Channels:** How much does each channel adjust (degrade/aggrade) over time? Is the size of the bed material increasing (indicating degradation) or decreasing (indicating aggradation) over time?

   Stream grade channels are restored live water crossings, usually where a culvert (metal, log. or slash) was removed. Restoration of channels includes: removal of structure, removal of fill to grade, recontour of adjacent slopes, installation of channel stabilization structures (weirs and bank armor) and revegetation of the area.

   In order to track channel stability and channel adjustment over time, we collect the following information: 1) Channel cross-sections, 2) Longitudinal surveys, and 3) Wolman pebble counts.

   Findings:

   - Nearly all channel cross sections show settlement of six to twelve inches over the first winter (see Figure 16 example).
   - Minor changes (primarily degradation, less aggradation) occur on nearly every cross section from year to year.
   - Longitudinal Surveys indicate some minor changes to the stream channel including small headcuts, establishment of step/pool systems, and minor degradation (see Figure 17 example).
   - Wolman pebble counts indicated an overall increase in D50 of approximately 8.0 millimeters and an overall increase of 26 millimeters at D84 for the average of all pebble counts conducted in year 0 and year 1 of monitoring.

   Discussion: It appears that there is some settling of the entire disturbed surface over the first winter as the snow packs the freshly disturbed soil. This may be due in part to some erosion of the surface material in addition to some recompaction of the surface.

   The cross sections, the profiles and the pebble count all indicate that in the first year, in these freshly disturbed channels, we see a flush of fines and small particles from the channel surface. The changes in the aggregated pebble count indicate scouring of silt and sand size particles. We predict that we will see less change as the channel adjusts then stabilizes.

6. **General Prism Treatments** (recontour, outslope, decompact, abandon): Is the treatment appropriate to the site/landtype where it was used?

   By using data from the road log it is possible to determine at what frequency general prism treatments are applied to decommissioned roads.

Table 18. Road prism treatments by landtype. -- a. Low to Moderate Risk Segments

Road	District	Drainage	Yr Monitored	Template Treatments (in feet)					Landtype
				Abandon	Decompact	Outslope	Recontour	Total	
730 s1	North Fk	Deception	Yr2	0	0	1400	0	1400	32R66
830476	North Fk	Deception	Yr1	0	0	1188	132	1320	31R20
3255B	Palouse	Yellowpine	Yr2	0	0	1640	0	1640	31Q25
5220B	North Fk	Fuzzy	Yr5	0	330	686	304	1320	24S20
73731	Palouse	White Pine	Yr2	0	446	669	0	1115	24Q20-31Q10
75158	Lochsa	Pete King	Yr0	0	0	1128	199	1327	31S20
75181	Lochsa	Walde	Yr5	665	0	0	665	1330	24G10-24S20
6016	North Fk	Washington	Yr5	0	647	237	435	1320	23K20
563 80 / 90	Powell	Legendary Bear	Yr5	528	0	627	165	1320	13A00-13Q20
Total Feet				1193	1423	7575	1900	12092	
Percent Total				10	12	63	16	101	

b. High Risk Segments

Road	District	Drainage	Yr Monitored	Template Treatments (in feet)					Landtype
				Abandon	Decompact	Outslope	Recontour	Total	
75671	Powell	Badger	Yr2	0	0	0	1527	1527	61U26
5619	Powell	Fishing	Yr5	0	515	593	222	1330	61U26
830063	North Fk	Deception	Yr1	0	0	1056	264	1320	61S44
460	Lochsa	Walde	Yr5	0	0	331	998	1329	61S20-31S20
5540	Lochsa	Glade Cr	Yr 6	0	0	1070	251	1320	61S20-31K20
6056	North Fk	Sneak	Yr5	0	611	225	411	1247	61S10
729B	North Fk	Deception	Yr2	0	70	280	1050	1400	61r10-24R00
730 s2	North Fk	Deception	Yr2	0	0	1358	42	1400	61R10
729	North Fk	Comet	Yr3	79	264	542	435	1320	61R10
75669	Powell	Cold Storage	Yr2	0	0	1353	0	1353	61G20
75665 s2	Powell	Wendover	Yr2	0	0	1643	0	1643	61G20
564	Powell	Postoffice	Yr2	44	0	1409	0	1453	61G20
5620B	Powell	Badger	Yr0	0	0	310	1240	1550	61G20
5649	Powell	Parachute	Yr0	0	330	726	264	1320	61G20
75665 s1	Powell	Wendover	Yr2	0	0	1406	0	1406	61G10-61U26
75760	Powell	Postoffice	Yr1	0	0	1195	133	1328	61G10-61U26
250 cm1	North Fk	Orogrande	Yr5	0	356	660	304	1320	60Q20-31Q10
4801	North Fk	Salmon	Yr5	108	0	996	242	1346	50
Total Feet				231	2146	15153	7383	24912	
Percent Total				1	9	61	29	100	

Discussion: General road treatments include recontouring, outsloping, decompacting, and abandonment of roads templates. The intent of the general prism treatment is to restore slope stability and drainage patterns. In order to leave a decommissioned road segment in stable condition, more intensive treatment (more earth moved) is generally necessary on higher risk ground.

Full re-contouring involves reestablishing the natural contours of the hillside, restoring the original topography. Outsloping involves pulling up fills; leaving a 10 - 30 percent cross slope that water can run off. Decompacting or ripping involves reducing compaction to allow for water infiltration and plant growth. Stable sections of roads without channel crossings that are already somewhat outsloped and vegetated may be abandoned. Although recontoured or outsloped sections may also be decompacted, they are recorded only as recontoured or outsloped on the road log.

The road log data summarized in the tables 6a and 6b show that inspectors are requiring more intensive treatment (less abandonment and decompaction; more recontour) on roads on more unstable landtypes, as expected. This is also appropriate to the extent that more effort is invested on higher risk roads.

SUMMARY

The monitoring program on the Clearwater National Forest is designed primarily as a feedback loop to the road decommissioning program to ensure that the goals of the program are being met. The 2003 results indicate that most of the problems with surface erosion and small mass failures are associated with cross drain channels. In the future, we will focus more emphasis on techniques to lessen these problems.

ACKNOWLEDGEMENTS

The Nez Perce Tribe and the Clearwater National Forest joined together in a watershed restoration partnership in 1996. The road decommissioning monitoring program is a part of this partnership. The monitoring crew is made up of employees of both the Forest and the Tribe. Both entities also provide technical support to the program.

ROADS

Item No. 13: Miles of Road Open/Restricted

Frequency of Measurement: Annual
Reporting Period: Five Years

MONITORING ACTION

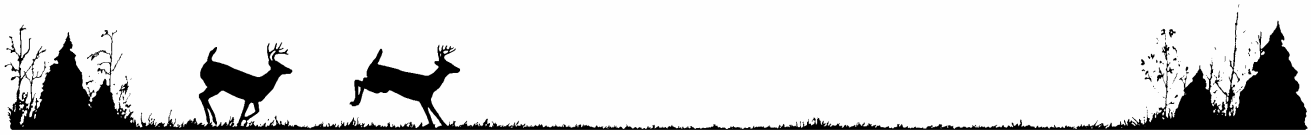
The Forest engineer will annually review total miles of road on the Forest and display the data to show miles of open roads and miles of restricted roads. The restricted road information will be broken down to show roads that are closed yearlong to all vehicle traffic and roads that are restricted for some part of the year.

ACCOMPLISHMENTS/FINDINGS

The Forest development road system on the Clearwater National Forest is made up of roads that vary from narrow single-lane unsurfaced to double-lane paved roads. This system of approximately 4,430 miles provides access to all major areas of the Forest. Road restrictions are a major component in resource protection. Driven by resource needs, including habitat needs of big game and water quality, road restrictions are reviewed annually and revised when necessary to meet the current management situation.

Miles of Restricted and Open Roads

Restricted			Method Of Closure				Open
District	Yearlong (miles)	Seasonal (miles)	Gates	Guardrail	Earthen Barrier	Posted: Sign Only	Year-round, weather permitting
Pierce	360	171	140	69	49	37	533
Palouse	180	411	74	41	71	34	265
North Fork	447	117	67	42	135	24	557
Lochsa	247	40	80	53	45	18	113
Powell	383	82	44	48	129	17	348
TOTAL	**1,617**	**821**	**405**	**253**	**429**	**130**	**1,816**



SCENIC RESOURCES

GOAL

In association with other resource management activities, maintain a natural appearing forest landscape as viewed from designated visual travel corridors, recreation sites, wilderness, high-use recreation areas and administrative areas.

STRATEGY

The Forest landscape architect and District personnel will review proposed management activities; provide input when proposed management activities are located in the viewshed of designated visual travel corridors, recreation sites, wilderness, high use recreation areas and administrative areas; and recommend actions that will meet Forest Plan *scenic integrity objectives* (formerly referred to as Visual Quality Objectives). Management activities will be monitored during implementation and at completion for success in meeting *scenic integrity objectives* (*SIOs*).

Item No. 3: Visual Quality Objectives

Frequency of Measurement: Annual
Reporting Period: Five Years

MONITORING ACTION

The Forest landscape architect, assisted by District personnel reviewed all of the current year's completed timber harvesting activities to determine if SIOs were met for FY03. Other management activities monitored for their effects on the scenic resource were recreation development, fire effects and road decommissioning projects. The monitoring process included field observations of selected management activities and an office review of project reports.

ACCOMPLISHMENTS/FINDINGS

The Forest landscape architect and District personnel provided input to District Rangers by serving on interdisciplinary teams (IDT) for timber harvesting proposals, recreation projects, watershed analysis and prescribed fire proposals. Recommendations were provided for these projects that outlined practices, which would aid the Districts in meeting SIOs on several proposed management actions. These activities will continue to be monitored during the implementation phase of the project.

A total of two timber sales and seven small salvage sales were completed and closed out in FY03.

> Top of the World Timber Sale is located on the Palouse Ranger District. The timber sale area is adjacent to the access road to Elk Creek Falls Trailhead, a heavily used recreation area, and to State Highway 3. The sale was designed to use harvest methods that would minimize visual effects within these important visual corridors. Screening was retained where necessary and skidding corridors were carefully treated to reduce the visual effects of the harvest activities. The completed timber sale met or exceeded the SIO of *Moderate (VQO of Partial Retention).*
>
> Rascal Ridge Timber Sale is located on the Powell Ranger District. It is adjacent to a low use travel corridor and has a SIO of Very Low (VQO of Maximum Modification). It met this Scenic Integrity Objective.

There were seven salvage sales including 5201 Salvage, 5028 Salvage, Austin Salvage, Lookyhere Salvage, Yellow Pine Restoration, Johnson Creek Salvage and Wagner Gulch Salvage. Most critical were the Johnson Salvage and Wagner Gulch Salvage which are located adjacent to heavily used recreation corridors. All of the salvage sales met or exceeded the SIO for the area which ranged from *Moderate (VQO of Partial Retention)* for the Wagner Gulch area to *Very Low (VQO of Maximum Modification)* for the 5201 and 5028 Salvage.

There were several prescribed fires on the Clearwater National Forest in FY03. Of significance was a prescribed burn along the U.S. Highway 12 corridor near Syringa on the Lochsa Ranger District. This activity was designed to reduce fire hazard and to improve habitat. The burn reduced the brush undergrowth, removed a few trees and darkened the bark on some, but by spring the effects were very minimal and the corridor appears natural, with no long term negative visual effects. Additional prescribed fires were completed, but all were small and in areas outside of critical viewing corridors. There was no significant impact on the scenic integrity from any critical viewpoints from these activities.

Another area of concern in protection of the scenic quality of forested landscape is in road management. Currently, the Forest is completing a number of road decommissioning projects all of which were outside critical visual travel corridors this year. With most road decommissioning projects, there is a short-term effect on the visual condition during the period when excavation takes place, but vegetative cover returns within one year and a positive effect on the scenic quality of an area is obvious within five years.

Additional information regarding effects on scenery of other FY03 management activities is available at the Supervisor's Office.

Soil and Water

Goal

Manage watersheds and soil resources to maintain Forest Plan water quality standards that meet or exceed State and Federal standards. Protect all beneficial uses of water: fisheries, water-based recreation and public supplies. Ensure that soil productivity and stability are maintained.

Strategy

Provide input and direction during management activity planning and implementation. Establish monitoring stations to determine the impacts of past and current management activities. Monitor the application and effectiveness of *Best Management Practices* (BMPs) during and after project implementation. Maintain an inventory of areas needing soil and water restoration. Restoration will be completed as funding allows. Develop cost-effective methods of evaluating sources of soil-productivity damage caused by compaction, displacement and severe burning.

Item No. 8 Water Quality and Stream Condition for Fisheries and Non-Fisheries Beneficial Uses

Frequency of Measurement: Annual
Reporting Period: Annual

Monitoring Action (Non-Fisheries)

This section deals with water quality and stream conditions for non-fisheries beneficial uses. To read about water quality and stream conditions for fisheries, please refer to the FISHERIES section.

The Forest hydrologist will coordinate with District personnel to establish water quality monitoring stations. These stations will collect data so as to monitor water quality to determine trends or impacts of past and/or current road construction, timber harvesting and mining activities.

Accomplishments/Findings

The primary emphasis of Forest water quality monitoring has been to determine the effects of sediment and water yields from timber production and road construction on water quality and fisheries. Baseline monitoring and project water quality monitoring of streams has occurred in the following way. Baseline stations have been located at the mouths of large drainages, generally larger than five square miles. Water level recorders and automatic water samplers have been installed for continuous collection of information. Water level recorders track seasonal fluctuation of stream water levels. This information is calibrated to determine stream discharge. Automatic water samplers have been installed at most baseline stations to collect suspended sediment samples at predetermined intervals.

Project stations have been located downstream from management activities. Control stations (no activity) generally have been established upstream from activities, in a different but similar watershed, or at the same project station but prior to the activity. Project sampling allows the quantification of site-specific impacts, primarily sediment yield from a given activity. Data is collected at each project station with automatic water samplers. Parameters measured are stream flow, suspended sediment, turbidity, and instantaneous water level. Water level recorders and automatic samplers are normally in operation from March through September.

Table 19 shows the Forest's monitoring network by major drainage basin and watershed. The number of years of record and the type of monitoring station is also presented. Additional water temperature monitoring was done during the summer months at approximately 300 stations. Contact the Forest fisheries biologist for water temperature information, or the hydrologist for sediment, turbidity, stream flow, precipitation or SNOTEL information.

Table 19. Water Quality Monitoring Network

Basin	Watershed - Location	Years	Data Type
Palouse River (17060108)	Palouse River (Moscow Mountain)	46	SNOTEL, Precipitation (NRCS)
	Palouse River (Above Laird Park)	19	Suspended Sediment, Discharge
Lochsa River (17060303)	Lochsa River (Near Lowell)	77	Discharge (USGS)
	Pete King Creek (Walde Lookout)	37	Annual Precipitation
	Pete King Creek (Mouth)	28	Discharge, Suspended Sediment
	Canyon Creek (Mouth)	12	Discharge, Suspended Sediment
	Deadman Creek (Mouth)	16	Discharge, Suspended Sediment
	Fish Creek (Mouth)	36	Discharge, Suspended Sediment
	Badger Creek (Mouth)	8	Discharge, Suspended Sediment
	Papoose Creek (Mouth)	8	Discharge, Suspended Sediment
	Crooked Fork (Crooked Fork)	38	Snow Course (FS and NRCS)
	Crooked Fork (Lolo Pass)	47	SNOTEL, Precipitation (NRCS)
	White Sand Creek (Savage Pass)	66	SNOTEL, Precipitation (NRCS)
Clearwater River (17060306)	Potlatch River (Sherwin)	46	SNOTEL, Precipitation (NRCS)
	Potlatch River (Above Little Boulder Creek)	9	Discharge, Suspended Sediment
	Orofino Creek (Pierce R.S.)	52	Snow Course (FS and NRCS)
	Orofino Creek (Shanghi Summit)	65	SNOTEL, Precipitation (NRCS)
	Lolo Creek (Mouth)	24	Discharge (USGS)
	Lolo Creek (Hemlock Butte)	43	SNOTEL, Precipitation (NRCS)
	Lolo (Sec 6)	22	Discharge, Suspended and Bedload Sediment
	Eldorado Creek (Below Linda Creek)	13	Discharge, Suspended Sediment
Upper North Fork Clearwater River (17060307)	North Fork of the Clearwater River (Aquarius Bridge)	37	Discharge (USGS)
	Quartz Creek (Mouth)	20	Discharge, Suspended Sediment
	Quartz Creek (Indian Henry Ridge)	4	Annual Precipitation
	Cold Springs Creek (Mouth)	14	Discharge, Suspended Sediment
	Cold Springs Creek (Cool Creek)	18	SNOTEL, Precipitation (NRCS)
	Long Creek (Hoodoo Basin)[34]	36	SNOTEL, Precipitation (NRCS)
	Cayuse Creek (Cayuse Landing)	37	Annual Precipitation
	Weitas Creek (Doris Butte)	33	Annual Precipitation
	Weitas Creek (Creator Meadows)	40	SNOTEL, Precipitation (NRCS)
Lower North Fork Clearwater River (17060308)	Beaver Creek (Beaver Divide)	33	Annual Precipitation
	Elk Creek (Elk Butte)	40	SNOTEL, Precipitation (NRCS)
	Elk Creek (Road 1705)	23	Discharge, Suspended and Bedload Sediment

[34] Site is located in Montana.

The Forest processed 2,137 suspended sediment, 2,140 turbidity, and 26 bedload samples in 2003. Bedload sediment samples were collected to determine the proportion of sediment moving as suspended and bedload in the watershed. Total sediment load can be determined for the watershed with these measurements. This information is useful for determining the effects of activities and calibrating watershed models. Stream discharge and suspended sediment data is summarized in Table 21 and is available from the Forest hydrologist at the Supervisor's Office.

Table 20 displays the period of record, mean daily discharge through 2002, 2003 mean daily discharge, mean daily suspended sediment through 2002, and mean daily-suspended sediment in 2003. Mean daily discharge is calculated from 12 flow measurements per day and mean daily suspended sediment is a composite of four sediment samples.

Table 20. Water Quality Monitoring Results.

Station	Period Of Record Used In Analysis	Mean Daily Discharge (Cfs) Through 2002	2003 Mean Daily Discharge (Cfs)	Mean Daily Suspended Sediment Through 2002 (Mg/L)	2003 Mean Daily Suspended Sediment (Mg/L)
Palouse River (Above Laird Park)	1986-2003	95.6	71.1	22.5	5.8
Pete King Creek (Mouth)	1976-2003	45.1	39.3	19.8	6.5
Canyon Creek (Mouth)	1992-2003	45.1	41.9	11.8	3.9
Deadman Creek (Mouth)	1988-2003	43.1	35.7	12.8	3.4
Fish Creek (Mouth)	1958-1966 1976-2003	219	228	9.5[35]	2.9
Badger Creek (Mouth)	1983-1984 1988-1989 2001-2003	17.4	9.3	3.6	5.6
Papoose Creek (Mouth)	1996-2003	64.8	50.4	27.5	Station Discontinued
Potlatch River (Above Little Boulder Creek))	1995-2003	189	122	8.9	4.0
Lolo Creek (Mouth)	1980-2003	326	351	35.3	Station Discontinued
Lolo Creek (Sec 6)	1982-2003	94.3	104	11.7	4.1
Eldorado Creek (Below Linda Creek)	1991-2003	61.9	72.3	8.1	Station Discontinued
Quartz Creek (Mouth)	1982 1984-2003	151	142	12.0	3.7
Cold Springs Creek (Mouth)	1983-1992 2000-2003	33.8	33.3	5.8	3.3
Elk Creek (Road 1705)	1982-2003	79.7	61.5	10.3	5.5

Suspended sediment measurements were dropped at several stations in 2003 due to a decrease in funding. These stations include, Squaw Creek (both discharge and suspended sediment), Papoose Creek, Lolo Creek at mouth, and Eldorado Creek. A Special study at two sites on the Potlatch River, above and below Sheep Creek, was also discontinued. Generally, monitoring of suspended sediment has shown a recovery trend forest-wide from past management practices. Of the 11 water quality stations where suspended sediment measurements were previously collected, only one had sediment levels higher in 2003 than the mean of all previous years. This station was Badger Creek, where the Nez Perce Tribe and Clearwater National Forest are actively obliterating roads. This short-term, small increase in suspended sediment was expected. The road decommissioning should produce a long-term decrease in sediment as the risk of road initiated landslides is reduced. Forest-wide, suspended sediment concentrations tended to be less in 2003 than in the 1980s and 1990s. Much of the recovery is believed to be the result of less land disturbing activities, better

[35] Suspended sediment in Fish Creek is representative of a granitic geology watershed with little or no timber harvesting and roads.

application of BMPs, PACFISH and INFISH buffers, road decommissioning, and better road location and design.

Turbidity has been monitored at 15 to 17 stations before 1991 and after 1997. Results of turbidity monitoring are presented in Table 21.

Table 21. Turbidity Monitoring Results - Period of record, mean daily turbidity through 2002, maximum turbidity period of record, mean daily turbidity in 2003, and maximum turbidity in 2003.

Station	Period of Record	Mean Daily Turbidity (ntu) Through 2002	Maximum Turbidity (ntu) Period of Record	Mean Daily Turbidity (ntu) 2003	Maximum Turbidity (ntu) 2003
Palouse River (Above Laird Park)	1999-2003	4.4	96.7	5.0	32.4
Pete King Creek (Mouth)	1978-1990 1998-2003	3.5	49.9	2.2	30.8
Canyon Creek (Mouth)	1998-2003	2.1	27.0	1.5	9.0
Deadman Creek (Mouth)	1988-1990 1998-2003	2.5	46.9	1.7	7.5
Fish Creek (Mouth)	1998-2003	1.9	26.6	1.4	7.2
Badger Creek (Mouth)	1983-1984 1988-1989 2001-2003	1.2	14.0	0.8	4.4
Potlatch River (Above Little Boulder Creek)	1998-2003	3.8	38.1	2.9	13.4
Lolo Creek (Sec 6)	1985-1988 1990, 1998-2003	3.0	19.0	1.8	7.6
Quartz Creek (Mouth)	1988-1990 1998-2003	2.2	60.5	1.6	7.4
Cold Springs Creek (Mouth)	1983-1986 2000-2003	1.5	17.4	0.9	3.7
Elk Creek (Road 1705)	1982-1987 1990 1998-2003	2.6	87.0	2.8	24.7

In Idaho Water Quality and Waste Treatment (IDAPA 58.01.02) turbidity standards have been set as follows:

> "Turbidity, below any applicable mixing zone set by the Department, shall not exceed background turbidity by more than fifty NTU instantaneously or more than twenty-five NTU for more than ten consecutive days."

At the 11 Clearwater National Forest water quality monitoring stations, 2,140 turbidity samples were collected and analyzed in 2003. All samples meet the above criteria.

Elk Creek Suspended and Bedload Sediment: A total of 152 samples of bedload have been collected at the Elk Creek gaging station between 1978 and 2000. Bedload varied from a high of 11.6%, to a low of 0.0% of the total sediment load in the year 2003. Mean bedload for 2003, based on 15 samples was 48 pounds per day, or 3.5% of the total sediment load. Mean bedload for the period of record was 269 pounds per day, or 6.4% of the total sediment load. In recent years (1997-2003), bedload seems to be declining from historic (1980-1996) averages. This may be due to improving channel substrate conditions, watershed recovery from past landslide and activities and, and application of best management practices.

Table 22. Elk Creek Suspended and Bedload Sediment Data for 1978 through 2003. A comparison of discharge, depth integrated suspended sediment, and bedload sediment.

DATE	Q – cfs	Suspended Sediment Lbs/day	% Suspended Sediment	Bedload Lbs/day	% Bedload	Total Sediment Lbs/day
Mean 1978-1991	84.1 cfs	3,660 Lbs/day	87.1%	303 Lbs/day	12.9%	3,965 Lbs/day
Mean 1997	340 cfs	21,500 Lbs/day	97.9%	451 Lbs/Day	2.1%	21,962 Lbs/day
Mean 1998	97.0 cfs	1,360 Lbs/day	93.7%	92.0 Lbs/Day	6.3%	1,452 Lbs/day
Mean 1999	157 cfs	3,750 Lbs/day	90.4%	294 Lbs/day	9.6%	4,045 Lbs/day
Mean 2000	178 cfs	2,890 Lbs/day	80.6%	697 Lbs/day	19.4%	3,583 Lbs/day
Mean 2001	81.1 cfs	692 Lbs/day	94.4%	41.0 Lbs/day	5.6%	733 Lbs/day
Mean 2002	191 cfs	2,900 Lbs/day	93.2%	48.2 Lbs/day	6.8%	2,940 Lbs/day
Mean 2003	104 cfs	1,344 Lbs/day	96.5%	47.8 Lbs/day	3.5%	1,392 Lbs/day
Mean Period of Record	110 cfs	3,936 Lbs/day	93.6%	269 Lbs/day	6.4%	4,204 Lbs/day

Lolo Creek Suspended and Bedload Sediment: A total of 152 bedload samples have been collected and analyzed at Lolo Creek between 1980 and 2003 (Table 23). Bedload varied from a high of 9.1% to a low of 0.4% of the total sediment load in the year 2003. Mean bedload for 2003, based on 11 samples was 113 pounds per day, or 2.3% of the total sediment load. Mean bedload for the period of record was 2,049 pounds per day, or 18.4% of the total sediment load. In recent years (1998-2003), bedload seems to be declining from historic (1980-1997) averages. This may be due to improving channel substrate conditions, watershed recovery from past activities, and application of best management practices.

Table 23. Lolo Creek Suspended and Bedload Sediment Data for 1980 Through 2003. A comparison of discharge, depth integrated suspended sediment, and bedload sediment.

Date	Q – cfs	Suspended Sediment Lbs/day	% Suspended Sediment	Bedload Lbs/day	% Bedload	Total Sediment Lbs/day
Mean 1980-1997	164 cfs	10,600 Lbs/day	78.9%	2,840 Lbs/day	21.1%	13,471 Lbs/day
Mean 1998	144 cfs	3,220 Lbs/day	97.0%	96.0 Lbs/Day	3.0%	3,319 Lbs/day
Mean 1999	243 cfs	10,800 Lbs/day	98.0%	159 Lbs/day	2.0%	10,986 Lbs/day
Mean 2000	226 cfs	6,560 Lbs/day	86.0%	1,070 Lbs/day	14.0%	7,624 Lbs/day
Mean 2001	212 cfs	5,410 Lbs/day	96.5%	196 Lbs/day	3.5%	5,604 Lbs/day
Mean 2002	306 cfs	10,300 Lbs/day	97.4%	171 Lbs/day	2.4%	10,500 Lbs/day
Mean 2003	205 cfs	4,497 Lbs/day	97.7%	113 Lbs/day	2.3%	4,610 Lbs/day
Mean Period of Record	174 cfs	9,101 Lbs/day	81.6%	2,049 Lbs/day	18.4%	11,150 Lbs/day

2003 Precipitation Measurements: The Forest maintains five yearly catch precipitation stations for the purpose of assisting the State Climatologist in developing isohyetal maps (maps of equal rainfall areas). The gages are located at Beaver Divide, Cayuse Landing, Doris Creek, Walde Lookout, and Indian Henry Ridge. Precipitation in the 2003 water year (October 1, 2002 – September 30, 2003) was slightly above mean for the period and slightly below the 10-year mean. Records go back to the 1960's in most cases.

Beaver Divide received 50.76 inches in 2003, or 97 percent of the period of record average; Cayuse Landing received 38.31 inches, or 97 percent of average; Doris Creek received 45.62 inches, or 107 percent of average; Walde Lookout received 53.37 inches, or 112 percent of average; and Indian Henry received 54.60 inches, or 101 percent of average. The mean precipitation for the five stations in 2003 was 48.53 inches, or 107 percent of the period of record average and 97 percent of the 10-year mean. Mean precipitation at all stations in the last ten years has been 49.99 inches, or 110 percent of the period of record mean of 45.36 inches.

Frequency of Measurement: Annual
Reporting Period: Five Years

MONITORING ACTION

The Forest hydrologist will coordinate with employees, including timber sale administrators, engineering representatives, contracting officer representatives, the Forest ecologist, the soil scientist, and fire management officers to monitor all projects for compliance with *Best Management Practices* (BMPs). BMPs are actions taken to minimize negative, detrimental or undesirable effects that may result from implementation of management activities and are defined in the Idaho Forest Practices Act. The primary objective of BMPs is the maintenance of water quality.

In addition, the Forest hydrologist will monitor 10% of timber sale units for BMP effectiveness. The Forest soil scientist/ecologist will monitor 100% of all new road construction for BMP implementation and effectiveness. The sale administrator and road contracting officers are responsible for BMP implementation.

ACCOMPLISHMENTS/FINDINGS

The Forest did not conduct an audit of the Idaho Forest Practices Act BMPs in 2003 because of commitments to the fires on the Powell Ranger District. In its place, we have chosen to analyze all the BMP audits from 1990 through 2002.

Table 24 summarizes the 1990-2002 Forest Practices Act Internal Audit and includes the following information by column.

1. FPA# refers to the rule number in Rules Pertaining to the Idaho Forest Practices Act (Title 38, Chapter 13, Idaho Code);
2. description of the FPA rule;
3. the number of BMPs that were observed Forest wide;
4. the number of BMP observations that were in compliance with the FPA rules (Implementation);
5. the percent of BMP compliance;
6. the number of occurrences where sediment or other pollutants were not delivered to a stream or draw (effectiveness); and
7. the percent of BMP effectiveness.

Table 24. 1990-2002 Forest Practices Act Internal Audit.

FPA#	Description	# of Checks	Implemented	% Implemented	Effective	% Effective
030	TIMBER HARVEST					
030.03	SOIL PROTECTION					
a.	Skidding Erosion	75	74	98.7	74	98.7
b.	30% Limitation	70	70	100	70	100
c.1.	Number of Skid Trails	69	67	97.1	69	100
c.2.	Tractor Size Appropriate	72	71	98.6	72	100
d.	Cable Yarding	120	120	100	120	100
030.04	LOCATION LANDINGS/SKIDS					
a.	Locate Landings and Skid Trails out of SPZ	142	142	100	142	100
b.	Size of Landings	150	148	98.7	148	98.7
c.	Landing Fill Stabilization	147	145	98.6	145	98.6
030.05	DRAINAGE SYSTEM					
a.	Drainage Skid Trails	72	72	100	68	94.4
b.	Drainage Landings	144	141	97.9	141	97.9

FPA#	Description	# of Checks	Implemented	% Implemented	Effective	% Effective
030.06	TREATMENT OF WASTE MATERIALS					
a.	Slash out of Class I Streams	45	45	100	45	100
b.	Slash out of Class II Streams	121	119	98.3	121	100
c.	Soil out of SPZ	134	134	100	132	98.5
d.	Oil, Fuel out of SPZ	134	133	99.3	133	99.3
030.07	STREAM PROTECTION					
a.	Lakes - Riparian Management Px					
b.	Skidding, Stream Crossing SPZ	40	40	100	40	100
c.	Skidding in SPZ	9	9	100	9	100
d.	Cable Stream Crossing	88	88	100	87	100
e.1.	Hardwoods, Shrubs, Grasses, Rocks - Shade	47	47	100	47	100
e.2.	Class 1 - 75% Current Shade	49	40	81.6	39	79.6
e.3.	Logging of SPZ	111	107	96.4	105	94.6
e.4-8.	Large Organic Debris	48	47	97.9	47	97.9
030.08	MAINTENANCE OF RELATED VALUES					
c.	Wet Areas	113	112	99.1	113	100
040	ROAD CONSTRUCTION AND MAINTENANCE					
040.02	SPECIFICATIONS AND PLANS					
a.	Minimize Road Construction in SPZ	65	64	98.5	64	98.5
b.1.	Roads No Wider Than Necessary	45	44	97.8	45	100
b.2.	Minimize Cuts and Fills	68	68	100	67	98.5
c.	Disposal on Geologically Stable Areas	38	38	100	38	100
d.	Drainage Planned in Road	75	71	94.7	70	93.3
e.	Relief Culverts and Ditches	67	64	95.5	66	98.5
f.1.	50 Year Culvert Design	20	20	100	20	100
f.2.	Relief Culvert Size	37	37	100	37	100
g.1.	Plan Minimum Stream Crossings	73	71	97.3	69	95.4
g.2.	Plan Culvert Fish Passage	1	1	100	1	100
h.	Variance Procedure Followed					
040.03	ROAD CONSTRUCTION					
a.	Construction Followed Plan	54	54	100	54	100
b.	Debris Cleared From Drainageways	37	37	100	37	100
c.	Stabilize Exposed Areas	57	57	100	56	98.2
d.	Compact and Minimize Soft Material in Fills	59	59	100	58	98.3
e.	Stream Alteration Act	9	9	100	9	100
f.	Remove Berms on Outsloped Roads	70	70	100	70	100
g.	Quarry Drainage	2	2	100	2	100
h.1.	Minimize Erosion of Embankments at Culverts	61	60	98.4	60	98.4
h.2.	Install Drainage Prior to Runoff	34	34	100	34	100
h.3.	Relief Culvert Gradient	45	45	100	45	100
i.	Wet Weather Delays	17	17	100	17	100
040.04	ROAD MAINTENANCE					
a.	Sidecast Out of Streams	94	91	96.8	91	96.8
b.	Stabilize Slumps and Slides	32	30	93.8	26	81.3
c.	ACTIVE ROADS					
c.1.	Culvert and Ditch Function	67	61	91.0	65	97.0
c.2.	Crown and Waterbar	63	62	98.4	62	98.4

FPA#	Description	# of Checks	Implemented	% Implemented	Effective	% Effective
c.3.	Minimize Road Surface Erosion	59	57	96.6	59	100
c.4.	Oil Out of Streams	59	59	100	59	100
d.	INACTIVE ROADS					
d.1.	Culverts and Ditches Cleaned	56	52	92.9	48	85.7
d.2.	Road Closed	59	59	100	59	100
e.	ABANDON ROADS					
e.1.	Outslope, Waterbar, Seed	36	33	91.7	32	88.9
e.2.	Ditches Cleaned	12	12	100	12	100
e.3.	Road Closed	36	30	83.3	36	100
e.4.	Bridges and Culverts Removed	11	10	90.9	10	90.9
040.05	WINTER OPERATIONS					
a.	Adequate Cross Drainage	3	3	100	3	100
b.	Road Maintenance	3	3	100	3	100
	SUMMARY	**3,524**	**3,455**	**98.0%**	**3,447**	**97.8%**

There were 3,524 BMP observations have been conducted in the last 14 years with overall implementation and effectiveness rates of 98.0 and 97.8 percent, respectively. Sediment was observed delivered to streams 77 times during the 3,524 BMP observations. Many BMPs continue to have a 100 percent implementation and effectiveness rate. The following BMP observations warrant additional discussion:

TIMBER HARVEST

030.03.d and 030.07.d: Cable Yarding Systems. Over the past 14 years, the BMP audits have shown that cable yarding systems provide an effective way to remove timber without discharging sediment into streams. Of the 120 observations taken of cable logging units, sediment entering streams has only been observed once. That observation occurred at a cable stream crossing. Where slopes allow the practical use of cable yarding systems, we can expect a continued high rate of BMP implementation and effectiveness.

030.07.e2: Current Shade. As shown in Table 25, overall BMP implementation and effectiveness rates for providing shade have been rather poor on the Clearwater National Forest. However, the last shade effectiveness problem was observed in 1998, on the French Fidelity Timber Sale that was planned in the late 1980s, before INFISH Riparian Habitat Conservation Areas were applied. A 75 foot buffer was designed into Unit 19, however timber blow down occurred lowering shade below 75 percent. There have been no implementation or effectiveness problems observed with riparian buffers since PACFISH and INFISH RHCAs were designed into harvest units.

ROAD MAINTENANCE: Although overall BMP implementation and effectiveness rates have been near 99 percent in recent years, road maintenance is the area where most noncompliance observations occur. This, we believe, is because the Forest has too many roads and insufficient funding to maintain them.

040.04.b: Stabilize Slumps and Slides. Over the years, 32 slumps and slides have been observed on roads during BMP audits with 30 of these corrected and six delivering sediment to streams. The problems seemed to be associated with inadequate Forest resources to cover all the road maintenance needs.

040.04.d1: Culverts and Ditches Cleaned on Inactive Roads. Fifty-six BMP observations of culvert and ditch function have occurred with four non-compliances and eight observances of sediment entering streams. Effectiveness rate is 85.7 percent. These culverts and ditches are on closed or gated roads that often receive little or no maintenance until problems are observed.

040.04.e1: Outslope, Water-bar, Seed and 040.04.e3: Road Closed on Abandon Roads. Abandon roads are generally temporary roads that should be closed, obliterated or outsloped, water-barred, and seeded so the road needs no further maintenance and will not erode

Thirty-six BMP observations of road outsloping, water-barring, and seeding have occurred with three non-compliances and four observances of sediment entering streams. Effectiveness rate is 88.9 percent. On

these 36 roads, 30 were observed to be open, a non-compliance of the BMP. It appeared that the roads often received proper erosion control and closure by the sale administrator, but were opened for site prep and tree planting. It appeared that tree planters who open closed roads seldom had sufficient equipment to replace waterbars or blockades after their project was complete. This is a Forest-wide problem that needs to be addressed.

Item No. 11 – Site Productivity

Frequency of Measurement: Annual
Reporting Period: Five Years

MONITORING ACTION

The Forest Soil Scientist will coordinate with District personnel to monitor soil conditions for compliance with Forest Plan and Regional Standards. Monitoring focuses on the impact of management actions on the soil resource. Specifically, the detrimental soil disturbances reviewed include: compaction, displacement, rutting, severe burning, surface erosion, loss of surface organic matter, and soil mass movement. Monitoring for FY02 and FY03 focused on assessing impacts of past management actions in proposed treatment units in new projects. In addition, reviews were conducted in BAER (burned area emergency response) projects for soil impacts caused by wildfires.

ACCOMPLISHMENTS/FINDINGS

The primary emphasis of site productivity monitoring has been to ensure that site productivity is being maintained by limiting detrimental soil disturbances to less than 15% of activity areas as specified in the Clearwater Forest Plan and the Northern Region Soil Quality Monitoring Supplement ((FSM 2500-99-1). Soil monitoring was conducted in five proposed projects in FY02 and FY03: North Lochsa Face, Middle Black, Dog Marquette, White/White, and Brick Trout.

In each project area, on-the-ground field soil reviews were conducted in each proposed treatment unit (with past management actions) to assess the areal extent of detrimental soil disturbances associated with those past actions. Examination of landtype maps, aerial photos, and project maps was used to determine areas of likely soil impact. The far right column below shows the monitoring results for each project area:

Table 25. Areal Extent of Detrimental Soil Impacts within Proposed North Lochsa Face Treatment Units (Lochsa District).

Unit	Alts Present	Previous Treatment Type and Year[36]	Proposed Activity	Proposed Yarding Method(s)[37]	Primary Landtype(s)	% of Unit with Previous Detrimental Soil Impacts
25	All	SALV-98	RG	T	22K45	1.5%
26	All	SWSC-71 SALV-98	RG	T	22K45 24K45	8%
28	All	SALV-74,95	RG	T	22K45 24K45	5%
29	All	SALV-74,97,98 STFC-98	RG	S	31K20 61S20	2.5%
30	All	SALV-79,98	RG	S	61S20 31K20	1%
38	All	SALV-77	RG	S/T	24G45 24G20	12%

[36] Previous Treatment and Proposed Activity Type Codes: CCR=clearcut with reserves, CT=commercial thinning, LIB=liberation cutting, PCT=pre-commercial thinning, RG=regeneration harvest, SALV=sanitation/salvage, SCC=stand clearcut, ST=seed tree harvest, STFC=seed tree final cut, STSC=seed tree seed cut, SWFC=shelterwood final cut, SWPC=shelterwood preparatory cut, SWRC=shelterwood removal cut, SWSC=shelterwood seed cut, UB=underburn.

[37] Yarding Method Codes: H=helicopter, N=none or prescribed burn, S=skyline, T=tractor.

Unit	Alts Present	Previous Treatment Type and Year[36]	Proposed Activity	Proposed Yarding Method(s)[37]	Primary Landtype(s)	% of Unit with Previous Detrimental Soil Impacts
43[38]	2,3,3a,6	SCC-96	RG	H	61S26 61U31	0%
46	All	SALV-95	RG	H	61S10	<1%
48	All	SALV-95,96	RG	S	31S20 24S10 24A01	3%
50	All	SALV-98	ST	T	22K45	<1%
52	All	SWRC-73, SWFC-90	ST	S	31K10 24K10	5%
56	2,3,3a,4,5	SALV-97,98 SCC-89,93	ST	S	31G20 22K00	1%
59	All	SALV-98	RG	T	31K20 24K20 24K45	<1%
60	All	SALV-97	ST	T	61S20 61S10 24S20	2.5%
61	All	SALV-99	ST	S/T	24K10 22K00	1%
66	All	SALV-98 CCR-90	ST	S/T	24K20 22K00	1%
68	All	SALV-93	ST	T	61S26 31S20	2%
69	2,3,3a,4,5	SALV-99	ST	T	24G20	2%
70	2,3,3a,4,5	SALV-83	ST	T	22K00	1%
71	2,3,3a,4,5	SALV-83 CCR-94	ST	S	31G10 61G20	1.5%
74	All	SALV-96	ST	S	61S26 61G20	1%
84	All	SALV-95	ST	S	31S10 63S26	3.5%
85	All	SALV-95	ST	T	24S10	2%
89[1]	All	CCR-99	CT	S	61S26 31S20	0%
101	All	SWSC-71	PCT	N	24G95 22K45	3%
102	All	SCC-66	PCT	N	22K00	18%
103	All	SCC-65	PCT	N	22K00	12%
104	All	SCC-73	PCT	N	22K00	18%
105	All	SCC-78	PCT	N	22K00	18%
106	All	STSC-77 STFC-99	PCT	N	22K00	15%
107	All	SCC-72	PCT	N	24G20 22K00 24G10	5%
109	All	SALV-77	SALV	S	50 24G20 61G20 24G10	1%
184	2,3a,4,5,6	SALV-95	RG	T	24G20 31K20	<1%

[38] These units are listed as having previous activities, but the portions with previous actions will be excluded since they are not in need of treatment at this time.

Unit	Alts Present	Previous Treatment Type and Year[36]	Proposed Activity	Proposed Yarding Method(s)[37]	Primary Landtype(s)	% of Unit with Previous Detrimental Soil Impacts
232	All	CT-86	CT	S	24S20 22G00	8%
247	All	SALV-95	UB	N	61S26	1%
248	All	SALV-95	UB	N	31S`10	<1%
253	All	SALV-77	SALV	S/T	24G45 31G20 24G10	1.5%
255	2,3a,4,5,6	SALV-67	RG	S	31S20 31S45	3%
256	2,3a,4,5,6	SALV-68	RG	S	31S20 31S45	4%
261	All	SCC-79	PCT	N	24G10 31G10	8%
262	All	SCC-77	PCT	N	24G20 22G00	20%
263	All	LIB-76	PCT	N	24S10 31S10 24S20	12%
264	All	LIB-76	PCT	N	31S10 61S10 24S10	15%
265	All	LIB-67	PCT	N	22S00 24S10	8%
266	All	LIB-76	PCT	N	22A01	10%
269	All	SWPC-60 SWFC-77	PCT	N	22A01 24A01	12%
271	All	LIB-60	PCT	N	24A01 22A01	5%
272	All	SCC-64 LIB-74	PCT	N	24S10 31Q20	6%

Table 26. Areal Extent of Detrimental Soil Impacts within Proposed Middle-Black Treatment Units (North Fork District).

Area	Alts Present	Previous Treatment Type and Year	Proposed Treatment Type	Proposed Yarding Method (s)	Primary Land-type(s)	% of Unit with Previous Detrimental Soil Impacts
1	2,3,4,5	SALV-98	TH	H	61S20 61S26	<1 %
2	2,3,4,5	SCC-86	TH	H	61S26 50	0%[39]
24	2,3,4,5	SCC-87	TH	S	31S20	0%[3]
68	2,3,4,5	SCC-67	RSBP	N	61U26	15%
69	2,3,4,5	SCC-67 SWPC-83	TH	S	61U26	2.5%
70	2,3,4,5	SCC-77	RSBP	N	32U66 61U26 36U92	8%
71	2,3,4,5	SCC-77	RSBP	N	31G10	10%
80	2,3,4,5	SALV-72 STSC-88	BSP	N	31R10	20%
81	2,3,4,5	SALV-72 STSC-85 SWPC-87	BSP	N	31R10 61R10	8%

[39] Past impact area excluded from proposed treatment unit.

Area	Alts Present	Previous Treatment Type and Year	Proposed Treatment Type	Proposed Yarding Method (s)	Primary Land-type(s)	% of Unit with Previous Detrimental Soil Impacts
82	2,3,4,5	SALV-73,74,83 SWSC-78,85 CCR-88 STSC-85 SWPC-87 SWFC-78 PCC-88	BSP	N	31R10 61R10	10%
83	2,3,4,5	SALV-73,83 PCC-88 SWPC-87 STSC-85	BSP	N	31R10	13%
84	2,3,4,5	SCC-77 SWPC-80	TH	H/S	61R10	2%
85	2,3,4,5	SCC-77 SWPC-80	TH	H/S	61R10	2%
89	2,3,4,5	STSC-54	TH	H/S	61R20 60U26	2%
91	2,3,4,5	SALV-54 SWSC-72 STSC-54,78,81,82 SWFC-91 CCR-92	BSP	N	61R10 61R20	10%
92	2,3,4,5	SWFC-78,81,83 CCR-78 SCC-83 SALV-78	BSP	N	15U00 61Q10 60Q20	11%
93	2,3,4,5	SWSC-74,78 SALV-78	BSP	N	32U95 31Q10	10%
94	2,3,4,5	SALV-60 SWFC-77,78 SCC-78	BSP	N	60Q10	12%
95	2,3,4,5	SWSC-60 SWFC-77,79 SALV-78 CCR-78	BSP	N	32U6 60Q20	17%
96	2,3,4,5	SWFC-78	BSP	N	32U60	10%
97	2,3,4,5	SWSC-60 SCC-60 CCR-60 SWFC-60,78 SALV-74	BSP	N	61Q10 32U61 60Q20	15%
98	2,3,4,5	SCC-60,77,83 STSC74 SWFC-83	BSP	N	60Q20	8%
99	2,3,4,5	SELS-77 SALV-88 CCR-88 SWSC-88	BSP	N	32U95	15%

Table 27. Areal Extent of Detrimental Soil Impacts within Proposed Dog Marquette Treatment Units (North Fork District).

Unit	Previous Treatment Type and Year	Proposed Treatment Type	Proposed Yarding Method (s)	Primary Land-type(s)	% of Unit with Previous Detrimental Soil Impacts
1	SALV-80, 81	CCR	T	24S45	3%
2	SEL-80	CCR	S	61S20	<1%
3	SEL-80	CCR	S	61S20 24S45	<1%
4	SEL-80 81	CCR	S	31S20 24S20	<1%
6a	SCC-66, SEL-80	CCR	T	24S20 24S45 61S20	1%
6b	SCC-66, 92 SEL-80 SALV-95	CCR	T		7%
7	SALV-89, 95, 98	CCR	S/T	60S26 50	<1%

Table 28. Areal Extent of Detrimental Soil Impacts within Proposed WhiteWhite Treatment Units (Lochsa District).

Unit	Alts Present	Previous Treatment Type and Year	Proposed Treatment Type	Proposed Yarding Method (s)	Primary Land-type(s)	% of Unit with Previous Detrimental Soil Impacts
1	4	IMP-83,84,85 SALV-98 SCC-83 STSC-84 SWRC-85	RG	S	24G20 24A01 31G20	7%
2	3,4	SALV-98	RG	S (T-5 ac)	24G20 22G00 31G20	12%
3	3,4,5	IMP-84 SALV-98	RG (alt 3,4) JB (alt 5)	S (T-5 ac) N	24G20 24A01	15%
4	3,4,5	IMP-84,85 SALV-98	RG (alt 3,4) JB (alt 5)	T N	24G20 24A01	3.5%
5	3,4	IMP-84 SALV-98 STSC-84 SWSC-85	RG	T	24A01	6%
6	3,4	IMP-84 SALV-85,98 SCC-83	RG	T	24A01	7%
7	3,4	IMP-84, SALV-98	RG	T	24G20	4%
8	3,4	IMP-83,SALV-98	RG	S	24A01	5%
9	3,4,5	IMP-83,84 SALV-98 SCC-84	RG (alt 3,4) JB (alt 5)	S N	24A01	5%
10	3,4,5	SALV-98	RG (alt 3,4) JB (alt 5)	S N	24A01	1%
11	3,4,5	IMP-92 SALV-81,98	RG (alt 3,4) JB (alt 5)	S N	24A01 24G20	5%
14	3,4,5	IMP-60 SALV-99 SCC-94 STSC-81	CT	S	24G20 24G10	1%
15	3,4,5	IMP-60 SCC-94 STSC-81	CT	S (T-100 ac)	24G10 24G20 31G20	2%
19	4,5	SALV-84 STFC-83 STSC-74	CT	S	24G10 22G00	<1%
20	3,4,5	STSC—82 SWFC-91,92 SWSC-77	JB	N	22G00 24G10	7.5%
21	3,4,5	SWSC-77	JB	N	24G10 22G00	2%
23	3,4,5	IMP-77	JB	N	24G10	1.5%
24	4	SALV-77,81	RG	S	22A01 60G10	3%
27	3,4,5	SALV-85	CT	T	24G10	<1%
28	4	SWFC-92 SWSC-77	RG	T	24A01	15%
29	3,4,5	IMP-60 STFC-91 STSC-81,82	JB	N	24G10	5%
30	3,4	IMP-85	RG	S	22G00 24G10	2%
31	4	SCC-93	RG	S (T-10 ac)	24A01 22G00	<1%
32	4	SWFC-83 SWSC-73	RG	S (T-30 ac)	22G00 24A01	2%
35	4,5	SALV-84	CT	S (T-10 ac)	24G10 22G00	<1%

Unit	Alts Present	Previous Treatment Type and Year	Proposed Treatment Type	Proposed Yarding Method (s)	Primary Land-type(s)	% of Unit with Previous Detrimental Soil Impacts
36	4	IMP-65 SALV-81 STFC-83 STSC-74	RG	S	24G10 22G00	<1%
37	4,5	SALV-84 STFC-83 STSC-74	CT	S	24G10 22G00	<1%
38	3,4,5	SALV-67,85	CT	S (T-10 ac)	24G10 22A01 24A01 31G20	1%
39	3,4	SALV-85	RG	S	22A01 24A01 31G10	2%
43	3,4	SALV-99	RG	S	24G20 24G10	<1%
46	3,4	IMP-77	RG	S (T-5 ac)	24G10 22A01	1%
47	3,4,5	IMP-79	CT	T	22G00	1%
48	3,4,5	SALV-85	CT	S	31G10 31G20 24A01 31U26	1%
49	4,5	SALV-84	CT	S	24G10	1%
50	4,5	STFC-83 STSC-74	CT	S	24G10 22G00 31G20	<1%
51	3,4	IMP-84,85 SALV-98	RG	S	24G20	2.5%
53	3,4,5	SWFC-92 SWSC-77	JB	N	22G00 24G10	2%
55	4	SALV-77,81	RG	S	22A01	1%

Mitigation measures, including decompaction with a ripper, forest cultivator, grapple rake, or similar equipment, placement of large woody materials, etc. may be applied in these units to improve soil conditions.

Table 29. Areal Extent of Detrimental Soil Impacts within Proposed Brick Trout Treatment Units (Lochsa District).

Unit	Alts Present	Previous Treatment Type and Year	Proposed Activity	Proposed Yarding Method (s)	Primary Land-type(s)	% of Unit with Previous Detrimental Soil Impacts
5	3,4,5	CT-72	CCR	S	22S00 24S45	3%
6	3,4,5	CT-72	FR	T	10A40 24S45 31S10	6.8%
11	4,5	STSC-74,SALV-98	CCR	S	22S00 24S10 31S10	2%
12	3,4,5	STSC-75,SALV-98 STFC-98, CCR-98	CCR	S	22A01 24S10	0.8%
13	4,5	SALV-98	STSC	S	24S10 24S20 31S20	1%
14	3,4,5	SCC-75,STSC-75 SALV-98	CCR	S	24S10 31S20	2%
15	3,4,5	SCC-75,SALV-98	CCR	S	24S10	2%
23	4,5	STSC-2003	CCR	S	24S10 24S20	0%

Unit	Alts Present	Previous Treatment Type and Year	Proposed Activity	Proposed Yarding Method (s)	Primary Land-type(s)	% of Unit with Previous Detrimental Soil Impacts
27	3,4,5	SCC-92,CCR-95, SALV-92,98	CCR	S	24S10	2%
30	4,5	SALV-98	CCR	S	24S10 24S20	1%
31	3,4,5	STSC-79,SCC-90, STFC-94,SALV-98	CCR	S	22G00 24G10 24G20 24S10	1%
32	4	SALV-2003	CCR	S	22G00 24A10 24G20	0%
38	3,4	SWSC-81	CCR	S	22G00	10%
43	3,4,5	SALV-98	CCR	S	24G20	1%
45	3,4	SALV-98	CCR	S	24G10 31G20	1%
53	3,4,5	IMP-77	CCR	S	31G10	1%
54	3,4,5	IMP-77	CCR	S	24G10 31G10	1.4%
55	3,4	IMP-77	STFC	T	22G00 24G10	12.2%
56	3,4	STSC-78	STFC	T	24G10 31G20	1%
57	3,4,5	IMP-77,STSC-78	CCR	S	24G45 31G10	1%
69	3,4	SWSC-98,SALV-98	STFC	T	24G10 24G20 31U26	11%
70	3,4	SWSC-79,CT-98,SALV-98	CCR	S	24G10 24G20 31G20 31U26	7.8%

A number of wildfires occurred on the Clearwater National Forest in 2003. BAER assessments were conducted on all wildfires greater than 300 acres to determine the need for rehab treatments. During the BAER surveys, burn severity/intensity impacts to the soil/vegetation were assessed. The following table shows the burn severities/intensities for the fires that BAER assessments were conducted in 2003.

Table 30. Burn Severity/Intensity of 2003 Clearwater NF Wildfires (Powell District) as Developed from Satellite Imagery and Field Reviews.

Fire	Burn Severity/Intensity				Area (acres)
	% Unburned or Underburned	% Low	% Moderate	% High	
Beaver Lake	22.9%	43.8%	23.3%	9.9%	12464
Siah Lake	12.3%	53.2%	25.7%	8.7%	598
Hopeful 2	31.7%	35.5%	18.4%	14.4%	3511
Wendover	10.9%	46.6%	32.8%	9.7%	3441
Bear's Oil	32.3%	51.2%	12.6%	3.9%	884
Pleasant	16.5%	43.3%	23.5%	16.8%	3866
Rhodes	32.6%	46.7%	12.2%	8.5%	718
Fish Lake	51.6%	25.9%	17.1%	5.4%	3166
Eagle Creek East	19.8%	38.9%	35.4%	6.0%	317
Total BAER fires	**25.1%**	**41.6%**	**22.8%**	**10.5%**	**28964**

The relationship between burn severity (soil impacts) and burn intensity (vegetation impacts) is not necessarily a direct one. In areas where there is naturally little forest vegetation (meadows, rocky slopes, talus fields, etc.), the burn impacts picked up by satellite imagery will likely more reflect burn severity. Conversely, in areas with well developed forest canopies, satellite imagery may more accurately depict changes in vegetation caused by the fire. In developing the burn impact (severity/intensity) maps for the 2003 Clearwater NF fires, the classifications developed are interpreted as follows:

- Unburned/underburned: Low severity, low intensity. The fire did not actually burn through this class or burned at such low levels that there were minimal impacts to either the vegetation or the soil.
- Low: Low severity/low to moderate intensity. The fire generally burned in a mosaic pattern throughout these areas with low impacts to the soil and tree mortality was generally less than 25%.
- Moderate: Generally low to moderate soil impacts (severity), moderate to high vegetation impacts (intensity). The fire created a mosaic condition of varying intensity and severity. Tree mortality is moderate to high ranging from 50-100%, averaging 70-80%.
- High: Moderate to high soil impacts (severity), high vegetation impacts (intensity). Soil impacts can be high if sufficient surface fuels are present, but vegetation mortality is usually complete.

The Walton Fire, which burned in 2001 was reviewed to assess the effectiveness of the BAER treatments that were implemented after the burn. Log erosion barriers and tree planting were accomplished on a steep slope above Walton Creek to reduce the probability of both surface erosion and mass soil movements into the creek, which could detrimentally impact the State of Idaho fish rearing facility downstream. Field review showed no significant mass movements and low amounts of surface erosion. The log erosion barriers were capturing some sediment, but due to the steep slopes, some soil material was moving downslope. The sites will be reviewed again in 2004.

TIMBER

GOAL

Provide a sustained yield of timber and other forest products to help support the economic structure of local communities and provide regional and national needs. Select on the ground those silvicultural systems that will be the most beneficial to long-term timber production, but modified as necessary to meet other resource and management area direction. Continue to work toward achieving the desired future condition identified in the Forest Plan.

STRATEGY

The Forest will continue to manage the timber program to provide for the long-term health, diversity and productivity of the Forest. Complete site-specific analysis of the land base will be used to design the timber sale program. Silvicultural systems will be selected to build biological diversity and maintain ecological processes. The timber sale program will provide for a wide range of sale sizes and product types. An appropriate mix of logging systems will be specified. The Forest will make every effort to respond to the needs of the local communities that depend upon the Forest for their economic survival by continuing to pursue and develop new timber sale opportunities.

TIMBER STAND INVENTORY

The compartment inventory program, initiated in FY85, produces a comprehensive inventory and database representing all timber stands on the Forest. The compartment inventory looks at a geographic unit (average unit size is 10,000 acres) in three phases.

- In the first phase, aerial photographs are examined to identify areas that are relatively alike in size, tree density and species. Phase one has been completed; all stands on the Forest have been mapped and identified for suitability and management area.
- The second phase involves field stand examination of randomly selected stands. Phase two has been completed on approximately 82 percent of the 173 Forest compartments. No additional compartments were field sampled in FY03; however, approximately 23,500 acres of stand exams were accomplished, thereby increasing the number of stands with current field inventories as well as adding to the pool of stand exams from which to match to unsampled stands.
- The third phase involves data compilation, then application of the data to unsampled stands. The introduction in FY93 of the "*Most Similar Neighbor Estimation Procedure*" allowed the Forest to initially complete phase three on most of the timbered strata. This procedure matches sampled stands to unsampled stands using photo-interpreted and physical characteristics of the stands. It results in timely, statistically unbiased estimates of the important characteristics for every stand on the Forest. Testing and validation of this process is complete and a vegetation inventory database has been established to store the generated data.
- Now that the compartment field sampling has been completed and the "*Most Similar Neighbor*" programs are operational, the inventory program shifts to a maintenance and updating phase. The inventory compilation programs are periodically rerun, new project stand exams are added, especially for stands that have experienced changes due to harvest, wildfire, and insect outbreaks, and the photo interpretation data is selectively update for the stand that have notably changed.

In FY03, the Forest offered a variety of products including sawlogs, cedar products, firewood, Christmas trees and fence posts. These products were sold through six timber sales, 947 firewood permits, 646 Christmas tree permits, and 18 miscellaneous collection permits. A total volume of 30.8 million board feet (MMBF) was sold. The annual volumes offered, sold, harvested and under contract since FY98 are shown below.

Annual Timber Volume Offered, Sold, Cut and Under Contract (MMBF)

	FY99	FY00	FY01	FY02	FY03
Offer	23.9	8.1	20.1	5.8	30.8
Sold	11.2	17.3	18.1	5.8	29.8
Cut	16.3	9.4	15.3	15.9	25.2
Contract	58.4	55.5	57.4	49.3	36.6

The total acres of timber sold by harvest method during the past five years are shown in the graphic below.

Total Acres of Timber Sold on the Forest by Harvest Method

	FY99	FY00	FY01	FY02	FY03
Clearcut and Clearcut with Reserves	315	79	113	192	472
Shelterwood and Seed Tree	738	521	348	94	472
Final Removal	606	0	10	0	16
Selection	8	743	46	0	0
Intermediate Harvest	1,936	435	602	158	271

The volume of timber sold for the roaded and unroaded components of the Forest is shown below.

Roaded and Unroaded Timber Sold

Year	Roaded Sawtimber	Roaded NIC*	Roaded Total	Unroaded Sawtimber	Unroaded NIC*	Unroaded Total	Forest Total
99	8.6	2.6	**11.2**	0	0	**0**	**11.2**
00	14.7	2.6	**17.3**	0	0	**0**	**17.3**
01	13.9	4.2	**18.1**	0	0	**0**	**18.1**
02	5.8	0	**5.8**	0	0	**0**	**5.8**
03	28.6	1.2	**29.8**	0	0	**0**	**29.8**

*NIC = non-interchangeable component

The next graphic compares the projected annual acres and volumes used to derive the annual ASQ, with the number of actual acres and volumes sold, by management area as defined in the Forest Plan.

Comparison of Forest Plan Projections with Annual Acreage of Timber Sales, 1988-2003

Management Area	Forest Plan Acres	Forest Plan Volume Mmbf	Timber Sale Average Acres	Timber Sale Average Volume Mmbf
Timber Production	**3,497**	**81.2**	**2596**	**40.6**
Road/Trail Corridors	**125**	**.8**	**33**	**.7**
Big-Game Summer Range	**3,099**	**62.5**	**29**	**.6**
Big-Game Winter Range	**1,007**	**23.6**	**390**	**6.7**
Riparian Areas	**3,516**	**5.2**	**57**	**1.1**
Middle Fork Clearwater Scenic Corridor	**0**	**0**	**18**	**.5**

The difference between planned ASQ volume and the average annual volume sold shown above (Roaded and Unroaded Timber Sold) is mainly due to not harvesting in the unroaded portion of the Forest.

Item No. 18: Harvested Land Restocked Within Five Years

Frequency of Measurement: Annual
Reporting Period: Five Years

MONITORING ACTION

The Forest silviculturist will prepare a report showing the percentage of stands and acres meeting the five-year regeneration standard. Data obtained from the Timber Stand Management Records System will provide the basis for determining the percentage of successfully regenerated stands.

ACCOMPLISHMENTS/FINDINGS

The National Forest Management Act of 1976 requires that when trees are cut to achieve timber production objectives, the cuttings shall be made in such a way as to ensure that the technology and knowledge exist to adequately restock the land within five years after final harvest. Reforestation records pertaining to regeneration harvests that occurred in 1997 were compiled and the required percentages calculated. The data presented in Table 5 is based on the status of regeneration at the end of 2002. The time elapsed since harvest is five years. Seedtree cuts are not considered final harvests but because seedtree cutting initiates stand regeneration, the Forest monitors restocking success on the same basis as with the final harvests.

1998 Regeneration Harvests Adequately Restocked in Five Years

	Clearcut	Seedcut	Final	Selection	TOTAL
Number of Stands	18	25	19	1	**63**
Number of Acres	220	362	569	25	**1166**
Stand Success %	94%	96%	100%	100%	**97%**
Acres Success %	98%	97%	100%	100%	**99%**

Of the 63 stands that received regeneration harvesting in 1998, one clearcut and one seedtree cut were not adequately restocked after five years. The initial planting failed to meet stocking standards in the clearcuts due to the lack of adequate site preparation. These stands are scheduled to be replanted in 2003. The lack of adequate stocking in the remaining clearcuts and seedtree cuts is due to delays in carrying out the prescription for site preparation. This unit was slashed in 2003, will be burned in 2004 and replanted in 2005. The seedcut unit planting failed to meet stocking standards due to drought. This unit is scheduled for replanting in 2004.

Item No. 19 – Unsuited Timberlands Examined to Determine if they have Become Suitable

Frequency of Measurement: Annual
Reporting Period: Ten Years

MONITORING ACTION

Timberlands classified as unsuitable during development of the Forest Plan will be examined, using more exacting methods, to determine if they should be reclassified as suitable.

ACCOMPLISHMENTS/FINDINGS

All timberlands, both suitable and unsuitable are currently being inventoried as part of the Forest's compartment inventory program. Occasionally, unsuitable timberlands may also be examined in association with an analysis of a proposed project. Both types of examinations are directed at confirming and refining the suitability determinations made in the Forest Plan.

Item No. 20 – Validate Maximum Size Limits for Harvest Areas

Frequency of Measurement: Annual
Reporting Period: Annual

MONITORING ACTION

The Forest silviculturist will prepare a table displaying the number of stands harvested by harvest type, meeting the 40-acre maximum harvest size standard compared to the number of stands exceeding this standard.

ACCOMPLISHMENTS/FINDINGS

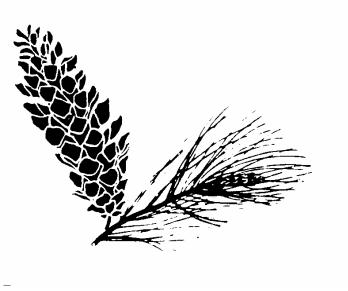
The maximum size of harvest openings created by even-aged regeneration harvesting (a method of harvest that results in a regenerated stand of similar age) should normally be less than 40 acres. Harvest opening size may exceed 40 acres when certain exceptional conditions apply such as insect outbreaks that threaten surrounding stands, catastrophic blowdown or for final removal of shelterwood trees in order to protect established regeneration in existing shelterwood and seedtree areas. The acres reported in the stand database for FY03 are shown below.

FY03 Even-aged Regeneration Harvests by Harvest Type and Size Category

District	Clearcut & Clearcut with Reserves		Seedtree & Shelterwood		Final Removal	
	#Stands <40 Acres	# Stands > 40 Acres	#Stands < 40 Acres	# Stands > 40 Acres	# Stands < 40 Acres	# Stands > 40 Acres
Pierce	8	0	17	3	0	0
Palouse	15	2	12	0	0	0
North Fork	0	0	1	0	0	0
Lochsa	0	0	0	0	0	0
Powell	0	0	0	0	0	0
TOTAL	23	2	30	3	0	0
Average Size	13 Acres	67 Acres	13 Acres	47 Acres	0 Acres	0 Acres

Item No. 21 – Insect and Disease Status as a Result of Activities

Frequency of Measurement: Annual
Reporting Period: Five Years



MONITORING ACTION

Insect and disease status is evaluated during post-treatment stand exams. Silviculturists will use these exams in the preparation of silvicultural prescriptions to deal with identified insect and disease problems. Additionally, annual aerial detection surveys are used to identify the extent of widespread insect and disease problems.

FINDINGS

Post-harvest stand exams and routine monitoring of harvest units show that reserve trees in regeneration harvest units and residual trees in salvage harvest units are experiencing high levels of mortality. This mortality is primarily being caused by root diseases, windthrow and Douglas-fir bark beetle attack. It is probable that the harvest cutting did not directly promote an increase in the casual agents of mortality, but

rather that the reserve trees were already infected or at high risk of succumbing. However, slash burning which results in tree scorch does elevate the risk of bark beetle attack.

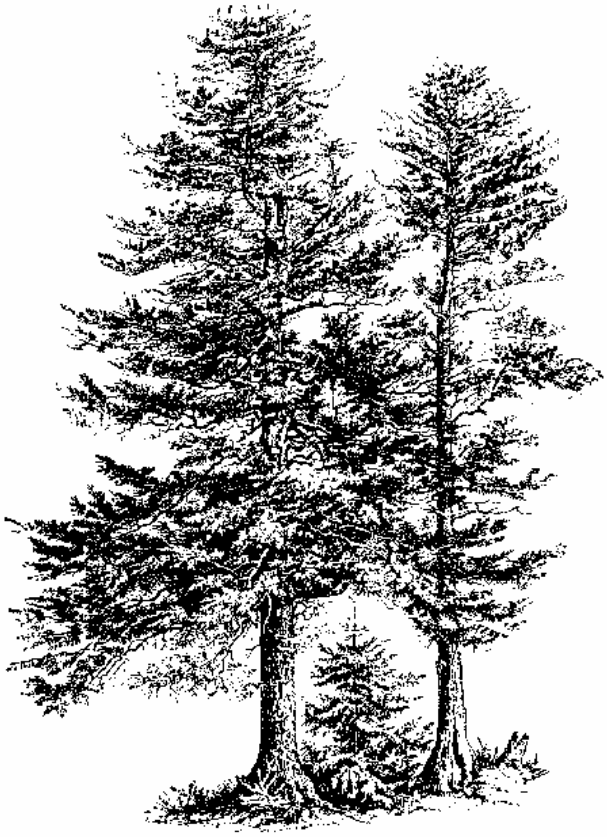
Annual aerial detection surveys are used to assess current levels of insect and disease activity on the Forest. Areas with active insect outbreaks and recent forest fires are mapped and summarized. Many types of forest disease mortality, however, are not apparent from the aerial surveys and are not recorded. Because of this, reported losses from disease are not complete.

Regular aerial detection surveys were conducted on the Forest in FY03. Mapping of current tree mortality and damage occurred on the Palouse and North Fork Districts, but large portions of the Lochsa and Powell Districts were not flown due to the smoke from numerous wildfires.

Tree mortality caused by the Douglas-fir beetle seemed to remain about the same in FY03 as in the previous year. Grand fir tree mortality caused by the fir engraver bark beetle increased dramatically throughout the Clearwater region. Drought stress, overcrowding, and root disease will likely promote further increases in fir engraver beetle activity.

There was a significant increase in the mountain pine beetle infestation of lodgepole pine stands in FY03, particularly in the upper reaches of the North Fork river drainage. Approximately 3,200 acres of lodgepole pine stands were mapped containing some 4,750 recently killed trees.

There appeared to be little change in the areas infested with balsam wooly adelgid in FY03. The cumulative area infested is about 7,500 acres. The number of subalpine fir trees killed by this insect was not estimated this year. Tree mortality remains widespread throughout the western portion of the Forest in low-lying creek bottom situations and at higher elevations across the eastern part of the Forest.



The western balsam bark beetle outbreaks in subalpine fir have remained static or slightly increased over last year. The cumulative area infested is about 3,000 acres including some 4,500 recently killed trees.

The area of defoliation on grand fir and Douglas-fir caused by the Douglas-fir tussock moth outbreak on the Palouse Ranger District completely disappeared in FY03.

The hemlock looper, another defoliator that feeds on mountain hemlock, grand fir, and subalpine fir, reached its peak area of infestation last year, at about 25,000 acres. As expected this outbreak has died out with only 24 acres of defoliation being observed in FY03.

The decline of mature and old western redcedar caused by what is believed to be Armillaria root disease continues, resulting in trees with dead tops, dead branches, severely constricted tree crowns, and sporadic tree mortality. Monitoring will continue on this disease that continues to intensify.

TRAILS

GOAL

Manage trails to provide for a variety of recreation experiences. Provide for safety, minimize use conflicts and prevent resource damage.

STRATEGY

- Public safety, use and resource considerations will be used to set trail work priorities.
- Identify relocation and construction needs,
- Manage an effective trail maintenance program.
- Maintain safe bridges.
- Manage an effective trail construction/reconstruction program.

Item No. 16 – Trail Management

Frequency of Measurement: Annual
Reporting Period: Five Years

MONITORING ACTION

The Forest trails coordinator will prepare a report annually that focuses on the status of the trail system, trail bridges, and the trail construction and reconstruction program. Reports from the INFRASTRUCTURE database will be reviewed to ensure this information is current.

ACCOMPLISHMENTS/FINDINGS

TRAIL MAINTENANCE

Approximately 350 miles of snow trails are maintained annually. Three hundred of these miles are groomed for snowmobiles in Clearwater County using State of Idaho snowmobile funds. Two hundred of these miles are on national forest lands.

Table 31 provides information on accomplishments by maintenance level for the Forest's summer trail system. Maintenance levels for summer trails are defined as follows.

Level I: minimum clearing, minimum drainage work and no tread work

Level II: brushing with some structure and tread work

Level III: heavy clearing, tread repair, and construction of drainage structures

Table 31. Miles of Trail Maintenance Accomplished*

	1999		2000		2001		2002		2003	
	Motorized	Non-Motorized	Motorized	Non-Motorized	Motorized	Non-Motorized	Motorized	Non-Motorized	Motorized	Non-Motorized
Level I	**773.05**		**731**		**625**		**733**		**1025.08**	
	298.4	474.65	364	367	254	371	342	391	591.67	433.41
Level II	**67.5**		**45**		**32**		**53**		**45.10**	
	34.2	33.3	18	27	26	6	22	31	20.8	24.3
Level III	**31.1**		**70**		**20**		**21**		**82.87**	
	2.4	28.7	54	16	10	10	9	9	51.76	51.76
TOTAL MAINTAINED	**871.65**		**846**		**677**		**807**		**1153.05**	
	335	536.65	437	409	290	387	373	434	664.23	488.82

*Wilderness trail accomplishments are located in the WILDERNESS section of the Monitoring Report.

Trail Maintenance

Trail Maintenance Labor Type	1999	2000	2001	2002	2003
Force Account Maintenance (includes flood repair in 96 & 97)	329.3	254	10	113	405.35
Volunteer Maintenance	227.5	327	130	140	325.68
Contract Maintenance	314.8	265	485	554	422.02

TRAIL RECONSTRUCTION

2003 Trail Reconstruction Program

Projects Completed	Trail No.	Miles
Powell Complex portion of L&C Trail	24	4
Surprise Creek	219	5.2
Projects Started		
Wendover Ridge	25	1
Pete King Ridge	708	3
Feather Creek I	767	5
Deception OHV	complex	4
Total Trail Reconstruction		24

Again in 2003, trail construction funds were diverted to the national fire suppression effort.

However, contract work was completed on the Surprise Creek trail and the Montana Conservation Corps (MCC) completed the Powell Complex trail work. MCC was then moved to the Wendover Ridge trail, but fires forced them to be withdrawn from that project after completing only a small portion of the work. The MCC crew was then moved to the Feather Creek trail and started work on that project. The Forest trail crew in conjunction with the State Trail Cat worked on the Pete King Ridge trail and continued work on the Deception OHV trail complex.

Wild and Scenic Rivers

Goal

Protect and enhance the inherent values of existing designated Wild and Scenic Rivers and those being studied for possible future designation. Analyze and recommend suitability for classification of selected rivers to the Wild and Scenic system.

Monitoring Action

- Monitor ongoing projects for adherence to established protection measures.
- Manage existing scenic easements to standards defined in the Forest Plan.
- Improve access to rivers, facilities along their banks, and availability of interpretive information.
- Work with river floaters and Special Use Permittees to insure that the best available river experience is preserved.

Accomplishments/Findings

Scenic Easements

The Clearwater and Nez Perce National Forests continue to share the Wild and Scenic Rivers Administrator position. This position provides scenic easement administration services to both forests for easements along the Lochsa, Middle Fork Clearwater, Selway and Main Salmon Rivers.

The scenic easement review board evaluated a variety of landowner proposals during monthly meetings in FY03. An example of project types before the board included: timber harvest, remodeling and additions to existing homes, new home construction, road construction, bare land development, barn and shop proposals, and commercial activities.

Several Forest Service projects occurring in the Wild and Scenic River corridor were also evaluated. All Lochsa Ranger District projects were in compliance with the River Plan. Suggestions were provided to address other issues such as safety.

The Forest Service has entered an era in which the challenge is to maintain the character of the landscape and river corridor while working with landowners having different desires, often more development oriented, than those traditionally found in the river corridor.

River Administration

The Forest sponsored a Wild and Scenic Rivers Workshop with Jackie Dietrich, Forest Service Program Management for Wild and Scenic Rivers. The session was attended by Forest Service, Idaho Transportation Department (ITD), Idaho Department of Lands, Idaho Department of Environmental Quality and other cooperators. The session discussed the Wild and Scenic Rivers Act in depth and reviewed case studies and legal precedent

Five outfitters operate on the Lochsa River under special use permit. One of the outfitters continues to build a kayaking school while the others emphasize rafting. One business changed ownership, one permit was re-issued without changes and one permit was re-issued with an increase in user days. Three of the five permits are priority use permits issued for 5-year terms. The other two are annually issued temporary permits required during a probationary period for new businesses.

Five outfitters operate on the Middle Fork Clearwater River under special use permit. One outfitter voluntarily relinquished their license and permit for the area; that permit has not been reissued.

Outfitted fishing on the Lochsa, Middle Fork and North Fork Clearwater Rivers is an ongoing challenge. The Forest initiated an Outfitted Fishing Needs Analysis this year.

Nearly 100 dispersed campsites along the Lochsa river corridor were inventoried. Results indicate that few new sites are being created and resource impacts at existing sites are fairly static. Some sites appear to have little use, while several receive high use. Ongoing analysis of these sites is necessary to determine if management action is necessary to control and contain resource impacts where they are occurring.

Issues, such as highway safety and congestion continue to raise hard questions for management. The FS and ITD worked together to identify and install pedestrian crossing signs at particularly congested areas. ITD continued its roadside brushing program.

The Clearwater National Forests cooperated with the Bureau of Land Management (Cottonwood Field Office) in sharing a river ranger for the Lochsa patrol season. Using fee demo funds, the Lochsa Ranger District employed a river ranger for more hours during the week than in the past.

WILDERNESS

GOAL

Maintain wilderness values both in existing wilderness areas and in those areas being recommended for wilderness classification. Provide for limiting and distributing visitor use in wilderness areas to allow natural processes to operate freely and to ensure integrity of values for which wilderness areas are created. Coordinate management of the wilderness with other national forests that share in the management of those lands.

Item No. 5: Wilderness

Frequency of Measurement: Annual
Reporting Period: Annual

MONITORING ACTION

Note changes occurring within existing and potential wilderness areas and determine if they are affecting the wilderness character of the lands. Recommend management practices to correct adverse changes.

ACCOMPLISHMENTS/FINDINGS

The following report is a summary of the Clearwater National Forest's findings from the Selway-Bitterroot Wilderness (SBW) "State of the Wilderness Report". The full report can be obtained from the Powell Ranger District or from the Clearwater National Forest web site. The final paragraph is a summary of the monitoring efforts for illegal snowmobile activity in the Selway-Bitterroot Wilderness and the Great Burn potential wilderness area for 2003 only.

MONITORING USE IMPACTS

The Selway Bitterroot Wilderness spans the border of north central Idaho and western Montana. As one of the wildernesses established with the 1964 Wilderness Act, its 1.3 million acres lie within four National Forests and are managed by six ranger districts.

Based on Levels of Acceptable Change (LAC) monitoring and field inventory from field seasons, areas are identified where Forest Plan standards are not being met. These are identified by Opportunity Class Areas. Opportunity Classes are used in the Forest Plan to delineate areas with different management goals. In general, Opportunity Class I provides the most primitive visitor experience with the least social encounters while Opportunity Class IV provides the least primitive visitor experience with the most social encounters. Monitoring will continue in 2004 with the intent of the Forest Plan to move areas into compliance by their assigned Opportunity Class.

Wilderness rangers, volunteers and other personnel on each Forest monitor a variety of resource conditions and types of use in the SBW to maintain resource integrity. While in the field, personnel keep track of campsite conditions, weed occurrences, fires, airfield use, river use, trail conditions, outfitter activities, compliance with Forest Plan standards and visitor concerns.

Visitors to the SBW pursue a variety of activities including: hiking, horseback riding, fishing, hunting, photography, nature study, swimming, mountain climbing, snow shoeing, and numerous other forms of recreation. Monitoring the types and amount of use that occur in the SBW is essential to preventing degradation of wilderness qualities while providing a range of primitive and unconfined recreational opportunities. Standards exist within each opportunity class for both site and social indicators in order to effectively protect the wilderness resource and trigger management action should unacceptable conditions develop.

Clearwater N. F.	
SBW Acres	268,932
# Wilderness Rangers	2
# Volunteer Hours	1,804
Total Miles SBW Trails	310.3
Miles SBW Trail Maintained	202.2
# Campsites Monitored	109

Social indicators include the # of other parties encountered each day and the number of other parties camped within site or sound of a campsite. Site indicators are measured by the number of sites per square mile and by the sites per impact rating per square mile (impacts assigned according to the Limits of Acceptable Change system).

Both site and social indicators are monitored by wilderness rangers during their time in the field. Site indicators are measured at each campsite a minimum of once every five years. Each year, wilderness rangers visit a percentage of campsites within their district and conduct official campsite inventories; however they typically visit and naturalize a number of sites in addition to those slotted for an official inventory. During 2003, rangers inventoried 109 campsites.

Visitor registration cards and field encounters provide information on social indicators. While the voluntary registration cards used in the SBW do not provide a complete picture of the number of wilderness users in the SBW, studies show a third of the visitors sign in providing a reference for a minimum level of use at a particular portal. The new Visitor Travel Log (created in 2002) focuses on a group's characteristics and destination. The new forms were distributed to portals in the beginning of the 2003 season. Visitors appeared to be recording more complete information than on the old cards. It is hoped the new cards will encourage visitors to sign in without concern over personal information questions providing better visitation data.

The SBW also began the process of integrating a new database called INFRA WILD to help organize and track use monitoring data. The SBW is one of the first wilderness areas to adopt this database and sent a number of wilderness rangers to training in the fall of 2002 to learn how to operate the database. Rangers began entering test data in 2003. This table summarizes the number of groups and individuals that wilderness rangers encountered in the field during 2003.

	Groups	Persons
Day hikers	36	117
Backpackers	20	62
Equestrian	13	41
Outfitters	9	
Contractors		
Administrative Personnel	2	5
Pilots/other	1	4
Total	**81**	**229**

Because multiple encounters with the same "Group" of Outfitters, Contractors and other Forest Service personnel were more likely than multiple encounters with the same group of private individuals in the backcountry, only the first encounter with the same Group is recorded in the table. Individuals who arrived by plane were identified as: pilots (those whose sole purpose was to drop or pick up visitors or gear), day hikers or backpackers (overnighters) depending on the length of their stay.

PROBLEM AREAS

Twelve problem areas were inventoried in FY00 with eleven remaining out of standard. Data showed that the overall trend was improving, with seven areas indicating an upward trend, three remaining static, and two indicating a downward trend. In 2003, 109 campsites were inventoried. Monitoring will continue with the intent of the Forest Plan to move areas into compliance by their assigned Opportunity Class.

The Friday Pass Trail has some extremely eroded, rocky sections as well as washouts digging into softer soils. This trail is not recommended to stock.

There is an accumulation of new stumps around Fish Lake, Wounded Doe and Pass Creek.

Opportunity Class I – One site per square mile; one light site

Crags Lakes

FY00 monitoring indicated that impact levels and sites per square mile showed a slight downward trend; there are more social trails, and more exposed mineral soil (from trampling) in some sites. There are eight campsites, where one is desired. Sites are cleaned up each year, but social encounters are recorded for only a few days each season (not enough for conclusive data). Three sites were inventoried in FY02, with the remainder in FY03. Use appeared to be low for the season and some sites had a chance for recovery. This

may have been due to the lack of access from an avalanche and blow down event over Chimney Peak. We will seek volunteers for the Crags area for 2004.

Opportunity Class II – Two sites per square mile; one light, one moderate site

California Lake

This area is out of standard with one moderate, and two light sites. The trail heading into California Lake receives moderate stock use, and was cleared by visitors in 2000. This area is indicating an upward trend. This area was not monitored in FY01, FY02 or FY03. We will strive for FY04 monitoring.

Opportunity Class III – Three sites per square mile; two light, one moderate site

Wind Lakes

Two areas within the Wind Lakes Analysis Area have conditions that do not meet the recreation standards for Opportunity Class III. These areas are along Wind Lakes Creek, and the area around Wind Lakes.

Because of severe drainage and erosion problems, poor tread, deteriorating support structures, resource damage, unsafe user conditions, and impacts to the wilderness characteristics, this area was evaluated in an Environmental Assessment (EA). Field reviews concerning this were conducted in FY95, and then again for an updated version in FY02. The EA will go out for public review March 2004.

It is hoped that through education and persuasion, the desired future condition can be met as visitors become more knowledgeable, and low impact campers will be able to use and enjoy the wilderness while traveling and camping lightly on the land. An education effort has been carried out by a partnership of the Forest Service (wilderness ranger presence, signs, low-impact schools and training centers), volunteer wilderness rangers, the National Outdoor Leadership School (developer of the Leave No Trace program), Backcountry Horsemen of America, and other groups for this area and other Forest areas.

Seven Lakes

Visitors who were not familiar with low impact camping techniques have heavily impacted the Seven Lakes area in the past. Damage caused to trees and vegetation by tethered stock is especially noticeable.

In FY02 personnel that new signing was needed to replace illegible or missing signs; therefore, all the campsites and signs in the Seven Lakes area were assessed in 2003. UV light deteriorated a number of the special site designation signs and these will be replaced in 2004. Overall, the area received less use in 2003 due to fire activity and smoke. No problems with grazing were evident for the 2003 season. Volunteers will be sought for the Seven Lakes areas for 2004.

Big Sand Lake

Big Sand Lake campsites were inventoried in 2003. During the 2003 summer, a large group created a new user trail, damaged some small saplings and enlarged the fire ring at this site on the west side of the lake, further impacting it. The East Shore campsite did not show signs of growth, but it is also heavily impacted. Sanitation was an issue at two sites this year.

Further education and visitor engagement is needed concerning lakeside camping. Stock containment, erosion from water access, increasing barren core and decreasing understory vegetation as well as encroachment of weed patches require that we put more effort into managing these sites with help from key user groups. The Big Sand Fire above the north side of the lake closed the area for approximately 3 weeks.

Opportunity Class IV – Four sites per square mile; one heavy or extreme, two moderate site

Fish Lake

The Fish Lake airstrip is meant to function as an internal portal for users pursuing wilderness dependent activities. Short visits and proficiency landings are discouraged in an effort to minimize disturbance, which is not compatible with a wilderness experience. Administrative access to the SBW is managed according to the minimum tool principle, where pack stock and foot travel are the preferred methods of access. The SBW general management direction identifies two indicators to evaluate the level of airfield use; 1) number of landings/day/airfield, and 2) number of landings/year/airfield. Standards for the SBW airfield use will be

determined from the results of 4 years of reliable data collection per airfield and a study to determine the perceptions of all wilderness user types regarding aircraft use in the SBW.

In FY02 and FY03, volunteers provided the public with information on the airstrip, SBW, and low impact camping techniques while documenting use at the lake. They also performed maintenance duties such as seeding barren areas with grass seed collected from the strip, filling gopher holes on the airstrip, staining visitor registration boxes and signposts, and developing a pilot log system. These volunteers obtained airstrip use data for FY02 and FY03. We will seek volunteers for the Fish Lake area and airstrip in 2004.

Stanley Hot Springs/Huckleberry Flats

These two areas are within the same roving square mile and are monitored together. Since 1993, impact levels have improved, but sites per square mile increased dramatically at the hot springs from 6 to 15 sites. Attempts have been made to close some of the sites by signing, blocking off, and planting, but high use means every site is taken and eventually the signs disappear.

Volunteers have been stationed at or patrol the hot springs most years since 1993 (none in 2001) discussing low impact camping practices to visitors and general site clean up. In 1999, the foot log was removed from Boulder Creek, but this has hardly affected access to this popular area. There are no plans to rebuild a bridge. Volunteers report that pets harass wildlife, and that the hot springs area does not support stock camping. Stanley Hot Springs will be part of a hot springs management plan for the Forest including Weir and Jerry Johnson Hot Springs. Half of the campsite inventories were completed FY02, and of those particular sites, all remained static. This is our most heavily used wilderness site. The immediate area is completely void of small down woody debris from people collecting firewood. Users have been felling 10" diameter snags for wood and have also been cutting live branches. In 2003, a Boy Scout Troop assisted the Wilderness Program by volunteering to clean up the Stanley Hot Springs area and helped with weed pulling, fire ring scattering, and packing out trash. All the campsites in the vicinity of the Hot Springs were inventoried for 2003. We will seek volunteers for the Stanley area in 2004.

CONSERVATION EDUCATION

Education programs are one tool that the Forest uses to foster appreciation for the SBW, while encouraging responsible resource use. Programs typically focus on the value of wilderness, wilderness history and "Leave No Trace" practices in an effort to reduce visitor impacts and address problems such as littering, damage to trees, overgrazing, poor sanitation practices and other actions damaging to the wilderness resource. Our education program was one of our biggest accomplishments in 2003. We conducted 16 programs, reaching 604 individuals of all ages.

Audience	# in Attendance	Message
U of M Graduate Students	15	Wilderness Management & Careers
MCC crew leaders: Training Session	51	Leave No Trace (LNT) w/ crews
4-5-6th Graders:	200	Wilderness Skills Trail
U of M Wilderness & Civilization Class	32	LNT
Attendees at 9-mile LNT Stock Masters	10	Stock LNT
Powell Employees	34 / 12	Wilderness Awareness / Defensive Horse Safety
Girl Scouts	23	LNT
Senior Citizens	19	LNT in the Front-country
Boy Scouts	23 / 8	Wilderness Values & LNT

Outfitter/Guides for Wildlife Adventure H.S.	3	Camp Inspections
MT. Natural Resources Youth Campers	30	Wilderness Awareness
Smokejumpers	8	LNT / MIST
U of I Campus Recreation	121	LNT
Penn State/Mont Alto University Students	13	Wilderness Awareness
Total Audience	**604**	

Groups targeted for a more thorough education include Boy Scouts, airplane pilots, high school students, and college students.

SBW VOLUNTEERS 2003

Volunteers contribute a substantial amount of time, energy and talent to the Selway Bitterroot Wilderness Program and accomplish a variety of work for the four managing National Forests. In addition to providing visitor information at many of our wilderness portals, volunteers help pack in project supplies, assist with trail maintenance, cabin restoration and campsite restoration projects. Volunteers also help monitor and collect data for an array of projects throughout the wilderness. All the Forests are grateful for the generous assistance provided by volunteers during 2003.

Clearwater NF	
# Volunteers	**47**
# Volunteer Hours	**1,804**

The information at left provides a synopsis of the volunteer efforts in the SBW on the Clearwater Forest during 2003.

Back Country Horsemen: North Central Chapter members built 3 wooden feed bunks with the help of a National Forest Foundation grant. They were delivered in the fall to the Powell Ranger Station for installation at the Tom Beal trailhead in July 2004 and approximately 400 hours were spent on the entire process. Roger Ingrahm assisted with stock LNT education at Elk Summit for 40 hours. Twin Rivers Chapter members (2) contributed 6 hours helping realign the top beam of a stock-unloading ramp at Kooskooskia Trail Head.

Wilderness Skills Trail leaders: 9 individuals from other programs and other districts volunteered their time to assist in leading 4-5-6th graders through the skills trail for a total of 128 volunteer hours

National Trails Day: 12 Montana Conservation Corp members assisted with a trails clearing and maintenance project around 3 miles of trail at Jerry Johnson Hot Springs for a total of 96 hours

Boy Scout Troop: A group of 8 scouts working towards their 50-miler badge assisted with weed pulling and campsite naturalization at Stanley Hot Springs for a total of 12 hours of service after attending a LNT session.

Elk Summit Guard Station: 4 individuals volunteered as station guards at Elk Summit and contributed approximately 712 hours of service. In addition to providing visitor information, they helped with routine site maintenance and trail monitoring duties. One volunteer also assisted in presenting 3 Leave No Trace programs for various youth groups.

Fish Lake Airstrip: Two separate volunteers were stationed as guards at Fish Lake from June 29 through mid August providing a presence and monitoring at the remote airstrip. Another volunteer assisted w/ trail and facilities maintenance during a 6-day trip and contributed 32 hours.

Horse Care Volunteers: District employees who showed an interest in the stock this year volunteered for horse training safety. Our program relied on 3 of these individuals to help care for the stock when they were not needed and we were either out in the field on foot, or away from the district on our weekends. A total of 42 hours were donated to the stock program.

Winter Patrol: One volunteer assisted with a winter backcountry patrol and cabin maintenance trip for 3 days (24 hours).

GREAT BURN VOLUNTEERS 2003

The Great Burn Trail Monitoring Project is a citizen-initiated project designed to gather information on off-road vehicle use in the Great Burn, and to document how and where off-road vehicles impact natural resources and conflict with non-motorized uses. With the help of the Great Burn Study Group and Friends of the Clearwater, the project utilized more than thirty-five volunteers who collectively logged hundreds of hours of trail monitoring on eighteen field outings. Volunteers conducted field monitoring by visiting trailheads and through day hikes and overnight excursions into the backcountry. They have composed a report representing data gathered from June 1 through October 15. Volunteers observed and documented both the types and levels of motorized recreation occurring within the Great Burn, as well as user conflicts, illegal activity, resource damage, user-created trails, trail and trailhead conditions, signage, vandalism and the condition of campsites.

ADMINISTRATIVE SITES

Administration of the SBW for its many established purposes requires maintenance of certain structures and facilities both within (W) and immediately adjacent (A) to the Wilderness. The following list identifies use at these sites during 2003.

1. Horse Camp: (W) Used approximately 30 days by trail contract administrators and wilderness rangers on backcountry patrol.
2. Fish Lake: (W) Used approximately 7 days by trail contract administrators and wilderness rangers on backcountry patrol. Volunteers monitoring the airstrip used the cabin June 29 - August 12, August 9 – August 15 for a total of 39 days.
3. Diablo Lookout: (W) Intact structure, staffed during fire season August 10 – September 19.
4. McConnell Mountain Lookout: (W) Deteriorating structure, not staffed.
5. Grave Peak Lookout: (W) Deteriorating structure; not staffed.
6. Hidden Peak Lookout: (W) Deteriorating structure; not staffed.
7. Bear Mountain Lookout: (A) Staffed July through August with a lookout
8. Beaver Ridge Lookout: (A) Staffed July 8 – August 9, and August 21 – October 10
9. Lochsa Historic Station: (A) Staffed by volunteers for 15 weeks in the summer at 1680 hours.
10. Elk Summit Guard Station: (A) Staffed by a volunteer from July through mid-September. Trail crew use on entry and exit of three 10-day hitches from Elk Summit.
11. Colt Creek Cabin: (A) Deteriorating cabin; not staffed.

LAW ENFORCEMENT

In addition to Law Enforcement Officers (LEOs) who work on each Forest, some districts have wilderness personnel who are authorized Forest Protection Officers (FPOs) and are trained in Level II law enforcement. LEOs and FPOs record incidents that occur in the wilderness and have the authority to issue violation notices when CFRs (Code of Federal Regulations) are disregarded by visitors.

Summary of incident reports written in FY03:

- Damage to live vegetation at Upper Dodo Creek
- Damage to live vegetation at Mud flats campsite.
- Chainsaw use to clear trail on Elk Summit trail #4.

Reports in the wilderness area	
Number of law enforcement personnel	4
Number of incident reports written	13
Number of warning notices written	1
Number of violation notices written	3

- Dead horse left in a camp less than 200 feet from a creek.
- Adjacent to Wilderness, but not included in total – vegetation damage at Pass Creek and Elk Summit.
- Litter and damage to green trees at Stanley Hot Springs
- Litter at Tom Beal Park
- Warning Notices: 1 - Vehicle at Tom Beal trail head beyond time limit
- Violation Notices: 1 - Exceeding group limit out of Elk Summit, 2 - Cutting live vegetation, and 3 - Disregarding a fire closure order by building a campfire during fire restrictions at Big Sand Lake.

Powell Ranger District personnel discovered an unauthorized, user-created, trail and salt block located in the Hidden Creek Drainage in 2002. A Special Order was issued to close the trail to all travel until the area is rehabilitated. A Forest Service law enforcement investigation is pending.

AIRSTRIP MONITORING

Although motorized and mechanized means of transport are generally not allowed in wilderness areas, use of aircraft to specific airfields within the SBW predates the Primitive Area classification and was permitted by both the Primitive and Wilderness classifications, subject to certain restrictions and limitations. (Emergency landings for fire, search and rescue and law enforcement are allowed outside of the airstrips in the SBW at the discretion of managers.) The SBW contains 3 existing public airstrips; Fish Lake, Moose Creek and Shearer.

The airfields are meant to function as internal portals for users pursuing wilderness dependent activities (defined as activities requiring a setting "where the imprint of man's work is substantially unnoticeable" and which provide "opportunities for solitude or a primitive and unconfined type of recreation.") As such, short term visits and proficiency landings are discouraged in an effort to minimize disturbance, which is not compatible with a wilderness experience. Administrative access to the SBW is managed according to the minimum tool principle, where pack stock and foot travel are the preferred methods of access.

2002 Monitored Landings on Fish Lake Airfield	
# of Monitoring Days	31
Private	33
Administrative for Facility	1
Other FS Administrative	1
Fire	4 landings, 5 sling loads
Outfitters	3
# of Days Not Monitored	10
# of Days Closed Due to Fire(s)	15
Total	**42**

The SBW general management direction identifies 2 indicators to evaluate the level of airfield use; 1) number of landings/day/airfield, and 2) number of landings/year/airfield. Standards for SBW airfield use will be determined from the results of 4 years of reliable data collection per airfield and a study to determine the perceptions of all wilderness user types regarding aircraft use in the SBW. Fish Lake airstrip has been monitored FY02 and FY03, and we plan to monitor in FY04.

Notes: Fire closures minimized the number of landing days this season. Due to uncertainty about when the closures would be lifted, we were unable to find a volunteer to monitor flights from August 26 through September when outfitter use is at its peak. Boulder Creek Outfitters was scheduled to pull their camp from Fish Lake by September 30. Missing an additional 33 days of monitoring undoubtedly skewed our landing numbers regarding both private and outfitted use of the airstrip. Base-line use has not yet been determined for this airstrip.

AUTHORIZATION FOR MECHANICAL USES

The Wilderness Act generally prohibits motorized equipment or mechanized transport in designated wilderness areas; however, it does allow for motorized/mechanized use "as necessary to meet minimum requirements for the administration of the area…, including measures required in emergencies involving the health and safety of persons within the area."

In accordance, the "minimum tool" principle will be applied to the management of all resources within the Selway-Bitterroot Wilderness. This means that the minimum management actions necessary to correct a given problem will be identified and methods and equipment which accomplish the objectives with the least impact on the physical, biological and social characteristics of wilderness will be used. All decisions pertaining to administrative practices and use of equipment in wilderness will be based on this concept.

Potential disruption of wilderness character and resources and applicable safety concerns will be considered before, and given significantly more weight than, economic efficiency. If some compromise of wilderness resources or character is unavoidable, only those actions that have localized, short-term adverse impacts will be authorized. Such management activities will be conducted in accordance with all applicable regulations, policies, and guidelines and, where practicable, will be scheduled to avoid creating adverse resource impacts or conflicts with visitors' experiences.

During the FY03 fire season, the Clearwater National Forest gave authorization for 4 mechanical uses, but only used 2 of those authorizations for chainsaw and pump use, and a helicopter landing.

WEED OCCURRENCE AND SUPPRESSION

Noxious and invasive weeds continue to exist along travel routes, in suitable habitat, and along rivers and streams. Weed seed free feed is now required on all Forestlands in both Montana and Idaho. The spread of noxious weeds continues to be a concern on the Clearwater NF. This year we had assistance in monitoring, mapping and mechanical treatment by the Student Conservation Association.

Spotted Knapweed is the most common weed below 4,000 ft and is at the greatest risk of spreading to the interior of the wilderness from wilderness portals along Highway 12. A variety of thistles, Sulfur Cinquefoil, Spotted knapweed, Hounds tongue, St. John's Wort and Oxeye Daisy were also noted by Wilderness Rangers along certain trail segments and heavily used campsites. When rangers and volunteers encountered small concentrations of weeds, the patches were hand grubbed and recorded for future monitoring.

Knapweed was reported in FY03 at: Trail #198 Lone Knob, Trail #211 Boulder Creek moving to Huckleberry Flat campsite, Trail #206 Eagle Mountain extending outward from trail on south aspects, Trail #99 Storm Creek at junction with #77, Trail #49 Warm Springs near the waterfall at the cliff overlook, Big Fog trail head moving towards Selway Crags, Trail #469 Mocus scattered plants up the trail, Huckleberry Flat, Bat Hill, Trail # 2210 Rock Creek, Trail #220 Lochsa Peak, Big Flat Creek area, and Trail #50 Colt Killed Creek has less plants than last year, but still need to pull in 2004.

St. John's Wort was reported in FY03 at: Trail #211 Boulder Creek scattered along the lower reaches, seems to be coupled with knapweed, and is also located at Huckleberry Flat, Trail #2210 Rock Creek on northern exposure, Pass Creek area, Horse Camp, along Trail #205 Long Lake from the #211 junction, old burn site near trail #205, Trail #220 Lochsa Peak, Wilderness Gateway, Trail # 906 Frog Peak in lower elevations, and Colt Killed Cabin.

Sulfur Cinquefoil was reported in FY03 at: Trail #99 Storm Creek, junction of Trail #77 and Beaver Meadows, Trail #221 Grit Ridge lower 2 miles, Old Man Meadows near camp, Huckleberry flat and were pulled, Bat Hill, Trail 2210 Rock Creek, isolated small and large patches along Trail #211 Boulder Creek and seems to stay near trail, Pass Creek area, Trail #220 Lochsa Peak, and Colt Killed Cabin and trail head area.

Canada Thistle was reported in FY03 at: Trail #211 Boulder Creek at Gold Creek crossing, Stanley Hot Springs, Trail #206 Old Man Creek, satellite plants Trail #45 Friday Pass, Pass Creek area, and Trail #220 Lochsa Peak.

Houndstongue was reported in FY03 at: Trail #4 Big Sand Creek near Duck Creek and was pulled, Big Sand Lake on north shore and were pulled, and Trail #49 Warm Springs near Jerry Johnson Hot Springs.

Oxeye Daisy was reported in FY03 at: satellite plants at Trail #4 Big Sand Creek on a user trail towards Poacher Creek, east shore of Big Sand Lake, one mile before summit to Diablo Mountain Trail #18, Trail #220 within ¼ mile of trail head at wilderness Gateway, Big Flat Creek area, Trail #50 Colt Creek ¼ mile down, and Colt Creek Trail Head.

Others reported in FY03: Chamomile at Gold Meadows, Common Tansey at Wilderness Gateway, Buttercup (nonspecific) at Seven Lakes, Poison Hemlock at Trail #205 Long Lake ½ mile up and meadow off Trail #211 Boulder Creek, Trail #219 Surprise Creek, and the Pass Creek area.

Weed education programs in place consist of requirements for weed seed free hay, posted information at trailheads, BCH trailhead education efforts in the fall, and also located where information on low impact camping and weed seed free requirements are distributed at Elk Summit Cabin and Powell Ranger station. Wilderness rangers also check for weed seed free hay compliance during visits to both private and outfitter camps in the fall.

OUTFITTERS

Outfitters provide hunting, fishing, horse camping, day trips, backpacking, hiking, photography, and river rafting opportunities. They report client use days (numbers of clients x numbers of days) and pay fees accordingly. The Selway-Bitterroot on the Clearwater has 7 standing permits, as well as occasional temporary use permits with the number depending on the season. Some temporary permittees return every year, others every few years, and others never return.

Outfitter and guides pay 3% of their gross revenue in use fees. A portion of these fees comes back to the Forests in the form of Outfitter and Guide "Fee Demo" dollars. These dollars are used for trail maintenance and reconstruction, wilderness education, wilderness field presence, trailhead improvements, and other services that benefit both public users and outfitters.

In FY03, many outfitters were unable to fulfill itinerary expectations due to the fire season causing closed trails, roads, camps, and at times, Districts.

WILDERNESS TRAIL MAINTENANCE

Trail standards are linked to Opportunity Class designations. The following tables clarify terminology related to trails and trail maintenance. Detailed trail work accomplishments follow the tables.

Trail Maintenance Level	Definition
I	Minimal amount of clearing, marking and repair.
II	Intermediate level of clearing, marking and repair.
III	Significant amount of clearing, marking and repair.

Trail Maintenance Accomplishments by Opportunity Class in the Selway-Bitterroot Wilderness Area for 2003.

	Opportunity Class IV	Opportunity Class III	Opportunity Class II	Total
Level I Maintenance	9.8	158.5	5	173.3
Level II Maintenance	7	8.3	0	15.3
Level III Maintenance	0	13.6	0	13.6
Total	**16.8**	**180.4**	**5**	**202.2**
Total Miles w/in Opportunity Class	23.4	259	27.9	310.3

Note: Total number of miles will change slightly from previous years as mileage is being verified as part of the Deferred Maintenance survey effort.

Wilderness Trails Maintained in 2003

Boulder #211 @ 25 miles, Warm Springs #49 @ 4 miles, Surprise Creek #219 @ 5.9 miles, Eagle Mountain #206 @ 42 miles, Big Sand #4 @ 6.7 miles, Colt Killed Creek #50 @ 3 miles, Frog Peak #906 @ 5 miles, Long Lake #205 @ 9 miles, Split Creek #133 @ 6.8 miles, Indian Meadows #208 @ 3 miles, Lochsa Peak #220 @ 12.3, Greenside Butte #222 @ 5 miles, Gold Hill #247 @ 6 miles, Rock Creek #1210 @ 5.2 miles, Big Sand Creek #1 @ 6.1 miles, Wind Lakes #24 @ 5 miles, Pouliot #30 @ 4.5 miles, Friday Pass #45 @ 1.3 miles, Siah Lake #59

@ 9.1 miles, Army Mule #60 @ 10.3 miles, Maud-Dan Ridge #70 @ 3.6 miles, Big Flat Hidden Ridge @ 3.5 miles, Beaver Meadows #77 @ 1.9 miles, Saturday Ridge #89 @ 5.6 miles, Storm Creek #99 @ 6 miles, and Maple Lake # 939 @ 7.6 miles.

NOTE: Please see the trail's section for specific projects and result.

FINDINGS AND RECOMMENDATIONS OF FIELD REVIEWS

Snowmobile Use Monitoring

Snowmobile activity on the Forest and interest in it increases every year. A new LEO stationed at Powell increased the frequency of our snowmobile monitoring and enforcement capabilities. Six violation notices were written for snowmobiling on a trail closed to motorized vehicles.

WILDLIFE

GOAL

Manage and provide habitat that will support viable populations of all resident wildlife species. Maintain and enhance big-game winter and summer habitat to support a huntable population of elk, deer and moose. Manage habitat to contribute to the recovery of each threatened and endangered species on the Forest.

Maintain or enhance biological diversity to the extent practicable and consistent with overall objectives of multiple use so that it is at least as great as that of a natural (unmanaged) forest.

STRATEGY

Monitor the effects of Forest activities on preservation and enhancement of biological diversity and provide biological input to proposed management activities.

Each year improve approximately 2,300 acres of big-game habitat using a variety of methods such as prescribed fire, fertilization, slashing, logging, and seeding. Use road decommissioning and modification of timber sale design, layout, and scheduling to maintain or enhance elk habitat.

Review, coordinate, and consult with the US Fish & Wildlife Service on all projects that involve impacts to threatened and endangered species. Conduct biological assessments for all projects where threatened and endangered species may occur. Recommend practices to lessen or mitigate adverse effects of projects and ensure viable populations or promote the recovery of all listed species.

Provide the public with current information on the programs and status of wildlife habitat management.

Item No. 7: Provision for Plant and Animal Diversity

Frequency of Measurement: Annual
Reporting Period: Five Years

MONITORING ACTION

Monitor the effects of Forest activities to maintain and enhance plant and animal diversity.

ACCOMPLISHMENTS/FINDINGS

A wide variety of plant and animal habitats currently exist and are well represented on the Clearwater National Forest. The exception is early seral and old growth or late successional habitats. Primary cause for the declines in these habitats was intensive timber harvest and large-scale fire exclusion over the past 50 years. A list of stands that have been tentatively identified as old growth habitat is available upon request. During project analysis all stands are evaluated as to whether or not they meet the criteria from Appendix H of the Forest Plan. If the stand meets the criteria it is added to the old growth habitat data base. Stands that had been previously identified as tentative old growth habitat are also field verified during project analysis. If the stand does not meet the criteria for old growth habitat it is removed from the data base.

Since 1998, 7,548 acres of "Tentatively Identified" habitat has been "Field Verified" as old growth. In addition, 2,298 acres of old growth that was previously not documented has been added. Field surveys documented 18,765 acres of habitat as not meeting the criteria as old growth habitat. No change in old growth habitat in Wilderness has been documented. The following table summarizes the old growth habitat documentation on the Clearwater National Forest lands from 1998 to January 2004:

Old Growth Data from 1998 Report Compared with January 2004 Report.

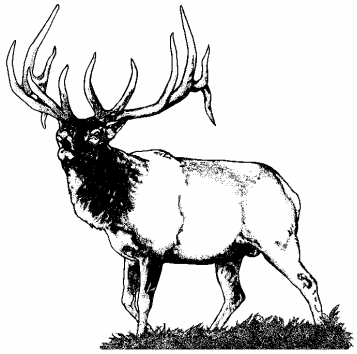
	Total Acres	Tentatively Identified Old Growth	Field Verified Old Growth	Total Old Growth Acres
1998 Non-Wilderness	1,551,478	128,760	33,840	162,600
1998 Wilderness	262,906	37,000	0	37,000
1998 Total	1,814,384	165,760	33,840	199,600
2004 Non-Wilderness	1,563,000	104,641	41,777	146,418
2004 Wilderness	262,906	37,000	0	37,000
2004 Total	1,825,906	141,641	41,777	183,418

Item No. 25 – Big-Game Habitat Improvement

Frequency of Measurement: Annual
Reporting Period: Annual

MONITORING ACTION

Areas being treated will have monitoring plans developed.



ACCOMPLISHMENTS/FINDINGS

In FY03, approximately 5,000 acres of big game habitat was improved with prescribed fire and another 30,000 acres of habitat benefited from wildfires scattered across the forest. In addition, approximately 500 acres of habitat was improved or enhanced associated with the harvesting of timber sales.

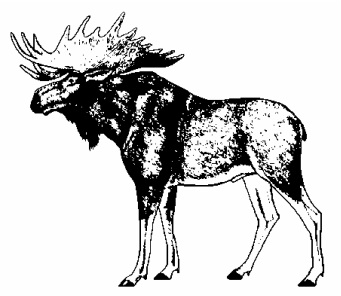
Additional information can be found in the **TIMBER** and **FIRE** section.

The *Middle Black and North Lochsa Face* projects were approved for implementation in FY 03. These projects were developed to improve the health of the ecosystem and habitat for elk on the North Fork and Lochsa Ranger Districts. Approximately 40 acres of brushfields were cut on critical winter habitat near Cold Springs. Field reviews indicate that this technique is extremely beneficial in producing new forage from re-sprouting shrubs. Widespread use of the method will need careful evaluation and prioritization due to costs and logistical support.

Frequency of Measurement: Annual
Reporting Period: Annual

MONITORING ACTION

Information will be provided on these species focusing on population trends and effects of management of these species.



ACCOMPLISHMENTS/FINDINGS

MANAGEMENT INDICATOR SPECIES

The following species were selected for inclusion in the Forest Plan as indicator species: elk, moose, white-tailed deer, pileated woodpecker, goshawk, pine marten, and all Threatened and Endangered plant and animal species.

Elk: Based on information from the Idaho Department of Fish and Game (IDF&G) big game surveys, the elk population on the Clearwater National Forest is estimated at 10,000. Winter conditions during FY03 were generally mild. The elk population remained static or slightly increased from the effects of the very severe winter conditions in FY97, which resulted in approximately a 50% reduction in elk population.

Moose: Approximately 1,300 moose inhabit the Forest based on IDF&G estimates. Harvest has remained stable. The Powell Ranger District continues to support habitat for approximately 75% of the moose population on the Forest. The trend in moose population over the past five years is stable to slightly increasing.

Deer: Approximately 5,500 white-tailed deer inhabit the Forest according to the IDF&G. Annual harvest has remained stable. Implementation of management practices to mitigate impacts on elk, riparian areas and old-growth habitat will benefit overlapping white-tailed deer habitat. The trend in deer population over the past five years is increasing especially on the Palouse Ranger District and other lands adjacent to agricultural areas. An epidemic of EHD (Epizootic Hemorrhagic Disease) that killed thousands of deer along the Clearwater River area near Kamiah occurred during the summer of FY 03. The mortality from this disease appears to have been restricted to private lands adjacent to the forest. There appears to be little or no impact to deer on Clearwater National Forest lands.

Pileated Woodpecker, Goshawk, and Pine Marten: These three species were selected as indicator species for monitoring a variety of old-growth habitats across the Forest. Trends in population numbers are correlated with overall old-growth acres maintained on the Forest as directed in the Forest Plan. A normal population of pileated woodpeckers and goshawks were commonly observed across the Forest and coincide with maintenance of old-growth habitat. A cooperative program was initiated with Potlatch Corporation to offer a monetary reward to individuals for reporting the location of active goshawk nests that could be confirmed by a biologist. No new nest sites were reported on the Clearwater forest as a result of this program during FY03. Pine martens are very common in higher elevations and continued to be trapped with no limits or harvest restrictions being considered. The pine martin population is considered to be stable based on maintenance of high elevation old-growth habitat and annual authorization of commercial trapping by IDF&G.

Gray Wolf (Experimental/non-essential): Wolves have been reintroduced into North Central Idaho in 1997. Currently, 300 wolves inhabit Idaho with 25-50 wolves on the Clearwater National Forest. The Nez Perce Tribe is responsible for monitoring and coordinating wolf recovery efforts in Idaho. Recovery goals are being met more rapidly than expected with the process of delisting being initiated. Trends in numbers are expected to increase as young adults disperse from existing packs and populate unoccupied suitable wolf habitat. Denning sites have been confirmed on various parts of the forest.

Bald Eagle (Threatened): The bald eagle occurs mostly as a winter resident in the Clearwater basin. Approximately 60 bald eagles winter in the Clearwater basin and its tributaries. Biologists from the Forest work on the National Wildlife Federation's annual bald eagle survey each January. Most of the bald eagle habitat is found along major watercourses. Recovery goals for the bald eagle have been exceeded for the past five years and the

bird was proposed for delisting in July 2000. A trend in numbers of bald eagles over the past five years is increasing based on incidental observations and annual surveys.

Lynx (Threatened): The Canada lynx was listed as a threatened species. A Conservation Strategy and Assessment has been approved. Field surveys for the presence of lynx have been conducted on portions of the forest. A multi-year research project focusing on various aspects of lynx ecology and movements associated with the construction activities in the Lolo Pass area was started in FY02. The study is a cooperative project involving various state and federal agencies. Personnel from the Intermountain Research Lab in Missoula, MT will lead the field effort.

THREATENED PLANT SPECIES

There are no listed plants on the Clearwater National Forest.

SECTION 3 - APPEALS AND LITIGATION

There are two parts to this section: a listing of individual project level appeals on the Clearwater National Forest, and a listing of the lawsuits in which the Forest is currently involved.

PROJECT LEVEL APPEALS

The Forest received eleven new project appeals on six projects during FY03. The following table presents the status of these appeals.

Project Name	Appellant	Status	Major Appeal Issues
North Lochsa Face Ecosystem Management Project	Nez Perce Tribe Friends of the Clearwater, et al. John Swanson Advocates for the West	Decision Upheld by the Regional Forester	Wildlife Cumulative Effects Range of Alternatives Water Quality/Fisheries Old Growth/Vegetation
Middle-Black Ecosystem Restoration Project	Clearwater Elk Recovery Team Idaho Department of Fish and Game Friends of the Clearwater, et al.	Decision Upheld by the Regional Forester	Effects to Roadless Areas Fisheries Soils Water Quality
Brick Trout Timber sale	Friends of the Clearwater, et al.	Decision Upheld by the Regional Forester	Analysis Documented in EA Effects to Wildlife Narrow Purpose and Need
White/White Timber Sale	Friends of the Clearwater, et al Nez Perce Tribe Columbia River Inter-Tribal Commission	Decision Upheld by the Regional Forester	Effects to Fisheries Water Quality Cumulative Effects

LITIGATION

The Forest was involved in one lawsuit during FY03. The following table presents the current status of this lawsuit.

Topic of Lawsuit, Plaintiffs and Defendants	Status	Major Issues
ATV Use on Recreation Trails Montana Wilderness Association, et al. v. Forest Service, et al.	Court decision in favor of Forest Service in November 2002	Use of all terrain vehicles on recreation trails in the general. In particular, the Clearwater and the Bitterroot National Forests failed to amend their Forest Plans to permit ATVs in excess of 40" to use recreation system trails.

SECTION 4 – IMPLEMENTED CHANGES

ECOSYSTEM MANAGEMENT

The Forest continued with the implementation of Ecosystem Management concepts and principles when designing projects. The Final Supplemental EIS and Record of Decision for the North Lochsa Face project were released in November 2002.

In addition, the Final EIS and Record of Decision EIS for the Middle-Black Ecosystem Management Project were released in January 2003.

The Forest continues to make progress in completing Ecosystem Analysis at the Watershed Scale (EAWS). The EAWS for the Upper Lolo EAWS and the Brushy Fork EAWS were completed in 2003.

FOREST PLAN REVISION

Forest plan revision continues with the formation of a Nez Perce/Clearwater National Forests zone revision team located in Kamiah, Idaho. A preliminary draft of the Analysis of Management Situation, which describes the current situation and what needs to change, was completed. Work continued on preparation of data sets to be used in analysis of alternatives.

FOREST PLAN AMENDMENTS

The only Forest Plan amendments implemented during FY03 were the following:

Amendment No. 20: Amends Appendix D to change the maximum acres burned from "wildfire" to "unscheduled" for certain management areas that have a primary resource emphasis other than timber, Lochsa District, North Lochsa Face EIS

Amendment No. 26: Amends Appendix K to change the water quality objective for the following nine streams: Bar Creek, Cub Creek, Deep Creek, Game Creek, Grasshopper Creek, Ice Creek, Pack Creek, Station Creek and Sun Creek; in addition, the channel types are changed for the following streams: Flat Creek, Squaw Creek, Fisher Creek, Trail Creek and Rock Creek, North Fork District, Middle-Black FEIS

Amendment No. 29: Amends Appendix K to change the water quality objective for Big Sand Creek, Palouse District, Big Sand Restoration Project EA

SECTION 5- PLANNED ACTIONS

INTRODUCTION

This section identifies actions slated for 2003 and beyond, in the following order.

(1) Discussion of Clearwater National Forest Ecosystem Management Documents

(2) Steps in the Revision of the Forest Plan

(3) Amendments that may be Proposed to the Current Forest Plan

(4) Discussion of Projected Budget (Appendix C in the Forest Plan)

(5) List of Other Activities Planned in FY03

1) **Ecosystem Management Documents:** **CLEARWATER NATIONAL FOREST ECOSYSTEM MANAGEMENT DOCUMENTS** - Procedures for updating the Forest vegetation and land system inventory databases are established and in use. Procedures for conducting broad-scale ecosystem analysis are better understood and being used to guide the Forest's ecosystem analysis projects.

   Assessments for the Clearwater, the Lower and Upper North Fork Clearwater, and Palouse River sub-basins have been completed. The sub-basin assessment of the Lochsa River will be completed after other higher priority watershed analysis and NEPA projects are completed.

2) **Steps in the Revision of the Forest Plan for the Clearwater National Forest:** Preparation for the release of the Forest Plan Revision Proposed Action in fiscal year 2004 is the primary task for the revision team. Public involvement concerning revision has started with informal contacts to groups and individuals. Formal public involvement will begin as part of the scoping process after release of the Proposed Action. Identification of forest plan revision issues will be completed after public input has been analyzed. A draft Environmental Impact Statement and Draft Revised Forest Plan is scheduled for release for public review and comment in 2005.

3) **Amendments That May be Proposed to the Current Forest Plan:** Following are some of the proposed Forest Plan amendments that may be expected in FY04.

   - **Other Amendments** ◆ Throughout 2004, several other project-specific amendments are expected to be identified as analysis continues or is initiated on other projects.

4) **Projected Budget (Appendix C of Forest Plan)** ◆ As implementation of the Forest Plan continues, actual dollars versus projected dollars are continually adjusted. Instead of amending the Forest Plan, Table 2 under "**ECONOMICS**" displays this information annually.

5) Other Planned Activities

EFFECTS	◆ A final environmental impact statement and Record of Decision for the Lynx Forest Plan amendment is expected to be issued in early 2003 with the projected time for a decision being late 2004. ◆ Interpretive displays at the Lolo Pass Visitor Center are to be completed in 2004.
FISHERIES	◆ Monitoring in the Lochsa River watershed area is scheduled to continue in 2004-2005. ◆ PACFISH and INFISH reviews were rescheduled for 2004. ◆ Habitat monitoring in the Orofino Creek drainage was rescheduled for 2005. ◆ Population monitoring is planned for the lower Lochsa River area during 2004-2005. ◆ The culvert on Toboggan Creek will be replaced with a bridge in 2004. ◆ Multiple surveys on these streams and other potential bull trout streams in the North Fork Clearwater drainage are scheduled for survey in 2004 in conjunction with IDF&G.
LANDS	◆ The Pits Land Exchange is scheduled for completion as a legislated land exchange in FY04. ◆ Acquisition of sections of Lewis and Clark Trail easements across Plum Creek lands will continue in 2004 and, if money is appropriated, be completed in 2005.
RECREATION	◆ Recreational use surveys begun in FY01 will continue thru FY03 with the results being available in FY04. ◆ Construction of the Deception/Cedars OHV trail began in FY02, continued in FY03 with completion scheduled for FY04. ◆ Snowmobile activity in the Selway-Bitterroot Wilderness area will be monitored from the air in FY04.
RIPARIAN AREAS	◆ Road obliteration to eliminate unneeded roads in the Deception Gulch area is planned to continue in FY04. ◆ Beginning in 2002 and continuing through 2003, an estimated 50 miles of road will be decommissioned in the Badger Creek watershed. Monitoring will continue each year through 2007.
ROAD DECOMMISSIONING	◆ The results of effectiveness monitoring for use of brush blankets is planned for FY04.

SECTION 6 – LIST OF CONTRIBUTORS & CONSULTANTS

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SECTION 7 – FOREST SUPERVISOR APPROVAL

APPROVAL

I have reviewed this annual Forest Plan Monitoring and Evaluation Report for FY03. This report meets the intent of the Forest Plan (Chapter IV) and 36 CFR 219. I have also considered the recommendations of my staff on proposed changes to the Forest Plan. Amendments needed to keep the Forest Plan current will be implemented only after appropriate participation and analysis.

This report is approved.

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LARRY J. DAWSON Date