United States
Department of
Agriculture

Forest Service
Northern Region

CLEARWATER NATIONAL FOREST

ANNUAL MONITORING & EVALUATION REPORT

FISCAL YEARS 2005-2006

CLEARWATER NATIONAL FOREST

FYS 2005-2006 MONITORING AND EVALUATION REPORT

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SECTION 1 – INTRODUCTION

The ***Clearwater National Forest Monitoring and Evaluation Report, Fiscal Years 2005-2006*** summarizes the results of Forest Plan monitoring and evaluation activities during Fiscal Years 2005 (FY05) and 2006 (FY06). The fiscal year begins on October 1 and ends on September 30.

There were no funds allocated last year to complete the 2005 monitoring report, so this report will include monitoring results for the past two years.

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 FY05-06 are summarized in Section 5.

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

1. **Introduction** – provides an overview of the report.
2. **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.
3. **Appeals** – lists unresolved Forest Plan appeals and project level appeals received in FY05-06, 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.)
4. **Planned Action** – identifies actions the Forest plans to take in FY07 – and beyond – to implement the Forest Plan.
5. **Implemented Changes** – discusses agreements and actions concerning ecosystem management, the Forest Plan and amendments to the Forest Plan.
6. **List of Forest Contacts** – includes acknowledgment of people who contributed to the development of this report.
7. **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 FY05 and FY06.

ACCOMPLISHMENTS/FINDINGS

See **Table 1: Comparison of Outputs and Activities with those Projected in the Forest Plan** for outputs and activities occurring in FY05 and FY06, 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 $) and Forest Plan Projections (in 2005 and 2006 $)** 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	FY02	FY03	FY04	FY05	FY06	First Decade Average Annual from Forest Plan	FY06% of Forest Plan Predicted
RECREATION								
Developed / Dispersed Use	MRVDs	467	483	**	**	**	201	NA
WILDLIFE & FISH								
Wildlife Habitat Improvement	Acres	704	5,000[2]	3,000	1,742	4,500	1,300	346%
Fish Habitat Improvement	Acres	54	41	36	51	55	219	25%
T&E Habitat Improvement	Acres	5	0	0	0	0	NA	NA
RANGE								
Grazing use	MAUMs	8.4	8.0	8.1	7.5	6.1	16.0	38%
Range improvement								
Structures	Str.	0	0	2	0	1	NA	NA
Noxious Weed Control[3]	Acres	1,070	1,950	960	1,468	1,800	380	474%
MINERALS								
Minerals Management	Cases	100	102	107	104	106	265	NA [1]
TIMBER								
Volume Offered								
Roaded Primary	MMBF	5.8	29.6	30.0	28.7	10.8	90	12%
Roaded NICS	MMBF	0	0	0	0	0	10	0
Unroaded	MMBF	0	0	0	0	0	73	0
Volume Under Contract	MMBF	49.3	36.6	30.8	31.2	31.3	NA	NA
Reforestation							14,416	-
Appropriated Funds	Acres	465	1193	327	356	726	NA	NA
KV Funds	Acres	462	951	475	813	1035	NA	NA
Timber Stand Improvement							1,928	-
Appropriated Funds	Acres	0	765	0	0	0	NA	NA
KV Funds	Acres	0	109	14	122	92	NA	NA
FUELS MANAGEMENT								
Natural Fuels Treatment	Acres	4,040	3,083	6,638	10,694	8,639	NA	NA
Brush Disposal	Acres	844	504	905	788	1,625	NA	NA
Wildland Fire Benefit	Acres	696	7,544	65	3,027	10,741	NA	NA
FACILITIES								
Trail Const./Reconst.	Miles	3.2	5.2	22.0	24.0	23.0	14.0	164%
Road								
Construction	Miles	0	0	2.1	5.6	6.3	69.0	9%
Reconstruction	Miles	5.7	0.5	13.3	5.2	9.7	NA	NA
Obliteration	Miles	40.4	24.5	24.9	22.0	43.3	NA	NA

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

2 Includes 2000 acres treated with cooperative funding.

[3] FY02 monitor report figure was in error; it is corrected here.

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

** = MRVD data is no longer collected; visitor use in the future will be collected through the National Visitor Use Mgmt (NVUM) system.

Table 2: Comparison between Yearly Expenditures (in thousand $) and Forest Plan Projections (in FY06 $)

ACTIVITY DESCRIPTION	FY02	FY03	FY04	FY05	FY06	FOREST PLAN	FY06 % of Forest Plan Predicted
General Administration	NA	NA	NA	NA	NA	3658	NA
Fire Protection	3165	3278	3222	1994	1889	1479	128 %
Fire Protection Fuel	578	444	1033	631	1001	424	236%
Timber Sale Plan/Prep/Admin	1284	490	749	764	1815	4402	41%
Timber Resource Plans	0	0	0	0	0	497	0%
Timber Silvicultural Exams	0	0	0	0	0	1459	0%
Range	51	110	96	76	54	177	30%
Range Noxious Weeds	119	154	164	185	130	49	267%
Minerals	152	367	169	111	118	286	41%
Recreation	1379	1468	1774	1105	1295	1765	73%
Wildlife and Fish	1081	959	1146	914	689	1849	37%
Soil and Water	433	533	387	292	237	666	36%
Maintenance of Facilities	322	378	420	311	274	819	33%
Special Uses	44	47	51	112	102	153	67%
Land Ownership Exchange	73	16	30	45	22	224	10%
Land Line Location	123	141	108	101	126	595	21%
Road Maintenance	1304	1189	1346	1175	1114	1386	80%
Trail Maintenance	629	943	586	379	381	733	52%
Co-op Law Enforcement	44	0	0	0	0	114	0%
Reforestation Appropriated	463	572	605	356	364	2972	12%
TSI Appropriated	142	283	12	25	7	697	1%
Tree Improvement[2]	154	172	171	125	111	101	110%
KV Reforestation	510	821	694	682	882	4592	19%
TSI KV	2	40	14	73	156	143	109%
Other KV	0	0	0	15	6	988	1%
Other CWFS Trust Fund	1327	1907	1872	441	587	1123	52%
Timber Salvage Sales	1132	1661	1312	1233	570	502	114%
Brush Disposal	228	372	304	259	279	2738	10%
Range Betterment	2	3	4	1	1	13	10%
Construction Recreation Facilities	382	386	269	41	336	143	235%
Facility Construction	0	58	0	0	0	952	0%
Engineering Construction Supp	21	0	0	0	0	2818	0%
Construction Capital Investment	0	132	238	0	0	4254	0%
Trail Construction/Reconstruction	91	349	195	272	241	494	49%
Timber Purchase Road C/R	0	0	0	0	0	7540	0%
Land Acquisition	1682	680	123	45	26	107	24%
Insect/Disease Sup	62	189	214	0	0	0	NA
Economic Recovery	12	114	52	0	0	0	NA
Appeals/Litigation	0	0	165	0	0	0	NA
Ecosystem Management	1165	966	1006	152	227	0	NA
TOTAL	18160	19244	18529	11915	13040	50913	26%

NA = Not originally planned

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 FY05 and FY06 included the following.

OFF-HIGHWAY VEHICLE POLICY

The Forest Service adopted a national rule regarding OHVs in FY06. The OHV Rule requires each National Forest to formally designate those roads, trails, and areas where motorized travel is permitted and to show them on a Motor Vehicle Use Map. Implementing the OHV rule on the Clearwater NF began in FY06 with a travel planning effort to identify a motorized system. The Palouse Ranger District completed identifying the district's motorized system in FY06.

CLEARWATER ELK HABITAT INITIATIVE

In January 2003, Senator Mike Crapo sponsored an "Elk Summit" to explore reasons for declining elk herds in the Clearwater basin and to begin a discussion about potential solutions. Several hundred people attended the gathering. At the conclusion of the session Senator Crapo proposed a collaborative group that would bring the various interests to the table to reach consensus about actions that would benefit elk. Participants included representatives from the Nez Perce Tribe, federal and state agencies, environmental groups, forest industry, and others with an interest in elk and elk habitat in the Clearwater basin. The group became known as The Elk Collaborative.

After more than a year of meetings, The Elk Collaborative provided Senator Crapo with a list of recommendations upon which they had reached consensus. The list included recommendations about (1) prescribed fires/wildfires/logging, (2) noxious weeds, (3) habitat restoration, (4) game management/population management, (5) predator management, and (6) access management.

The Idaho Department of Fish and Game and the Forest Service produced a response to the recommendations which they submitted to Senator Crapo in August 2005. Subsequently, the Clearwater National Forest, Nez Perce Tribe, and Rocky Mountain Elk Foundation met with Senator Crapo to affirm their commitment to elk recovery. At that time the Clearwater National Forest and Rocky Mountain Elk Foundation signed a formal Memorandum of Understanding to establish a framework that would promote cooperative management actions and habitat improvement to maintain and enhance elk and other wildlife populations and habitat in northern Idaho.

The Forest Service has fully implemented many of The Elk Collaborative's recommendations. Others are accomplished through ongoing management or are in progress.

In August 2006 Senator Crapo toured the Clearwater National Forest to view the landscape, especially those areas where wildland fires had been managed to improve habitat or prescribed fires had been deliberately ignited to create openings in the canopy and stimulate growth of new vegetation. Senator Crapo responded favorably to the tour, publicly stating he would write letters to "higher ups" in the Forest Service to encourage them to allow local managers to spend the necessary time and money to manage natural wildland fires and start prescribed fires.

LEWIS & CLARK BICENTENNIAL OBSERVANCE

The years 2003-2006 marked the 200th anniversary of the Corps of Discovery's voyage. The Clearwater NF implemented a permit system to manage use in the high elevation portion of the Lolo Trail corridor during the bicentennial years. The system was designed to protect the rich cultural and fragile natural resources in the area. Lolo Motorway rangers monitored and protected the cultural and natural resources along the route. Rangers also educated visitors about the permit system and encouraged Leave No Trace camping.

2005 OVERVIEW OF USE

Total Lewis and Clark Bicentennial visitors accounted for on Lolo Motorway and Highway 12:

- Visitors receiving permits: 1,772
- Visitors contacted by rangers: 1,460
- Visitors with outfitters: 399
- Visitors with filming crews, etc: 3
- Visitors on bus tours (short stop permits): 360

Estimate of total number of visitors: 3,142

2006 OVERVIEW OF USE

Some of the accomplishments of Lolo Motorway rangers in 2006:

- Conducted 1100 visitor contacts from July 5-September 30
- Assisted visitors with directions, leave-no-trace camping tips, campsite selection, hiking and motorized trail information, and education about the sensitive cultural and natural resources along the Lolo Trail Corridor
- Posted fire and trail closures
- Maintained facilities along the corridor
- Pulled knapweed as soon as it was discovered
- Removed rocks and debris from the 500 road and reported hazards

Nez Perce Tribe signature event: Summer of Peace in Lewiston, Idaho, June 5-17

- The Clearwater NF was the lead contact for all the federal and state agencies involved in planning this event and also helped plan the visit of the National Park Service Corps II visit to Lewiston. In addition the Forest Service provided and helped recruit speakers and organized activities for more than 2,500 children who attended the event.

- The Forest provided two booths at the event, one focusing on the Lolo Trail National Historic Landmark and the other on the Nez Perce National Historic Trail. Employees and volunteers staffed the booths. There were educational materials for the public as well as fun, hands-on experiences for children.
- The Forest worked with tribal members in Kamiah to plan a one-day satellite Summer of Peace event showcasing the upriver Nez Perce tribal people. The Forest Service provided logistical support for the event, tribal non-monetary honorariums and two booths.

Lewis and Clark at Lolo Pass: Bicentennial Events June 29-July 1

- Nez Perce tribal members shared their history and culture while authors presented programs and guided interpetive walks teaching about the plants associated with the Lewis and Clark expedition.

Lolo Pass Visitor Center operations

- Lolo Pass Visitor Center was open to the public seven days a week thanks to the partnerships formed during the Bicentennial years. The Clearwater National Forest funded three part-time positions together with the Lolo National Forest, Traveler's Rest, and Idaho State Parks and Recreation.
- The Bicentennial earmark provided funding to hire two additional interpreters to share the Lolo Trail National Historic Corridor story with the public. These interpreters led guided hikes, provided special presentations on request, and presented fireside programs in Powell and Wilderness Gateway Campgrounds on weekends.

FOREST PLAN REVISION — PUBLIC INVOLVEMENT AND COLLABORATION

In 2003 the Clearwater National Forest initiated an effort to revise the 1987 Forest Plan. From the beginning, the Forest identified the need to collaborate with individuals affected by or interested in national forest management. The Forest identified a goal of conducting an open, two-way process between the Clearwater National Forest and the people it serves.

The formal collaborative process began in 2003 with 81 data collection sessions involving over 100 individuals from a variety of backgrounds. This information was the foundation for a comprehensive social assessment (http://www.fs.fed.us/cnpz/forest/documents/sup_docs/soc_soc_assessment_final.pdf).

Since that project, the centerpiece of collaboration has been an ongoing series of meetings—more than 200 to date—with individuals, groups, agencies, and governments. Meetings have been supplemented with news releases, mass mailings, phone calls, and e-mails.

A formal 90-day comment period following the release of the Proposed Action in October 2004 yielded more than 11,000 responses. Using the agency's traditional "content analysis" process, every response was read, analyzed, and entered into a database. The results are compiled in a comprehensive report (http://www.fs.fed.us/cnpz/forest/documents/sup_docs/soc_050517content_analysis_report.pdf).

In May 2005, the Forest transitioned to a new planning rule. It is taking the agency more time than expected to define how plans developed in accordance with this new rule should look and read. At this writing, it is expected that proposed land management plans will be released in the summer of 2007. That release will be followed by a 90-day comment period.

The forest plan revision website serves as a primary source of information for individuals interested in forest plan revision (http://www.fs.fed.us/cnpz/). That site includes historic documents, the latest versions of proposed plans, and a variety of supporting documentation. The revision website has logged more than 22,000 hits throughout the revision effort.

Special Projects and Programs

Rural Community Assistance Program

Although the Farm Bill's Rural Community Assistance program has been unfunded since 2004, the Forest continues to work with local communities to implement projects previously funded. Projects still in the implementation stages include:

- City of Potlatch: $20,000 for a Historic Depot Restoration Project
- City of Kendrick: $20,000 for the Depot Renovation/Historical Museum.
- Nez Perce County: $11,200 for the Lenore Community Center Renovation.

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.

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.

The counties and Forest Service both recruit applicants for the RACs. RACs consist of 15 members, five of whom represent each of the three membership categories: industry/commercial, environmental/historical, and elected officials/at-large interests. RAC members serve 3-year terms.

2005 North Central Idaho Resource Advisory Committee Members

Category A: Labor and Industry	Category B: Environmental and Dispersed Recreation	Category C: Elected Officials, Education, Tribal, Citizens
Paul Bartlett	Dennis Baird	Fred Trevey
Ronald Hartig	Harlan Opdahl	Susan Borowicz
Don Heckman	Kent Henderson	John Nelson
William Mulligan	Robert Hafer	George Enneking
Brett Bennett	Donald McPherson	Scott Althouse
David Bodine, Jr. (RM)	Robert Abbott (RM)	Don Ebert(RM)

2006 North Central Idaho Resource Advisory Committee Members

Category A: Labor and Industry	Category B: Environmental and Dispersed Recreation	Category C: Elected Officials, Education, Tribal, Citizens
Paul Bartlett	Dennis Baird	Fred Trevey
Ronald Hartig	Harlan Opdahl	Susan Borowicz
Don Heckman	Kent Henderson	John Nelson
William Mulligan	Robert Hafer	Don Ebert
Brett Bennett	Donald McPherson	Emmit Taylor, Jr.
David Bodine, Jr. (RM)	Robert Abbott (RM)	Randy Doman (RM)

RM = replacement member

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 FY 2005 included:

Project Name	Amount Funded
Palouse noxious weed partnership	$ 18,000
Deer Creek Highway District weed control	6,696
Idaho County weed control	50,000
Weitas Creek Campground	26,460
Rehabilitation of Seven Devils Road	30,000
Elk City Wagon Road enhancement	54,000
Idaho/Clearwater County fuels reduction	55,000
Nez Perce NF and Hells Canyon NRA projects with Northwest Youth Corps	87,480
Clean Slate restoration	172,800
Hells Canyon NRA deferred trail maintenance	51,885
East Fork Emerald Creek enhancement	13,500
Cherry Dinner TS p-line survey and heritage inventory	28,000
Hells Canyon NRA noxious weed treatment	20,000
Wilderness airstrip weed treatment	15,120
Bryan Mountain loop trail signs	734
Clearwater 2005 mark and cruise	45,360
Palouse Campground hazard tree removal	17,000
Powell contract stand exams	45,144
Clearwater Youth Conservation Crew	12,000
North Fork noxious weed treatment	10,500
Middle Black shrub cutting and weed treatment	47,500
Clarke Mountain OHV Trail	42,000
Cherry Dinner TS and Gold Bug TS p-line survey and road design	53,000
Mocus Point Suspension Bridge repair	25,920
Colt Killed Creek Bridge	12,500
Gezel TS mark and cruise	17,280
Lochsa weed control – goat grazing	21,797
Crooked River instream survey and design	32,400

Projects approved in FY 2006 included:

Project Name	Amount Funded
Palouse noxious weed partnership	$ 18,000
Deer Creek Highway District weeds	6,912
Wilderness airstrip weeds	7,500
Hells Canyon NRA weed treatment	27,000
Northwest Youth Corps with Nez Perce NF and Hells Canyon NRA	76,195
False Creek in-channel rehabilitation	75,000
Sediment monitoring main stem South Fork Clearwater River	41,830
North Fork Clearwater noxious weed treatment/habitat improvement	50,000
Idaho County management of invasive weeds	50,000
Little Slate stand exams	32,400
Red River Youth Conservation Corps	5,400
Selway Crossing improvement design	54,000
Clearwater mark and cruise	6,480
Selway Road resurfacing	64,800
Road-to-trail conversion (Road 9301	16,200
Leave-no-trace stock master training scholarships	3,780
White Pine pruning Clearwater NF	65,000
Pre-commercial thinning (Clearwater NF)	124,076
Timber/vegetation inventory computer program update	32,400
McConnell Mountain area trail clearing	16,524
Warm Springs Trail erosion control	14,040
Center Ridge stand exams	6,480
Palouse RD stand exams	19,440
Elk River kiosk	50,000
Upper Lolo Lidar mapping	30,240
Highway 12 vegetation management plan	32,400
Clearwater NF Youth Conservation Corps	16,200
Selway-Bitterroot Wilderness weeds NEPA writer/editor	21,600
Idaho Project Learning Tree	16,120
Potlatch Canyon Trail fence and cattle guard	13,176
Kelly Campground toilet vault replacement	21,600
Clean Slate/Buck Shot restoration	175,000

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 Tribe regarding proposed projects and activities. The Forest and Tribe also partner based 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 Historical Park regarding the management of the Lewis and Clark National Historic Trail and the Lolo Trail National Historic Landmark.

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 visitors with information about what they will find at this site.

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

FIRE

GOAL

The Clearwater National Forest will implement a safe and efficient fire management program that provides for the three separate but related parts of fire management included in the *1995 Federal Wildland Fire Policy* as well as one that complies with the management goals and objectives outlined in the Forest Land and Resource Management Plan (LMRP).

- Fire protection — The traditional fire prevention, preparedness, detection, dispatching, and fire suppression jobs.
- Fuel treatment — The manipulation of vegetative material to meet fire and land resource management objectives.
- Fire Use — The use of planned and unplanned ignitions for prescribed fire provided that NEPA, an approved prescribed fire plan, and consultation with the Fish and Wildlife Service and the public are complete.

The annual Clearwater/Nez Perce Fire Management Plan (FMP) provides the framework to manage all wildland and prescribed fires and serves to document the fire management program as described in the approved LRMPs. The FMP was developed (and is revised annually) to interpret strategic decisions made in the Forest Plans and translate them into tactical context for a specific response area.

STRATEGY

- 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
- Analyze and display organizational needs using the ***National Fire Management Analysis System*** to determine the most cost-efficient fire management organization. This tool will help evaluate fire protection boundaries to promote economic and efficient fire suppression through the closest resource concept.
- 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 qualifications necessary to accomplish prescribed fire programs and to participate as members of incident management teams on large complex fires.
- Ensure sufficient funds are collected from timber sales to abate “activity-created” fuel hazards. Manage the trust fund accounts to ensure all work is completed.

- Continue to support and be involved in achieving the goals of habitat improvement and 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, 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.

FIRE ORGANIZATION

The Nez Perce and Clearwater National Forests implemented a Fire Management Zone organization in 1995. The Zone has fire protection responsibilities for approximately 4 million acres, 2.2 on the Nez Perce and 1.8 million on the Clearwater. The purpose of creating the Zone was to improve utilization of resources across the two forests and increase effectiveness and efficiency in the fire management organization.

The Clear/Nez Fire Zone receives nearly 30% of the fire starts in the Northern Region. Ninety percent of these fires are lightning ignitions; the remaining 10% are from a variety of human causes. Despite the heavy fire occurrences, 97% of fires are successfully initial attacked. this includes use of appropriate management response and wildland fire use. To meet fire protection objectives there is a significant dependence on aviation resources to support initial attack. The Zone consistently has the highest utilization of smokejumpers, helicopters, air attack, and retardant for initial attack in the Region.

The Clear/Nez Fire Zone is made up of a shared fire staff officer, one deputy fire staff, one fire planner, one fuels specialist, a zone aviation officer. The Zone is part of the Grangeville Interagency Dispatch Center. This center pulled all initial attack dispatching responsibilities into one central location in partnership with the Idaho Department of Lands, Clearwater-Potlatch Timber Protective Association, Bureau of Land Management, and the Nez Perce Tribe. The two Forests share the funding for the dispatch coordinator and the assistant coordinator positions. The other partners contribute funding and positions commensurate with their workload.

There are eight ranger districts in the fire zone, four on the Clearwater and four on the Nez Perce. District fire management organizations are responsible for the planning and implementation of fire-related activities on their respective units. The Zone is host to two Type III helicopters with supporting personnel modules, a smokejumper program, and a full service retardant base housed at the Grangeville Air Center. In addition there is a tri-region agreement in place that includes the Umatilla, Payette, and Wallowa-Whitman National Forests.

A complete description of roles and responsibilities of personnel/positions involved in the Clear/Nez Fire Zone management operations can be found in the annual FMP.

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: 2005 AND 2006 FIRE SEASONS

The winter of 2004-2005 was mild with lower than normal precipitation and snowpack. The spring months were unusually wet which delayed the start of the 2005 fire season into late July. In July there was a dramatic drying trend which quickly produced record ERCs (energy release components) by August. This combined with the normal lightning activity quickly depleted Zone resources by early August. During the peak period of activity the Zone hosted four Type-2 IMTs, one Type-1 IMT, and one national Fire Use team. The Long Black Complex was the most notable fire on the Clearwater Forest in 2005. Concurrent with these events was the management of another large and successful fire use program across the Zone.

Probably the greatest success of the 2005 season was the large summer prescribed burn program that began with ignitions in mid-August that was managed concurrently with the suppression and fire use programs. Prescribed burn projects designed to restore winter elk forage and to reduce accumulations of fuels included Middle Black, Upper North Fork, Weitas, and Toboggan Ridge.

The winter of 2005-2006 was near normal in precipitation and snowpack for the Pacific Northwest. However, many Clear/Nez Zone fire personnel remained very active through the winter months with hurricane recovery work in the Southeast, multiple large fires and initial attack work in Oklahoma and Texas from December through February. The action shifted to the Southwest in April and May.

The 2006 fire season at home began on schedule in early July and escalated very quickly in the first week of August when the Zone experienced between 80 and 100 starts from a storm on August 7. This workload taxed all resources and was a stern test for the new dispatch center. During the peak of the season, the Zone hosted one Type-1 IMT and three Type-2 IMTs. Concurrent with these events was the management of another large and successful fire use program across the Zone which included multiple fires in the Clearwater wildland fire use area on the North Fork and Lochsa Districts outside of wilderness, as well as numerous fires in the Selway-Bitterroot Wilderness on the Powell District.

The Zone again managed a large and successful prescribed burn program on the Clearwater Forest, along with the management of suppression fires and several large fire use events. As in 2005, the most successful large burn projects were in the Middle Black, Upper North Fork, Weitas, and Toboggan Ridge areas. The severity of the fire season along with smoke management issues did not allow the ignition of any prescribed burns until late in August. However, the Zone was successful in burning approximately 10,000 acres between late August and November. The treatment of activity-created fuels across the Clearwater also saw great success, as more than 1,600 acres were treated.

PRESUPPRESSION / 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 (MEL) 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 fire-fighting resources to meet 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 out-year budget submissions.

- The Forest received a budget of $2,501,600 for fire presuppression in FY06 and was directed to staff at 90% of the most efficient level.
- The Forest staffed a 10-person helitack crew and Type III exclusive use helicopter at Musselshell Work Center in 2006. An additional 10-person helitack crew and Type III exclusive use helicopter was stationed at Grangeville Air Center generally for use on the Nez Perce side of the Zone.

- Two single-engine air tankers were again stationed in Grangeville in 2005 and 2006. This resource continues to provide a cost-effective initial attack fire-fighting tool across the federal, state, and public lands of the Clearwater region.

WILDFIRE DETECTION

Wildfire detection on the Clearwater is primarily provided by staffed lookouts and fixed-wing detection flights.

Staffed lookouts during the 2005 and 2006 fire seasons included Beaver Ridge, Rocky Point, Walde, Black Mountain, and Coolwater. Also, three very important lookouts — Bear Mountain, Osier Ridge and Hemlock Butte — came back online in 2005 after significant structural repairs were made.

Figure 1: Fire Detection 2005

Detector	Number of Fires 2005	Percent
Lookout	18	38
FS Aircraft	10	21
Other Aircraft	3	6
FS Employee	10	21
Other	2	4
FS Patrol	3	6
Cooperator	1	2

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 detection, recon, relief air attack, fire mapping, and point-to-point passenger service for the Clearwater-Nez Perce Zone.

Figure 2: Fire Detection 2006

Detector	Number of Fires 2006	Percent
Lookout	36	26
FS Aircraft	46	33
Other Aircraft	22	16
FS Employee	13	9
Other	11	8
FS Patrol	10	7
Permittee	2	1

STATISTICAL CAUSE

In 2005 the Clearwater Forest suppressed 7 person-caused fires that burned 2.6 acres. Of the 40 lightning fires on the Forest, 28 were put under the control-suppression strategy while the other 12 were put under wildland fire use status. Wildland fire use fires accounted for 512 acres of the total noted in Figure 2.

Figure 3: Number of Fires by Cause — 2005

Cause	# Fires	Percent	Acres
Lightning	40	85	5,686
Equipment	1	2	0.1
Smoking			
Campfire	1	2	0.1
Power Line	1	2	0.1
Debris Burning	1	2	0.1
Miscellaneous	3	6	2.2
TOTAL	47	100%	5,688.7

In 2006 the Clearwater Forest suppressed 2 person-caused fires that burned 0.2 acres. Of the 138 lightning fires on the Forest, 106 were put under the control-suppression strategy while the other 32 were put under wildland fire use status. Wildland fire use accounted for 2,531 acres of the total noted in Figure 2.

Figure 2: Number of Fires by Cause — 2006

Cause	# Fires	Percent	Acres
Lightning	138	98	11,039
Equipment	1	1	0.1
Smoking			
Campfire			
Arson	1	1	0.1
Debris Burning			
Miscellaneous			
TOTAL	140	100%	11,039

WILDLAND FIRE

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.

Wildfires were attacked and suppressed in accordance with the *Fire Management Action Plan*. The intent of the Clearwater National Forest Plan standards and guidelines was met by implementing an array of suppression strategies, called the appropriate management response. Each fire was assessed for its fire potential and location within each land allocation. A suppression strategy was assigned to best fit each fire situation.

The 2005 fire season was much below average on the Clearwater National Forest in terms of numbers of fires and acres burned. The 10-year average (1995-2004) for number of fires is 118.3. The 10-year average (1995-2004) for acres burned is 6,561 acres.

The 2006 fire season was well above average with three times the number of fire starts and twice the acres burned than the previous season.

- In 2005, the Forest had **47** fires that burned a total of **5,688.7** acres.
- In 2006, the Forest had **140** fires that burned a total of **11,039** acres.

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 Zone provided extensive support to Alaska, and to a lesser extent to the Southwest, Rocky Mountains, and Pacific Northwest areas during the spring and summer seasons. In total the Zone and its partners mobilized 18 firefighting crews, including 6 Forest Service crews, 10 state of Idaho crews, and 2 Nez Perce tribal crews. Also, 18 engines and approximately 348 overhead positions were filled from the Zone.

AVIATION

The Grangeville retardant base is designated as a single-engine air tanker base. The cooperative agreement with Idaho Department of Lands to station their two contracted single-engine tankers at Grangeville was implemented again for the 2005 and 2006 fire seasons. Two Air Tractor 802s, with an operational capacity of 700+ gallons each, operated out of Grangeville from mid-July through mid-September.

- The retardant base delivered 202,152 gallons of retardant in 2005, with 14,083 of those gallons being delivered to the Clearwater NF. The Clearwater/Nez Perce Zone retardant use from all sources totaled 245,927 gallons during the 2005 fire season.
- The retardant base delivered 160,336 gallons of retardant in 2006, while the Clearwater/Nez Perce Zone retardant use from all sources totaled 371,569 gallons for the 2006 fire season.

The helitack program of the Clear/Nez Zone provides initial attack, passenger and cargo transport, extended attack support, bucket work, and project support across the Zone. The Clear/Nez exclusive use helicopter contract was renewed with Hillcrest Aircraft Company for the 2005 and 2006 fire seasons. Two Bell 206 L-3 Type III helicopters with high performance kits were provided. Helicopter N861H was based at the Musselshell Work Center, while the second helicopter (N868H) was based at Grangeville Air Center

- **During the 2005 fire season**, the two helicopters amassed 373 exclusive-use flight hours. The exclusive-use helicopters transported 852 passengers and 123,444 pounds of cargo and delivered 109,150 gallons of water during the 2005 fire season. The two helicopters were significant contributors to the successful prescribed burning program on the Zone.
- **During the 2006 fire season**, the two helicopters amassed 484 exclusive-use flight hours. The exclusive-use helicopters transported 1,127 passengers, 210,089 pounds of cargo, and delivered 154,118 gallons of water during the 2006 fire season.

The Zone hosted the only exclusive use air tactical group supervisor platform and full-time air attack in Region One in 2005 and 2006. Commander Northwest supplied a turbo-charged Aero Commander aircraft under a 90-day commitment.

The Grangeville smokejumper program provides a professional, efficient, and safety-oriented workforce that is capable of meeting fire and land management needs on a national basis. The greatest utilization of the smokejumper resource will continue to be initial attack fire suppression. However, the jump program will continue to provide personnel for support and leadership on large suppression fires, on wildland use fires, to the Zone aviation program and to other project areas when needed to help meet resource objectives.

- Grangeville employed 29 smokejumpers for the **2005 fire season**. The Grangeville smokejumper base staffed 65 fires with 248 smokejumpers dispatched from the air center. The first jump of the fire season out of Grangeville occurred on July 31 and was the latest fire season start on record. At one point at the peak of the short 2005 fire season 92 smokejumpers were on assignments on the Zone.

- Grangeville employed 29 smokejumpers and two detailers for the **2006 fire season**. The Grangeville smokejumper base staffed 106 fires with 414 smokejumpers dispatched from the air center. Sixty of these fires were staffed with 293 jumpers via aerial delivery. This is the most smokejumpers dropped out of Grangeville since the 1994 fire season. The first jump of the fire season occurred on June 28. There was a 15-day period between July 6 and September 11 when Grangeville could not staff a fire due to the lack of available smokejumpers.

WILDLAND FIRE USE

This part of the FMP manages naturally ignited wildland fires to accomplish specific prestated 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*** is developed.

This management option was selected for 12 fire starts on the Clearwater Forest in 2005. These fires burned a total of 3,027 acres.

This management option was selected for 32 fire starts in 2006. These fires burned a total of 10,741 acres.

FUELS REDUCTION

Brush disposal trust funds were used to treat 788 acres of timber harvest-related fuels in fiscal year 2005 and 1,625 acres in fiscal year 2006. Spring and fall burning conditions proved to be very productive as the Forest experienced excellent burning conditions in May. Again in August and September periodic rain events followed by a drying period presented favorable conditions for the treatment of activity fuels.

The 2005 hazardous fuels budget for the Clearwater was $647,884. The program funding was supplemented with grant funds from the Rocky Mountain Elk Foundation. The Forest accomplished 8,162 acres of "primary purpose" natural fuels treatments and 2,532 acres of "secondary" treatments with these funds, and 2,175 of these acres were within the wildland urban interface. Mechanical treatments (thinning and machine piling) totaled 3,641 acres while prescribed burning treatments totaled 7,053 acres. The 2005 season was significant in that a large summer prescribed burn program began with ignitions in mid-August managed concurrently with the suppression and fire use programs. Prescribed burn projects designed to restore winter elk forage and to reduce accumulations of natural fuels included Middle Black, Upper North Fork, Weitas, and Toboggan Ridge.

The 2006 hazardous fuels budget for the Clearwater was $695,500. The Forest accomplished 2,830 acres of "primary purpose" natural fuels treatments and 5,809 acres of "secondary" treatments with these funds, and 883 of these acres were within the wildland urban interface. The late summer/fall prescribed fire season started in September this year but extended well into October (FY07). More than 6,000 additional acres burned in October and will be credited to fiscal year 2007. Large prescribed burn projects designed to restore winter elk forage and to reduce accumulations of natural fuels were implemented in the Middle Black, Upper North Fork, Weitas, and Toboggan Ridge areas.

FISHERIES (2005)

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 Endangered Species Act (ESA), threatened species of bull trout and steelhead trout and sensitive species of westslope cutthroat trout, spring Chinook salmon, redband trout and Pacific lamprey.

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 and project ESA consultations.

ACCOMPLISHMENTS/FINDINGS

PACFISH

No formal review by the PACFISH Implementation Review Team was conducted on the Forest in 2005. 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. In 2005, the Forest conducted reviews of five timber harvest units and associated roads on three timber sales within the (1) Lolo Creek drainage: Brick Trout; and (2) Lochsa River drainage: Cabin Country and Wendover Salvage to determine compliance with Forest Plan direction as amended by PACFISH. The reviews noted one incident (Brick Trout Timber Sale) involving the retention of culverts on a road designated for intermittent storage. Three culverts were removed on Road 5119A near the beginning of the road, but several culverts were left further along the road. The review recommended the remaining culverts be removed. No other incidents were observed on the three timber sales. These projects within these anadromous drainages met PACFISH standards and guidelines and did not retard the attainment of the Riparian Management Objectives (RMOs).

In addition, two cost-shared road networks, Spruce Moose Road (Road 5967) and South Fly Boys Road (Road 5690, 5690A and 5690B) within the Spruce Creek watershed in the upper Lochsa River drainage were reviewed. The remaining two miles of the Spruce Moose road was actively being constructed by the Plum Creek Timber Company (approximately one mile was constructed several years ago). The review found that construction was occurring during wet periods (October) and substantial rutting was occurring due to gravel hauling. Although no evidence of sediment being transported to streams was observed, the risks were increased on this cost-share road. Several days after the review, the activity was shut down for the

winter and appropriate erosion control measures employed to stabilize the road prism. The review of the South Fly Boys Road conducted following timber harvest on Plum Creek Timber Company lands; no road related problems or erosional sources were observed on this cost-share road reconstructed in 2004.

INFISH

In 2005, the Forest conducted a review on one timber harvest unit (#1) and associated roads (Road 681 and one temporary road) on the Salt Lick Timber Sale within the North Fork Clearwater River drainage to determine compliance with Forest Plan direction as amended by INFISH. The review found that the project met INFISH standards and guidelines and did not retard the attainment of the Riparian Management Objectives (RMOs).

The Forest also reviewed the Weitas Campground Hazard Tree Removal project that was completed in August 2005. On April 7, 2004, a review of the proposed project found that the number of trees marked for removal was excessive within the RHCA and most likely did not meet INFISH and/or the ESA consultation. Subsequent reviews and consultations with USFWS concluded that the project should (1) avoid soil disturbance and minimize removal of existing live trees within the 75-foot zone along Weitas Creek and the North Fork Clearwater River, and (2) close two campsites along the North Fork Clearwater River to reduce the number of hazard trees that were identified for removal in these areas and reduce impacts along the beach from ATV use.

The final review found that these mitigation measures were not followed and the number of trees removed within the riparian habitat conservation area (RHCA) was excessive. Along the North Fork Clearwater River, soil disturbance via skidding was noted within 16 feet to 75 feet for a distance of 270 feet; sediment (relatively negligible amount) is expected to be delivered to the North Fork Clearwater River where skidding was closest to the river. Along Weitas Creek, skidding was noted within 38 to 75 feet for a distance of 105 feet; no sediment is expected to be transported to Weitas Creek. The proposed project identified the removal of 17 hazard trees within the 75-foot riparian zone; a total of 47 trees was removed. Although the greater number of trees removed will have localized but minimal impacts to riparian conditions on both streams, the project was not implemented as depicted in the ESA consultations.

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*** for water quality and stream condition for nonfisheries beneficial uses.

MONITORING ACTION

The Forest fisheries biologist will coordinate the monitoring of critical anadromous and inland fish streams to determine habitat conditions and population trends. Forest field crews will measure key habitat characteristics, 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 2005. 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 2000-2004, monitoring efforts in 2005 were substantially decreased from previous years due to budget constraints.

ACCOMPLISHMENTS/FINDINGS

FOREST OVERVIEW

Stream Inventory Targets: As in the past five years, budget constraints limited the number of stream surveys and associated monitoring as no seasonal personnel were employed during the field season. The Forest did not fund any stream surveys via contract in 2005. Approximately 71 miles of stream surveys that were contracted in 2004 within the Potlatch River, Elk Creek and Weitas Creek drainages were completed during 2005; information is summarized in this monitoring report. In addition, the Forest completed 4.6 miles of stream inventories in 2005.

Improvement Targets: Project targets in 2005 focused on riparian protection regarding grazing, watershed restoration and fish passage improvement projects. Approximately 22 miles (51 acres) of fisheries habitat improvement were completed using fisheries funds. Other Forest funds and non-USFS partnership funds contributed to the completion of 29 miles (34 acres) of stream habitat improvements. Stream habitat was improved either directly through culvert replacements and road drainage removals and riparian habitat protection, or indirectly through road decommissioning projects.

The 2005 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 to assist road decommissioning projects within the North Fork Clearwater River and Lochsa River drainages. Fisheries funds were also used in several partnership projects in 2005 to improve fish passage. Fisheries funds were used for culvert removal projects in the Badger Creek and Deception Gulch drainages. Forest funds and funds from the Nez Perce Tribe (Bonneville Power Administration and Idaho Office of Species Conservation) were used for six culvert replacements or removals in the Lolo Creek drainage. The Forest also funded the survey and design of two culvert replacements projects in the North Fork Clearwater River drainage.

Stream Temperature Monitoring: The stream temperature monitoring program in 2005 monitored approximately 324 sites across the Forest. Stream temperature data for 300 sites were processed in 2005. This includes streams that were monitored during the summer of 2005 and multi-year units deployed during previous years to collect data in 2005 and later years. This monitoring report summarizes the data collected during 2005 on 286 sites on 243 streams; this does not include the 14 units that were retrieved in 2005 with 2003 and/or 2004 data. Temperature data for 24 sites are not available (instruments still instream [16], missing units [2], equipment failures [4], or exposed units prevented data collection [2]). During 2005, only eight units were lost, vandalized or had equipment failures; this is approximately three percent of the units deployed in 2005. Twenty-four units deployed in years 2002-2004 are still out in the field and are not included in the above figures. Dependent upon budgets, streams will be monitored for at least five consecutive years.

The 2005 summer showed stream flows substantially below the average stream flows during the summer months. For example, the mean monthly stream discharges during June through September were approximately 53 percent of the average discharge recorded for the Lochsa River during the 94-year period (1911-2005). Given the low stream flows, higher stream temperatures would be expected, especially considering that the summer of 2005 was slightly warmer than the summer of 2004 based on air temperature units stationed throughout the Forest. However, the 2005 summer was substantially cooler than the warm summer of 2003 and most likely exhibited a "normal" temperature regime during the summer months. In 2005, approximately 3 percent (6 streams) of the streams monitored exceeded the state's cold water biota standard. This is lower than 2004 data (4.7% vs. 6.5%) and 2003 data (4.7% vs. 6.1%). Of these six streams, only one stream exceeded the state cold water biota standard for five days or fewer.

Over the past several years numerous questions have been posed about why streams are not meeting various standards. While stream flows and associated snow pack in the drainages, summer precipitation,

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 2005 stream temperature data from streams (190 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. The same situation was reported for 2002-2004. Only 12 streams out of the 89 streams (14%) within wilderness/roadless/undeveloped areas met state spawning standards for steelhead trout and westslope cutthroat trout. In comparison, only 15 streams out of the 101 streams (15%) 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 were 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 197 streams located in wilderness/roadless/undeveloped areas and developed areas within the two major subbasins (Lochsa River and North Fork Clearwater River) showed 89 of 90 streams (99%) located in wilderness/roadless/undeveloped areas met the state cold water biota standard while 104 out of 107 streams (97%) in the developed areas of the drainages met the standard. These are essentially unchanged from 2003-2004.

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.

The five-year cooperative bull trout study within the North Fork Clearwater River drainage was completed in 2005 with the Idaho Department of Fish and Game (IDFG). The study was expanded to include the Lochsa River drainage in 2003. The IDFG marked and monitored movements of 100 and 37 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 2005 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 1998-2004 conditions. Based on these assessments and the 2005 resurveys of selected sensitive stream reaches on eight streams (see below), 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 nine miles of stream and adjacent riparian areas. No other major watershed restoration activities (i.e., road decommissioning, instream restoration projects) were scheduled in 2005.

Riparian Fence Maintenance - Fences on 19 permanent riparian enclosures and six temporary riparian exclosures were maintained in 2005:

- Seven exclosures along the East Fork Potlatch River to protect 1.9 miles of stream.
- One exclosure along Ruby Creek to protect 0.25 miles of stream.
- Two pond exclosures within the Corral Creek watershed.
- A "Hi-Tensile" electric fence (2.3 miles) along Cougar Creek to protect one mile of stream.
- Five miles of "Hi-Tensile" fence along the West Fork Potlatch River and Feather Creek to protect 1.7 miles and 0.75 miles of stream respectively.
- One temporary electric fence and two permanent fences on Corral Creek and Hog Meadow Creek to protect the 1993 stream reconstruction projects along two miles of stream.
- Approximately one mile of "Hi-Tensile" fence along Nat Brown Creek to protect 0.5 miles stream.
- A permanent fence (Hank's fence) within the East Fork Corral Creek drainage to protect 0.5 miles of stream.
- The East Fork Big Bear Creek exclosure to protect 0.25 miles of stream.

Habitat Monitoring: In 2005, the Forest completed resurveys of habitat, substrate, and fish population conditions via contract on 13 selected sensitive stream reaches within eight streams in the Potlatch River drainage to determine if stream conditions have changed since the previous surveys in 1993-1995. (Note the following references.)

Clearwater BioStudies, Inc. 1994a. Habitat conditions and salmonid abundance in East Fork Big Bear Creek, Palouse Ranger District, spring 1993. Contract report no. 53-0276-3-5, prepared for USDA Forest Service, Clearwater National Forest, Orofino, Idaho.

Clearwater BioStudies, Inc. 1994b. Habitat conditions and salmonid abundance in four streams within the Corral Creek drainage, Palouse Ranger District, spring 1993. Contract report no. 53-0276-3-5, prepared for USDA Forest Service, Clearwater National Forest, Orofino, Idaho.

Clearwater BioStudies, Inc. 1994c. Habitat conditions and salmonid abundance in Little Boulder Creek and Two unnamed streams within the Potlatch drainage, Palouse Ranger District, spring 1993. Contract report no. 53-0276-3-5, prepared for USDA Forest Service, Clearwater National Forest, Orofino, Idaho.

Isabella Wildlife Works. 1995. Fisheries survey report, East Fork Potlatch River, Palouse Ranger District. Contract report no. 53-0276-4-36. Final report submitted to USDA Forest Service, Clearwater National Forest, Orofino, Idaho.

Clearwater BioStudies, Inc. 1996. Habitat conditions and salmonid abundance in the Upper Potlatch drainage, Palouse Ranger District, summer 1995. Contract report no. 53-0276-5-16, prepared for USDA Forest Service, Clearwater National Forest, Orofino, Idaho.

Streams included the mainstem Potlatch River, West Fork Potlatch River, East Fork Potlatch River, Little Boulder Creek, Corral Creek, West Fork Corral Creek, East Fork Corral Creek and East Fork Big Bear Creek. Comparisons of stream conditions between 2005 and conditions observed during the mid-1990s showed both recovery and unfavorable changes in habitat conditions. However, due to the low stream flows in 2005 (some smaller streams had intermittent flows during the 2005 survey) the observed differences may not reflect actual trends. The report (Clearwater BioStudies, Inc. 2006a) showed that positive changes in stream conditions were apparent on the West Fork Potlatch River and Corral Creek where sections of the surveyed stream reaches were fenced in the 1990s to exclude cattle grazing in the riparian areas (Clearwater BioStudies, Inc. 2006a. Habitat conditions and salmonid abundance in selected streams within the Potlatch Creek drainage, Palouse Ranger District, summer 2005. Contract report no. 53-0276-4-84, prepared for USDA Forest Service, Clearwater National Forest, Orofino, Idaho.). Conversely, eroding streambanks were found to be most extensive in the East Fork Potlatch River and Corral Creek drainage.

Comparison of substrate data (cobble embeddedness) indicated that substrate conditions improved at most of the sites during the last ten years. However, the current substrate conditions are still above the desired conditions of 40-45 percent over natural for the "low fishable" Forest Plan standard.

The study also found that the quantity and quality of pool habitat varied substantially among the eight streams. Many of the high quality pools (i.e. deepest) were beaver enhanced pools found in the West Fork Potlatch River where the riparian areas were excluded from livestock grazing.

Since stream channel and substrate conditions were monitored at permanent sites during 2003 and 2004, no additional monitoring was scheduled in 2005.

Water Temperature Monitoring: Stream temperature monitoring was conducted at 12 sites on 8 streams in the Potlatch River drainage in 2005 to evaluate habitat conditions for steelhead trout. From 1990-1996 and 1998-2005 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. Fifteen 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.

Comparison of the 2005 stream temperature data from the monitoring sites, the 12 monitoring sites on 8 streams with available data and the desired maximum temperatures as defined for the "low fishable" standard in the Forest Plan revealed that:

- The mainstem Potlatch River (at Little Boulder Creek), East Fork Potlatch River (mouth), Moose Creek (downstream of Moose Creek Reservoir) did not meet the DFC (less than 20°C) for steelhead trout rearing.
- Two sites on Nat Brown Creek (lower and upper) exceeded the standard for three days or fewer.
- Seven of the 12 sites, mainstem Potlatch River (above West Fork Potlatch Creek), Corral Creek, Cougar Creek, Feather Creek, Moose Creek (upstream Moose Creek Reservoir), West Fork Potlatch River (downstream of Stout property and mouth) and West Fork Potlatch River (downstream Talapus Creek) met the DFC for steelhead trout rearing.

In 2005, three sites, mainstem Potlatch River (at Little Boulder Creek), 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 summer rearing temperature of 12°C (consecutive seven-day average of daily maximums) that EPA issued as final temperature guidance for water quality standards throughout the Pacific Northwest.

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 2005 spawning period, eight steelhead redds were observed in the index area.

In 2005, the resurveys of selected stream reaches (see habitat monitoring section above) found that rainbow-steelhead trout were the most widely distributed salmonid at 50 fish population monitoring sites (Clearwater BioStudies, Inc. 2006). Brook trout were only found in the West Fork Potlatch River. Comparison of the 2005 data and the data collected during the mid-1990s, showed that the distribution and abundance of overyearling trout within the eight streams were similar. Some notable differences included a slight increase of the abundance and distribution of rainbow-steelhead trout at some of the stream reaches. Also, the study found that the densities of rainbow-steelhead trout and brook trout were higher in the West Fork Potlatch River sites during 2005 than during 1995.

LOLO CREEK WATERSHED

Watershed Status: No natural or anthropogenic events occurred in the Lolo Creek watershed during 2005 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 1998-2004 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 to budget constraints, aquatic restoration and enhancement work within the Lolo Creek watershed were primarily completed with engineering and Tribal cooperative funds in 2005. With the exception of the completion of two miles of road decommissioning, fisheries funds were primarily 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.

Riparian Fencing - Fence maintenance on existing riparian enclosures was completed in 2005 using range funds.

Fish Passage Improvement - In conjunction with the ongoing watershed restoration projects, the Forest concentrated fish enhancement efforts on four culvert replacement projects and two culvert removal project that would improve access to approximately six miles of stream.

Fisheries funds (22 percent) and funds from the Nez Perce Tribe (78 percent) were used for three culvert replacement projects within the Eldorado Creek drainage. The Forest and the Nez Perce Tribe also provided funds for the project design, environmental analyses, consultations and monitoring. The culvert replacements on Eva Creek, Kate Creek and Dora Creek will improve access for westslope cutthroat trout and other aquatic organisms to approximately 2.0 miles of stream. Although these culverts are located upstream of Eldorado Falls, a partial migration barrier to anadromous fish, the improved access may also benefit steelhead trout whenever production and downstream migration is improved in the Eldorado Creek drainage.

Engineering funds and funds from the Nez Perce Tribe were used for one culvert replacement project and two culvert removals within the Jim Brown Creek drainage, tributary of Musselshell Creek. The Forest and the Nez Perce Tribe also provided funds for the project design, environmental analyses, consultations and monitoring. The culvert replacement and removals within the Dan Lee Creek and Weaver Creek drainages will improve access for westslope cutthroat trout, possibly steelhead trout and other aquatic organisms to approximately 2.5 miles of stream.

Road Decommissioning – Engineering and Tribal funds were used to stabilize approximately 2.0 miles of road within the Dan Lee Creek and Weaver Creek drainages. The majority of the road (1.8 miles) was placed into intermittent storage. The remaining 0.2 mile was permanently decommissioned.

Road decommissioning projects identified under the White White and Brick Trout projects were scheduled in 2005. However, both decisions were withdrawn due to legal action. Future road decommissioning projects in the White White and Brick Trout project areas will be included in new environmental analyses and subsequent decisions.

Habitat Monitoring: The mainstream Lolo Creek and nine tributaries have been designated as WQLS (water quality limited segments) by the state of Idaho. The primary pollutants of concern are sediment and water temperature. 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.

Water Temperature Monitoring: 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 have 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 show 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. Comparison of the 2005 stream temperature data and the desired maximum temperatures as defined for appropriate standards in the Forest Plan revealed that:

- The desired steelhead trout rearing temperature of 17°C was met at six streams (Dutchman Creek, Knoll Creek, Mike White Creek, Fan Creek, Nevada Creek, and Trout Creek) out of the eleven streams monitored with a "high fishable" standard. Lolo Creek, Eldorado Creek and Musselshell Creek did not meet the "high fishable" standard for steelhead trout rearing. Lunch Creek exceeded the standard on one day.
- The desired spring Chinook trout rearing temperature of 17°C was not met at the current or potential spring Chinook salmon streams (Lolo Creek, Yoosa Creek, Eldorado Creek and Musselshell Creek).
- The desired westslope cutthroat trout rearing temperature of 16°C or below was met at three streams (Brick Creek, Chamook Creek, Panther Creek, and White Creek) out of the six streams monitored with a "high fishable" standard. Yakus Creek exceeded the standard on two days.
- The desired westslope cutthroat trout rearing temperature of 18°C or below (moderate fishable standard) was met in Gold Creek and Mud Creek.
- The desired westslope cutthroat trout rearing temperature of 20°C or below (low fishable standard) was met in Dan Lee Creek.

Overall, water temperatures within 17 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 Lolo Creek (8 days) and Musselshell Creek (at the mouth (6 days)) exceeded the state cold-water biota standard. The state standard of 13°C for the spring spawning period (steelhead trout) was met at Lunch Creek. Six streams (Dutchman Creek, Fan Creek, Knoll Creek, Panther Creek, Trout Creek and White Creek) exceeded the spawning period standard by six days or fewer. All streams exceeded the bull trout maximum summer rearing temperature of 12°C (consecutive seven-day average of daily maximums) that EPA issued as final temperature guidance for water quality standards throughout the Pacific Northwest.

Fish Population Monitoring: For the last 17 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).

Steelhead trout (age 1+) densities of 0.39 fish/100m² observed in 2005 were basically identical to those observed in 2004 and the lowest observed by the Forest since in Lolo Creek since 2000 (Figure 1). The densities were below the 16-year average (1988-2003) of 2.43 age 1+ fish/100m². Population data continue to indicate that steelhead trout production is very low in Lolo Creek. The low densities of steelhead trout (0.39 age 1+ fish/100m²) 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.

Densities of spring Chinook juveniles of 22.8 fish 100m² observed in 2005 were about three times higher than densities observed in 2004; densities observed in 2004 were the lowest observed by the Forest since 1996 (Figure 2). Similar to 2004, the densities were below the 16-year average (1988-2003) of 41.0 age 1+ fish/100m². The low densities of spring Chinook salmon observed by the Forest were validated by the Nez Perce Tribe's snorkeling work. However, the Tribe's monitoring project did not involve snorkeling similar stream reaches within the mainstem of Lolo Creek like previous years; fish population monitoring was substantially reduced in 2005. The Tribe observed lower densities (5.61 fish/100m²) within the same index area, but the surveys were conducted at sites with lower amounts of pool habitat, as compared to the Forest's monitoring sites; pool habitat usually exhibits a higher rearing potential than other habitat types (Nez Perce Tribe 2005. Nez Perce Tribe Spring/Summer Chinook Salmon Escapement Monitoring and Spawning Ground Survey – 2005 Summary, Nez Perce Tribal Fisheries Department, Orofino, Idaho).

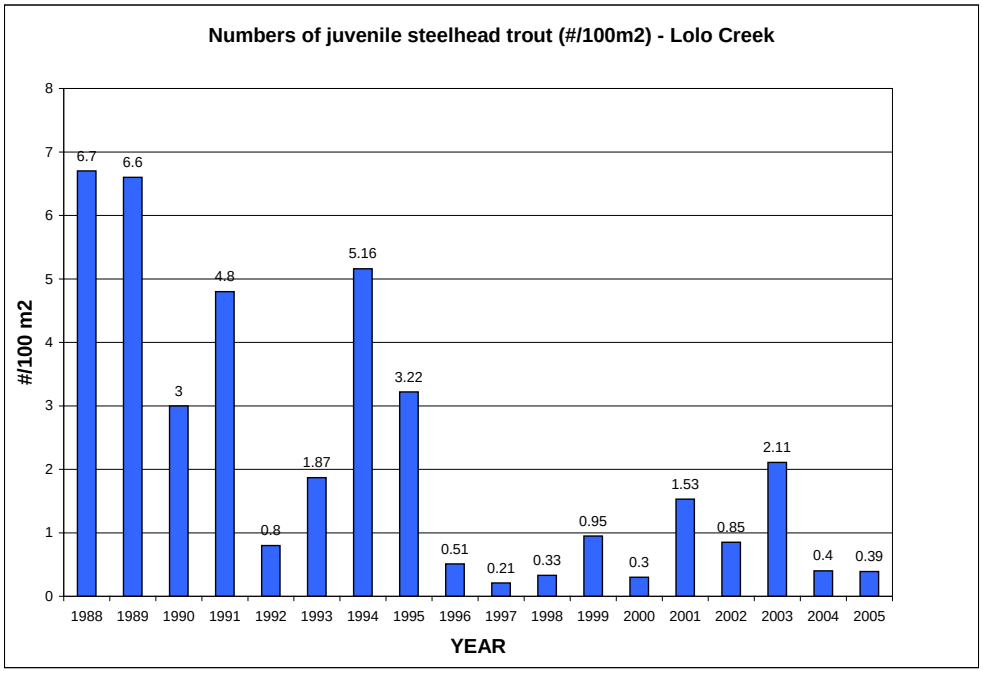


Figure 1. Comparison of the average densities (#/100m²) of juvenile steelhead trout (age 1+) that were observed for survey period 1988-2005 at permanent snorkeling stations on Lolo Creek by the Clearwater National Forest (data for 1997 and 2000 are different stations conducted by the Nez Perce Tribe within the same stream reach).

The moderately higher densities (22.8 fish/100m²) in 2005 as compared to 2004 were most likely the result of better spawning conditions and stream flows during the 2004 spawning period. The densities were substantially higher than the lowest densities (0.21 fish/100m²) documented by the Forest in 1996, substantially lower than the highest densities (91.8 fish/100m²) documented in 2003.

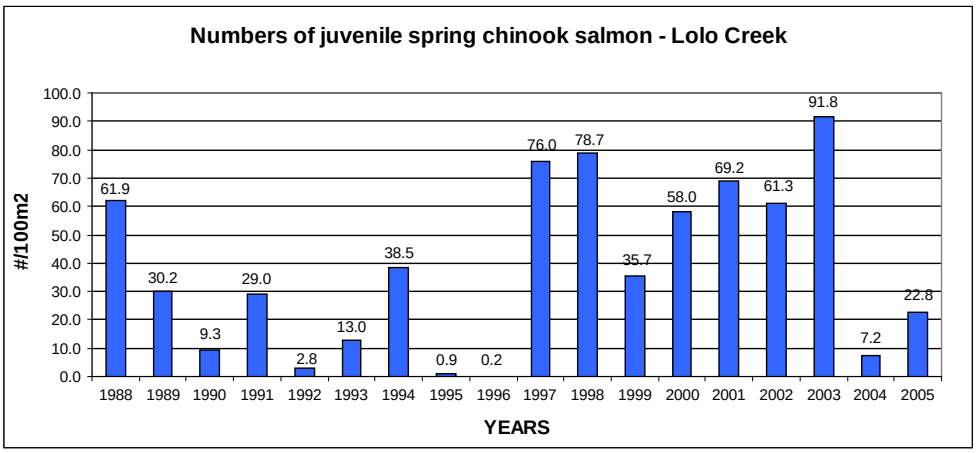


Figure 2. Comparison of the average densities (#/100m²) of juvenile spring Chinook salmon (age 0+) that were observed for survey period 1988-2005 at permanent snorkeling stations on Lolo Creek by the Clearwater National Forest (data for 1997 and 2000 are different stations conducted by the Nez Perce Tribe within the same stream reach).

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.

As part of the continuing Idaho Supplemental Studies being conducted in the Lolo Creek drainage, the Nez Perce Tribal Fisheries Department completed the 2005 Lolo Creek spring Chinook spawning ground surveys. These surveys were conducted in the mainstems of Lolo, Eldorado, Musselshell, and Yoosa Creeks.

Results of the 2005 surveys indicated that a total of 45 redds were located within the Lolo Creek drainage; all 45 redds were located within mainstem Lolo Creek (Figure 3). No redds were observed in Musselshell Creek, Eldorado Creek or Yoosa Creek. The number of redds within the Lolo Creek drainage was about 9 percent of the 2001 redd count (the highest in the 16-year monitoring period). The total redd count was only 29 percent of the 2004 redd count and substantially below the previous five-year average (2000-2004) of 209 redds. However, the 2005 redd count continues to show a higher count than marginal spawning period of 1988-1999 which had an average of 29 redds. If the exception high count of 141 in 1997 was omitted, the average for the eleven year period (1988-1996, 1998-1999) was approximately 19 redds. The reason for the relatively higher number of redds in 2005 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 2002-2005 spawning seasons (Nez Perce Tribe 2005. Personal communication with Sherman Sprague, fisheries biologist, Nez Perce Tribal Fisheries Department, Orofino, Idaho).

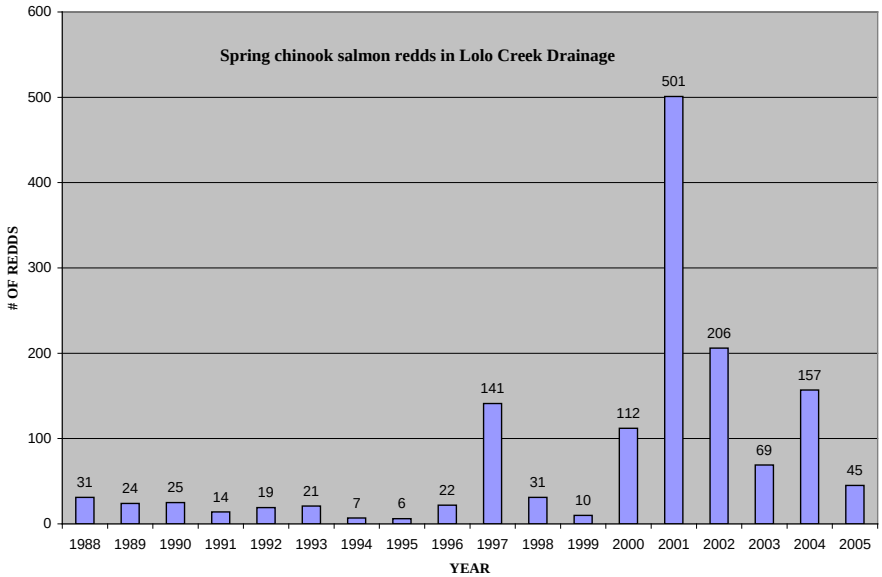


Figure 3. Comparisons of spring Chinook salmon redd counts observed within the Lolo Creek drainage during 1988-1999 (data provided by Idaho Department of Fish and Game [1988-89], U.S. Forest Service [1990-1991] and Nez Perce Tribe [1992-2005]).

OROFINO CREEK WATERSHED

Watershed Status: No natural or anthropogenic events occurred in the USFS drainages within the Orofino Creek watershed during 2005 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 2004. Various field reviews have supported the conclusion that the habitat conditions for most drainages are most likely similar to 1998-2004 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: As in 2001-2004, stream surveys that were scheduled for Orofino Creek in 2005 were not completed due to budget constraints. Dependent upon funding, surveys will be rescheduled for 2007.

Water Temperature Monitoring: 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 1996-2004, Orofino Creek at the Forest Service boundary were monitored for summer stream temperatures in 2005. In addition, stream temperature data was collected at five tributary sites and upper Orofino Creek (upper Orofino Creek drainage) during 2005. Comparison of the 2005 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. The state standard of 13°C for the spring spawning periods (for westslope cutthroat trout) was met at Gezel Creek.

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 2005 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 2004. Various field reviews and monitoring activities have supported the conclusion that the habitat conditions are most likely similar to 1998-2004 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. However, anadromous fish numbers may vary annually due to influences outside the watershed.

Habitat Improvement: Engineering funds were used to complete 5.0 miles of road stabilization within the Bridge Creek and Syringa Creek drainages; approximately 4.5 miles were decommissioned and 0.5 mile was placed into intermittent storage. This project provided improved watershed conditions for 2.5 miles of fish-bearing stream in these drainages.

Habitat Monitoring: Since the stream inventories of all fish-bearing streams within the Middle Fork Clearwater River drainage were completed on National Forest System lands during 1996, no additional habitat surveys were scheduled for 2005.

Water Temperature Monitoring - Middle Fork Clearwater River Drainage: Stream temperatures were monitored throughout the summer at the mouths of Big Smith Creek; Little Smith Creek and Swan 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 2005 stream temperature data from the three streams 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 at Big Smith Creek, Little Smith Creek and Swan Creek did not meet this standard. These 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 meet the “high fishable” standards for steelhead trout.
- Big Smith Creek, Little Smith Creek and Swan 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. As for bull trout, Big Smith Creek, Little Smith Creek and Swan Creek have not been designated potential bull trout spawning habitat; they also have exceeded the maximum summer rearing temperature of 12°C (consecutive seven-day average of daily maximums) that EPA issued as final temperature guidance for water quality standards throughout the Pacific Northwest.

LOCHSA RIVER WATERSHED

Watershed Status: No natural or anthropogenic events occurred in the USFS drainages within the Lochsa River watershed during 2005 that caused changes to the aquatic environment. Additional field review of the 2003 wildfires (USDA Forest Service - Clearwater National Forest, 2005. Annual Monitoring and Evaluation Report, Fiscal Year 2004.) did not indicate any additional major erosional problems or subsequent impacts to streams within the fire perimeters. 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 2005. Various field reviews and monitoring activities have supported the conclusion that the habitat conditions are most likely similar to 1998-2004 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. However, anadromous fish numbers may vary annually due to influences outside the watershed.

Habitat Improvement: Most improvement work regarding the aquatic resources focused on watershed restoration (i.e., road decommissioning and culvert removal). 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 one culvert removal project in the Lochsa River drainage. The Forest and Tribe participated in the design, implementation and monitoring of these projects. These activities improved access for adult anadromous and inland fish and allowed for unimpeded access for juvenile fish and other aquatic species on an additional 2.3 miles of stream.

Lower Lochsa River Area – Other than general road maintenance work, the Forest did not initiate any project that had direct or indirect habitat improvement for the aquatic resources during 2005. Due to pending legal proceedings, additional watershed restoration activities including substantial road obliteration and riparian planning projects that are scheduled under the North Lochsa Face analysis are currently on hold.

Fish Passage Improvement - Upper Lochsa River Area – In 2005, the Forest concentrated fisheries improvement funds on two fish enhancement efforts: one culvert removal project in conjunction with the ongoing road decommissioning project and survey and design of two culvert replacement projects.

Fisheries funds were used to remove an old culvert in Badger Creek. This culvert removal project re-opened approximately 2.3 miles of stream for the migration of aquatic organisms, including juvenile and adult steelhead trout, bull trout and westslope cutthroat trout.

Fisheries funds were also used for the survey and design of two culvert replacement projects within the Indian Grave Creek drainage; approximately 2.0 miles of habitat will be made accessible for steelhead trout, westslope cutthroat and other aquatic species. These two culverts are scheduled to be replaced in 2007 using funds from the Office of Species Conservation and the Nez Perce Tribe.

Road Decommissioning - Upper Lochsa River Area – The main habitat restoration activity within the upper Lochsa River drainage involved the road decommissioning project in the Badger Creek and Imnamatnoon Creek (Papoose Creek) drainages. The road decommissioning work reduced potential erosion sources and mass wasting areas and is expected to accelerate the recovery of stream channel and habitat conditions. Engineering funds were used with funds from the Nez Perce Tribe in the decommissioning of approximately 16.5 miles of road within the upper Lochsa River drainage.

Approximately 7.7 miles of road within the Badger Creek drainage were stabilized in 2005; 2.7 miles of road were placed into intermittent storage and approximately 5.0 miles of road were permanently decommissioned. Since 2001, the Forest has decommissioned 49.5 miles of road and placed 3.6 miles of road into intermittent storage within the Badger Creek drainage. The road decommissioning portion of the watershed restoration efforts will be completed in 2006 with the decommissioning of the remaining 4.4 miles of road.

A total of 7.5 miles of road within the Imnamatnoon Creek (Papoose Creek) drainage were stabilized in 2005. Tribal and Forest funds were used to place 3.6 miles of road placed into intermittent storage and complete approximately 2.8 miles of road obliteration. As part of the Cabin Country timber sale, approximately 1.1 miles of road were also decommissioned. These two projects provided improved watershed conditions for 3.5 miles fish-bearing stream in the East Fork Imnamatnoon Creek (Papoose Creek) drainage.

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 2005, no resurveys were scheduled within the Lochsa River drainage.

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 20 years. 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. During 2001-2003, surveys noted an increasing trend. However, the trend reversed in 2004 and 2005 (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 in 2002-2003. Similar to Pete King Creek, the increasing trend was reversed in Deadman Creek in 2004, but unlike Pete King Creek an increase was observed in 2005. At both streams, the 2005 levels were 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 decrease of four percentage points in 2005 (Figure 4). Since no new sediment sources (i.e., landslides, road failures) were identified during 2000-2005, the decrease is most likely the aftermath of a pulse of instream sediment being transported through the system during the past two years (2002-2003). 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.

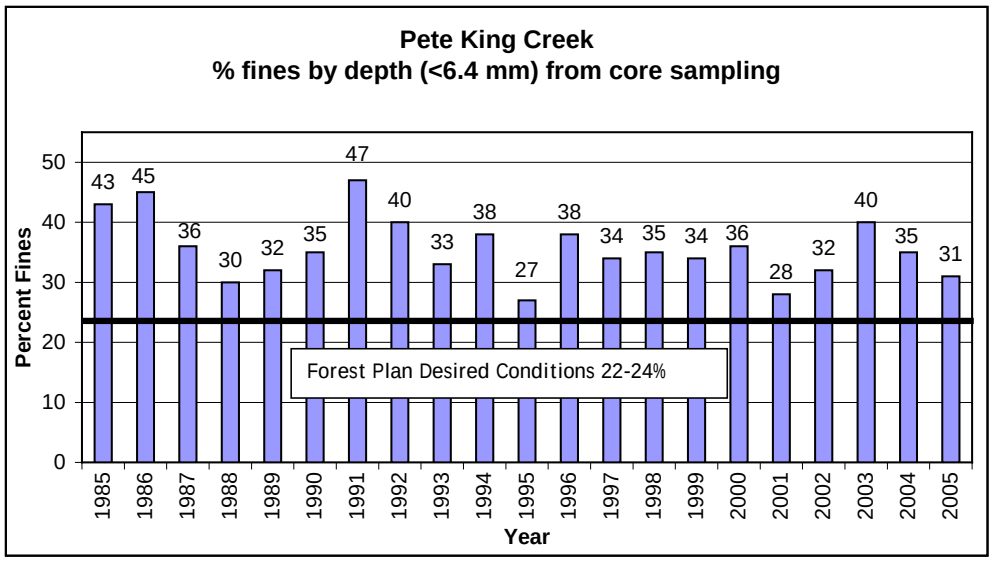


Figure 4. Comparison of average percent fines by depth (<6.4 mm) for years 1985-2005 at permanent substrate monitoring sites in lower Pete King Creek within the Lochsa River drainage.

At the Deadman Creek stations, the substrate conditions showed a moderate increase in percent fines from 30% to 35% between 2004 and 2005 respectively (Figure 5). Similar to Pete King Creek, no new sediment sources (i.e., landslides, road failures) were identified during 2000-2005. Therefore, the increase is most likely the aftermath of a pulse of instream sediment being transported through the system during the past four years (2000-2003). 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, 2002-2003, and in 2005 most likely show that the decrease is temporary and that sediment impulses resulting from past anthropogenic activities are still present in the drainage. Information collected in the next three years will hopefully show if a long-term decreasing trend is apparent or if sediment conditions will continue to fluctuate.

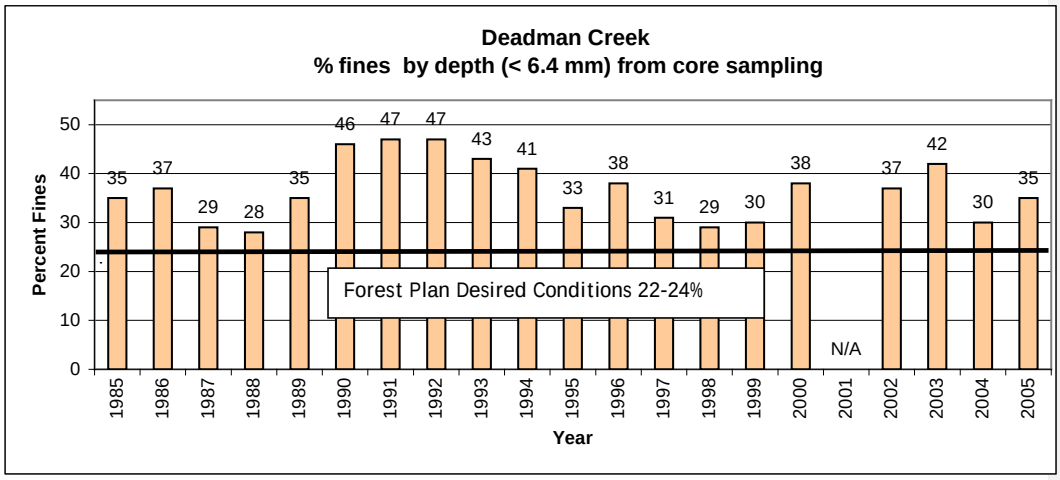


Figure 5. Comparison of average percent fines (<6.4 mm) for years 1985-2005 at permanent substrate monitoring sites in lower Deadman Creek within the Lochsa River drainage. No data was collected in 2001.

Upper Lochsa River Area: Stream channel and substrate conditions were monitored at three permanent sites on Badger Creek in 2005. See ***Riparian chapter*** for more information. The remaining substrate monitoring on the Forest was concentrated within the North Fork Clearwater River drainage during 2005.

Water Temperature Monitoring - Lochsa River Drainage: Stream temperatures were monitored throughout the summer at 108 sites on 92 streams within the Lochsa River drainage. Temperature data for 17 of these sites are not available (instruments still instream [13], missing units [1], equipment failures [1], or exposed units [2] prevented data collection). The Forest has been collecting water temperature data from 1990-2004 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 2005 stream temperature data from the 91 monitoring sites on the 77 streams with available data with desired maximum temperatures as defined for the "high fishable" and "no effect" standard in the Forest Plan revealed that:

- 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.
- The desired steelhead trout rearing temperature of 15°C (no effect) was met at two streams (Dan Creek, and Fern Creek) out of the fourteen streams monitored with a “no effect” standard. Two streams, Swamp Creek (2 days) and Willow Creek (6 days) exceeded the standard on six days or fewer.
- The desired steelhead trout rearing temperature of 17°C (high fishable) was met at 26 streams out of the 36 streams monitored with a “high fishable” standard. Skookum Creek (1 day), Spruce Creek (2 days) and Deadman Creek (7 days) exceeded the standard on seven days or fewer.
- The desired spring Chinook trout rearing temperature of 15°C (no effect) was not met at any of the five major streams with Chinook habitat. Two sites on those streams, Crooked Fork Creek (upstream Hopeful Creek) and Fishing (Squaw) Creek above West Fork Fishing Creek did meet the standard.

- The desired westslope cutthroat trout rearing temperature of 13°C was not met at any of the six streams monitored with a "no effect" standard.
- The desired westslope cutthroat trout rearing temperature of 16°C (high fishable) was met at 16 of the 20 streams monitored with a "high fishable" standard. Eagle Mountain Creek exceeded the standard five days.

Overall, water temperatures of 76 of the 77 monitoring streams 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. Two of the five sites on the mainstem Lochsa River met the standard while the remaining three sites exceeded the standard for 6 to 23 days. The state standard of 13°C for the spring spawning period (steelhead trout) was met at four streams (Fern Creek, Robin Creek, Spring Creek and Williams Lake Creek). An additional ten streams exceeded the standard by five days or fewer. The state standard of 13°C for the spring period for westslope cutthroat trout was met at four streams (Bridge Creek, Cooperation Creek, Haskell Creek and Muleshoe Creek). Beaver Creek, Cabin Creek, Queen Creek and Shoot Creek exceeded the standard on five days or fewer. Only Bridge Creek and Muleshoe Creek met the bull trout maximum summer rearing temperature of 12°C (consecutive seven-day average of daily maximums) that EPA issued as final temperature guidance for water quality standards throughout the Pacific Northwest.

Fisheries Population Monitoring:

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 and inclement weather conditions during late August limited the number of sites to the Pete King Creek and lower Fish Creek drainages. No fish population sampling was completed in Deadman Creek. Fish population monitoring was not completed during 2005 in the upper Fish Creek and Hungery Creek drainages. Average steelhead juvenile densities at the Pete King Creek sites showed moderate levels similar to 2004 while densities at the lower Fish Creek sites showed higher numbers than in previously surveyed years. 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 drainage has been conducted over a number of years to assess the trend in steelhead production within developed watersheds within the lower Lochsa River drainage (Figure 8).

The 2005 data indicate that steelhead trout populations within Pete King Creek have remained at the 2004 levels which are slightly higher than the 23-year average of 8.7 age 1+ fish/100m^2. Fish population data collected by the Forest showed densities of juvenile steelhead (age 1+) averaged about 9.3 fish/100m^2 in lower Pete King Creek. The 2005 densities are still below the desired densities of juveniles (age 1+) >15 fish/100m^2 (Figure 6). 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.

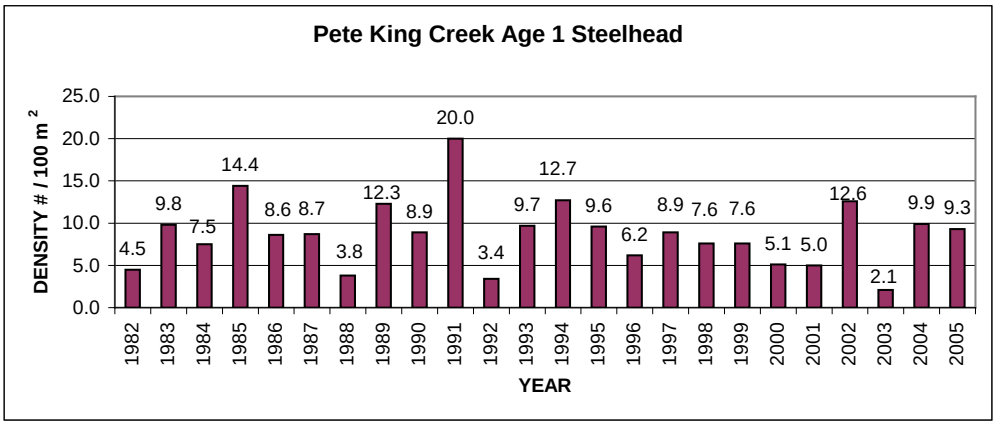


Figure 6. Comparison of the average densities (#/100m²) of juvenile steelhead trout (age 1+) that were observed for survey period 1982-2005 permanent snorkeling stations on Pete King Creek in the Lochsa River drainage by the Clearwater National Forest.

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 (Figure 7). Budget and time constraints in 2005 limited fish population sampling to sites within lower Fish Creek. In comparison to 2002-2003 average (no data was collected in 2004), the average steelhead trout juvenile densities in 2005 showed a moderate increase (45%) at the lower Fish Creek sites (Figure 7). Juvenile densities (18.3 fish/100m²) at the Fish Creek sites are above the desired densities of juveniles (age 1+) >15 fish/100m² (Figure 9); the densities observed in 2005 is exactly the same as the period of record (21-year average) of 18.3 fish/100m².

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 maintain 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.

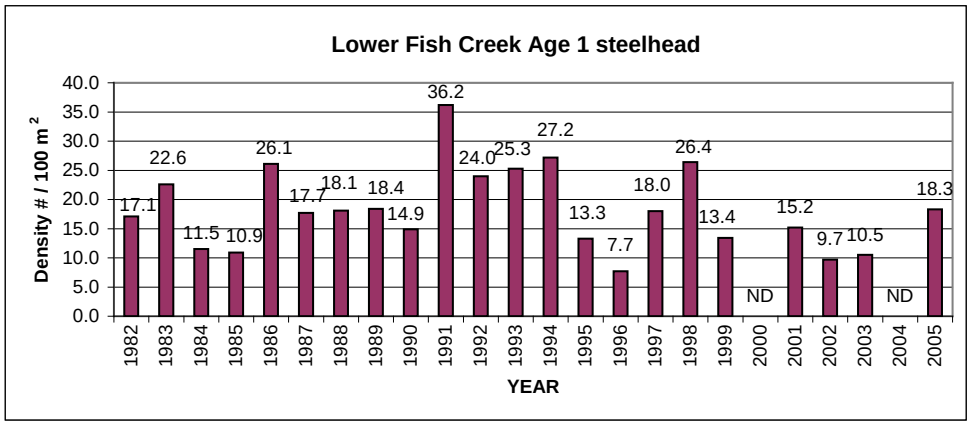


Figure 7. Comparison of the average densities (#/100m²) of juvenile steelhead trout (age 1+) that were observed for survey period 1982-2005 permanent snorkeling stations on lower Fish Creek in the Lochsa River drainage by the Clearwater National Forest. No data was collected in 2000 and 2004.

As part of the continuing Idaho supplemental studies being conducted in the Lochsa River drainage, the U.S. Fish and Wildlife Service completed the 2005 spring Chinook spawning ground surveys in lower five miles of Pete King Creek. The survey did not find any redds during the 2005 spawning period (U.S. Fish and Wildlife Service 2006. Provisional data from Idaho Fishery Resource Office, Dworshak National Fish Hatchery, Ahsahka, Idaho). Spring Chinook spawning in Pete King Creek occurs infrequently as 0 redds were found during 1992-96, 1998-99, 2003, and 2005 survey periods. 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 other priorities, the Forest conducted limited fish population monitoring (via snorkeling) in the upper Lochsa River drainage during 2005. Permanent fish population monitoring stations were only monitored via snorkeling in Badger Creek.

As part of a research study regarding the effects of road obliteration on instream conditions, two culvert replacements and one culvert removal, the Forest has been monitoring Badger Creek since 2000. Data collected in 2005 indicates steelhead production is occurring annually with fair to moderate densities (4.56 age 1+ fish/100m²) of juvenile steelhead observed upstream of the culvert replacements. The densities observed during 2005 were slightly below densities recorded in 2003 and 2004 (6.20 and 6.10 Age 1+ fish/100m² respectively). Westslope cutthroat trout densities in Badger Creek showed fair numbers of juvenile fish (age 0+ and 1+) but in relatively low densities of older fish (age 2+ fish).

In 2005, the Forest continued bull trout spawning ground surveys on selected streams within the Lochsa River drainage. Approximately 8.7 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 four streams in the upper Lochsa River drainage. The streams included Fishing (Squaw) Creek, West Fork Fishing (Squaw) Creek, Haskell Creek, and Williams Lake Creek. Spawning (87 redds) was documented in three of the four streams.

As part of the continuing Idaho supplemental studies being conducted in the Lochsa River drainage, the Nez Perce Tribal Fisheries Department completed the 2005 spring Chinook spawning ground surveys in Imnamatnoon (Papoose) and Waw'aalamnine (Squaw) Creeks. Results of these surveys indicated that spring Chinook spawning was substantially below the 13-year average in Imnamatnoon (Papoose) Creek and Waw'aalamnine (Squaw) Creek (Figures 8 and 9). A total of 8 and 2 redds were located within Imnamatnoon (Papoose) Creek and Waw'aalamnine (Squaw) Creek respectively. This compares to an average of 35.7 redds/year in Imnamatnoon (Papoose) Creek and 11.6 redds/year in Waw'aalamnine (Squaw) Creek during 1992-2004 survey period.

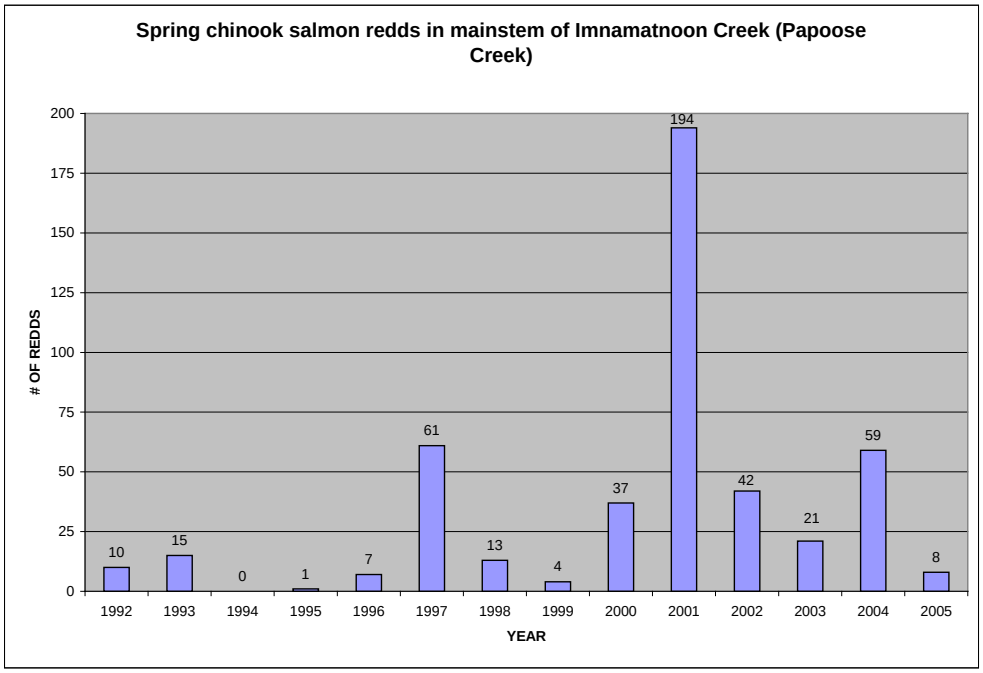


Figure 8. Number of spring Chinook salmon redds observed by Nez Perce Tribe in Legendary Bear (Papoose Creek) during 1992-2005 spawning season (provisional data, Nez Perce Tribe).

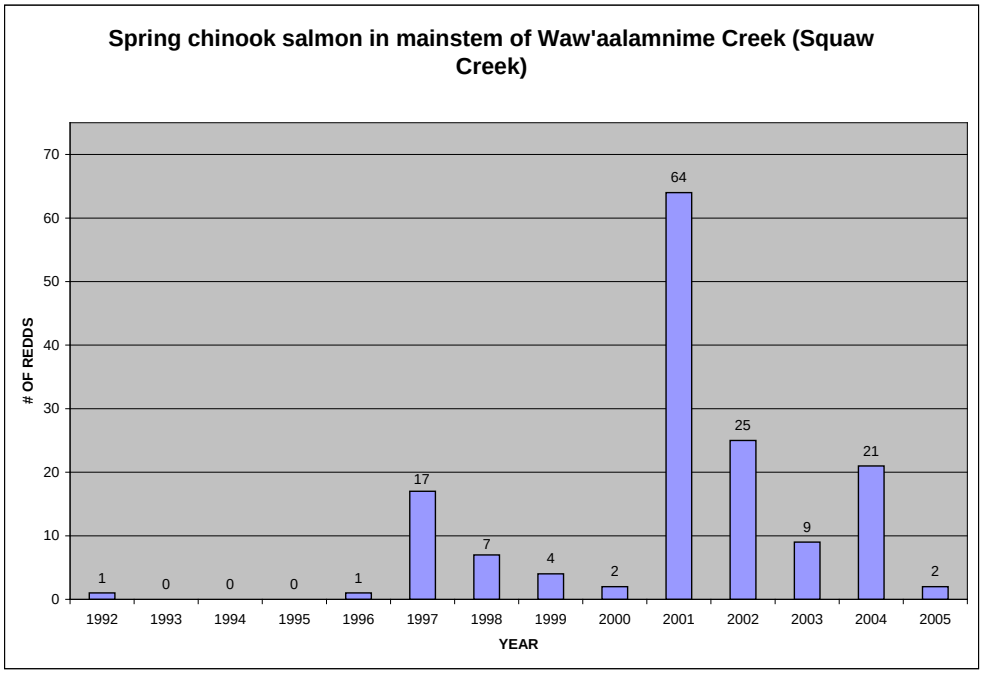


Figure 9. Number of spring Chinook salmon redds observed by Nez Perce Tribe in Fishing Creek (Squaw Creek) during 1992-2005 spawning season (provisional data, Nez Perce Tribe).

Lochsa River Bull Trout Studies: In 2003, the IDFG (Idaho Department of Fish and Game) and the Forest started a partnership project regarding bull trout studies within the Lochsa River subbasin. The project is primarily designed to determine the movements of bull trout, estimate adult fluvial bull trout population size and document overwintering and spawning locations in the Lochsa River drainage. In 2003 and 2004, the IDFG marked and monitored movements of 20 and 41 adult bull trout respectively. In 2005, the final year of the study, the IDFG marked and monitored movements of 37 adult bull trout. The IDFG collected tissue samples from the bull trout, and the University of Idaho is analyzing the tissues for genetic information. The Forest assisted the IDFG in conducting fish population monitoring and spawning ground surveys. Besides validating known spawning areas, the tracking of these 98 adult bull trout during the past three years has identified other streams where bull trout migration and spawning are occurring in the Lochsa River drainage. IDFG is currently finalizing annual reports summarizing the information collected during the past three years; contact the IDFG Lewiston's office for more information.

NORTH FORK CLEARWATER RIVER WATERSHED

Watershed Status: In addition to several small fires, two major lightning-caused fires (approximately 2,100 acres) occurred in the upper North Fork Clearwater River watershed during 2005 that caused minor localized changes to the aquatic environment.

In 2005, the 1,950 acre Black Canyon Face Fire burned along several miles of the North Fork Clearwater River (above Kelly Creek). This fire was examined several times in the fall of 2005 by the BAER (Burned Area Emergency Rehabilitation) team and other resource specialists. Numerous large cedar trees were burned and fell into the river. The impact of these trees falling into the river is considered a beneficial effect because of the increase of large woody debris and the fish habitat it provides. A minor amount of ash was delivered to the river; however, no sediment movement was observed. 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.

The Trap Point Fire Lakes (150 acres) burned within the lower Long Creek drainage. The fire was located on a ridge top in primarily lodgepole pine overstory and did not affect any riparian areas.

Besides these two wildfires, no additional natural or anthropogenic events occurred in the USFS drainages within the North Fork Clearwater River watershed during 2005 that caused changes to the aquatic environment. Additional field review of the 2003 wildfires and thunderstorm event (USDA Forest Service - Clearwater National Forest, 2005. Annual Monitoring and Evaluation Report, Fiscal Year 2004. Clearwater National Forest, Orofino, Idaho) did not indicate any additional major erosional problems or subsequent impacts to streams within the fire perimeters. The reviews did result in proposing additional watershed restoration (mulching and woody debris placements in headwater channels) within some of the high intensity burn areas within the Pleasant Fire (upper Cayuse Creek drainage). 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 1998-2004 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 1990s.

Habitat Improvement: Due to budget constraints, aquatic restoration and enhancement work within the North Fork Clearwater River watershed were limited in 2005 to an ongoing road decommissioning project, one culvert removal project and two culvert replacement projects. Fisheries funds supplemented Forest funds from engineering and watershed to complete road decommissioning activities in the Deception Gulch drainage. Fisheries funds were also used to assist the projects in the environmental analyses, ESA consultations, project design 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.

Road Decommissioning: Since 1999, the Forest has been working on completing (as funds are available) the road decommissioning portion of the watershed restoration project for the Deception Gulch drainage and adjacent drainages in the upper North Fork Clearwater River watershed. During 2005, the Forest completed 5.2 miles of road decommissioning and placed 4.6 miles of road into intermittent storage within Deception Gulch drainage and along the mainstem North Fork Clearwater River. Besides the 0.75 miles of road storage associated with the Deception Gulch culvert (see below), fisheries funds were used to complete another four miles of road decommissioning. The culvert removal and road decommissioning and storage work provided improved watershed conditions for 9.8 miles of stream including Deception Gulch and the mainstem North Fork Clearwater River.

Engineering funds and funds from the Clearwater Resource Advisory Committee were used to complete 2.6 miles of road decommissioning within the lower Orogrande Creek drainage. Another 1.8 miles of road was converted to an OHV trail. These projects provided improved watershed conditions for 2.4 miles fish-bearing stream in the Hook Creek drainage.

Fish Passage Improvement: During 2005, fisheries funds were used to remove a large culvert in Deception Gulch and place 0.75 miles of road adjacent to the culvert into intermittent storage. The culvert removal will provide access for westslope cutthroat trout, bull trout and other aquatic organisms to approximately 2.5 miles of stream.

Fisheries funds also were used in a cooperative Forest effort in completing survey, NEPA (National Environmental Policy Act) and ESA (Endangered Species Act) consultation, and design work on two culvert replacement projects on Hidden Creek and Fix Creek. When completed the culverts would improve access for westslope cutthroat trout, bull trout and other aquatic organisms to approximately 5.5 miles of stream.

Riparian Fencing: One temporary electric fence that was installed in 1996 around the sediment trap in the upper Elk Creek drainage was maintained in 2005. This provided protection of the riparian vegetation and maintained the integrity of the sediment trap from stream bank alterations.

Watershed Improvement: Other than road decommissioning activities in the Deception Gulch area, no other watershed improvement projects were scheduled in 2005. Watershed restoration (mulching and woody debris placements in headwater channels) within some of the high intensity burn areas within the Pleasant Fire (2004) within the upper Cayuse Creek drainage is planned for 2006.

Habitat Monitoring: In 2005, the Forest completed three projects involving the collection of stream channel, habitat, and fish population data. Projects included the resurvey of selected stream reaches in the Elk Creek drainage. Johnson Creek, a tributary of Elk Creek had an initial stream survey completed. The Forest also completed stream surveys in the Weitas Creek drainage.

Elk Creek Stream Reach Resurveys: In 2005, the Forest completed resurveys of habitat, substrate, and fish population conditions via contract on eight selected sensitive stream reaches within four streams in the Elk Creek drainage to determine if stream conditions have changed since the previous surveys in 1996 (Clearwater BioStudies, Inc. 1997. Habitat conditions and salmonid abundance in the Elk Creek drainage, Palouse Ranger District, summer 1996. Contract report no. 53-0276-6-31, prepared for USDA Forest Service, Clearwater National Forest, Orofino, Idaho). Streams included the mainstem Elk Creek, West Fork Elk Creek, Shite Creek and Morris Creek. Limiting factors for fish production for these drainages continue to include high levels of cobble embeddedness and inconsistent availability of good winter habitat.

Comparisons of stream conditions between 2005 and conditions observed in 1996 showed both recovery and unfavorable changes in habitat conditions. The report (Clearwater BioStudies, Inc. 2006b. Habitat conditions and salmonid abundance in selected streams within the Elk Creek drainage, Palouse Ranger District, summer 2005. Contract report no. 53-0276-4-84, prepared for USDA Forest Service, Clearwater National Forest, Orofino, Idaho) showed that positive changes in stream conditions were apparent along Elk Creek as the amount of raw stream banks was substantially lower in 2005 as compared to conditions in 1996. The change is most likely stream channel recovery following the 1995-96 flood event.

Comparison of substrate data (cobble embeddedness) indicated that substrate conditions improved at most of the sites during the last ten years. However, the current substrate conditions are still above the desired conditions of 30-35 percent over natural for the "high fishable" Forest Plan standard.

Johnson Creek Stream Survey: Approximately two miles of Johnson Creek was surveyed via contract in 2005 to gather baseline information on this Elk Creek tributary. The report (Clearwater BioStudies, Inc. 2006b) noted that Johnson Creek exhibited steep channel gradients that were limiting factors for fish habitat.

Weitas Creek Stream Survey: In 2005, the Forest completed stream surveys via contract on the remaining portions of the Weitas Creek drainage without baseline survey data. Approximately 55.6 miles of streams including the mainstem Weitas Creek and 17 tributaries upstream Windy Creek had stream channel, habitat, riparian and fish population data collected and summarized (Clearwater BioStudies, Inc. 2006c.

Habitat conditions and salmonid abundance in streams within the Weitas Creek drainage, North Fork Ranger District, summer 2005. Contract report no. 53-0276-4-84, prepared for USDA Forest Service, Clearwater National Forest, Orofino, Idaho). Besides the approximately 26.6 miles of the mainstem Weitas Creek, approximately 29 miles of tributary streams were surveyed; these included Yokum Creek, Liz Creek, Jam Creek, Ball Creek, Corral Creek, Fro Creek and 11 unnamed tributaries.

The report noted that riparian conditions along many stream reaches (particularly long the mainstem Weitas Creek) are open and still reflect the effects of the stand-replacing wildfires in the early 1900s. Although the majority of the Weitas Creek drainage is undeveloped and roadless, especially the 16 tributaries surveyed in the upper Weitas Creek drainage, the survey found several locally limiting factors for fish production for these drainages. These include high levels of cobble embeddedness in some streams, inconsistent availability of good spawning habitat, steep channel gradients, low pool quality (deep pools), and migration barriers in the tributaries.

Silver Creek Stream Survey: The Forest finished the baseline stream surveys in the Silver Creek drainage (upper Cayuse Creek) during 2005; approximately 1.1 miles of upper Silver Creek were surveyed. The 2005 and 2006 surveys indicated that Silver Creek provides excellent habitat conditions for salmonid spawning and rearing. The surveys found excellent substrate conditions (i.e., very low sediment levels), good bank stability, moderate amounts of high quality spawning habitat, and good levels of acting and potential woody debris levels. Large woody debris created 58 percent of the pools.

Kelly Creek Stream Survey: During 2005, the Forest completed a baseline stream survey and fish population survey on approximately 3.5 miles of the mainstem Kelly Creek (Deer Creek to Middle Fork Kelly Creek). Similar to the findings in the Weitas Creek drainage, the survey found that the riparian conditions along many stream reaches were open and still reflect the effects of the stand-replacing wildfires in the early 1900s. Due to these fires and subsequent flushing stream flows, acting and potential woody debris levels were still very low. The survey found that the substrate conditions within this larger stream were primarily boulder/large cobbles with very low amounts of sediment. Pool habitat was primarily formed by boulders (92 percent). Pocket water was dominant (39 percent) with a low number of larger pools (fair quality). Bank stability was rated as excellent.

Stream Channel and Substrate Conditions: The Forest concentrated the monitoring of stream channel and substrate conditions within the North Fork Clearwater River drainage in 2005; permanent sites on 16 streams were monitored (Salmon Creek, Isabella Creek, Skull Creek, Quartz Creek, Cold Springs Creek, Elizabeth Creek, Deception Creek, Osier Creek, Swamp Creek, Moose Creek, Moose Creek (upstream of Independence Creek), Toboggan Creek, Liz Creek, Fro Creek, Corral Creek and Yokum Creek). The last four stream listed were completed via contract. See ***Riparian section*** for more information.

Substrate Monitoring: The fourth year of the substrate monitoring project in lower Moose Creek (mouth upstream to Little Moose Creek) was completed in 2005 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 averaged 22.5% for the 2002-2005 period. The monitoring data showed that the average percent fines were 23.0%, 18.7%, 23.4% and 25.0% for 2002, 2003, 2004 and 2005 respectively. The four-year average of approximately 22.5% 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 2006 and 2007.

Water Temperature Monitoring: The Forest has been collecting water temperature data from 1992 to 2005 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 2005, stream temperatures were monitored at 140 sites on 126 streams within the North Fork Clearwater River drainage. Temperature data for seven of these sites are not available (instruments still instream [3],

missing units, equipment failures [3], or exposed units prevented data collection [1]). Comparison of the 2005 stream temperature data from the 133 monitoring sites on the 119 streams with available data with the desired maximum temperatures as defined for the appropriate standards in the Forest Plan Forest Plan revealed that:

- The desired westslope cutthroat trout rearing temperature of 13°C (no effect) was monitored at 14 streams. The standard was met at Bear Creek, Birch Creek, Mink Creek, and Weasel Creek. The standard was not met at any of the four sites on mainstem North Fork Clearwater River.
- The desired westslope cutthroat trout rearing temperature of 16°C (high fishable) was met at 59 streams out of the 78 streams monitored with a "high fishable" standard. In addition, six sites (Grasshopper Creek, Larson Creek, Lake Creek, Lost Pete Creek, Orogrande Creek, Osier Creek and Sprague Creek) exceeded the standard by five days or fewer.
- The desired westslope cutthroat trout rearing temperature of 18°C (moderate fishable) was met at all nine streams monitored with a "moderate fishable" standard.
- The desired westslope cutthroat trout rearing temperature of 20°C (low fishable) was met at 11 streams out of the 12 streams monitored with a "low fishable" standard. Orogrande Creek (at mouth) exceeded the standard on one day.
- The desired brook trout rearing temperature of 17°C (high fishable) was met at the West Fork Elk Creek. The other streams monitored for this standard, Elk Creek (upstream the town of Elk River) and Johnson Creek exceeded the standard for 39 and 8 days respectively.
- The desired brook trout rearing temperature of 20°C (low fishable) was met at Oviatt Creek and Partridge Creek. The other stream monitored for this standard, Long Meadow Creek exceeded the standard on one day.

Overall, water temperatures of 116 of 119 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 mainstem North Fork Clearwater River; monitoring data showed that two sites on the mainstem North Fork Clearwater River (upstream Weitas Creek (6 days) and upstream Orogrande Creek (4 days)) did not meet the state cold water biota standard. Weitas Creek (upstream Hemlock Creek (11 days) and mouth (6 days)) and Cayuse Creek (upstream Toboggan Creek (2 days)) also exceeded the standard. The state standard of 13°C for the spring period for westslope cutthroat trout was met at 17 streams (Birch Creek, Cache Creek, Cougar Creek, Clayton Creek, Game Creek, Jap Creek, Laundry Creek, Niagara Gulch, Placer Creek, Sourdough Creek, Shell Creek, Shake Creek, Siam Creek, Slate Creek, Short Creek, Wolf Creek and Weasel Creek). An additional 13 streams exceeded the standard for five days or fewer. Five streams monitored (Cache Creek, Coyote Creek, Game Creek, Niagara Gulch and Siam Creek) met the bull trout maximum summer rearing temperature of 12°C (consecutive seven-day average of daily maximums) that EPA issued as final temperature guidance for water quality standards throughout the Pacific Northwest. An additional five streams (Jap Creek, Placer Creek, Shell Creek and Weasel Creek) exceeded bull trout standard for five days or less.

Fish Population Monitoring: In 2005, the Forest completed several projects involving the collection of fish population data. Information was collected in the Elk Creek drainage regarding the resurveys of selected stream reaches and the baseline survey of Johnson Creek. Fish population sites were established and monitored in the Weitas Creek drainage via contract. The Forest also established and monitored fish population sites in the mainstem Kelly Creek. As in past years, bull trout spawning surveys were conducted on selected streams. IDFG also conducted fish population monitoring at some of their permanent monitoring sites.

Elk Creek - In 2005, the resurveys of selected stream reaches (see habitat monitoring section above) found that brook trout were the only salmonid at 29 fish population monitoring sites (Clearwater BioStudies, Inc. 2006b). Comparison of the 2005 data and the data collected in 1996 showed that the distribution and abundance of overyearling brook trout within the four streams were similar. Some notable differences included a slight increase of the abundance and distribution of brook trout in West Fork Elk Creek and Shite Creek.

Johnson Creek - Except at the lowest site near the confluence with Elk Creek, no fish were observed in the three upper monitoring sites in Johnson Creek; the migration barriers in the lower stream reach most likely restricts access into the upper drainage.

Weitas Creek - In 2005, the fish population monitoring conducted in conjunction with the stream surveys in the Weitas Creek drainage (see habitat monitoring section above) found westslope cutthroat trout, bull trout, rainbow steelhead trout and mountain whitefish (Clearwater BioStudies, Inc. 2006c). Westslope cutthroat trout were most widely distributed salmonid; they were found at 78 of the 82 fish population monitoring sites. Bull trout were observed in the mainstem Weitas Creek and in lower Liz Creek. Rainbow steelhead trout and mountain whitefish were found only in the mainstem Weitas Creek.

Kelly Creek - Fish population monitoring was completed in conjunction with the baseline stream survey on the mainstem Kelly Creek. Ten stations were established and monitored on the mainstem Kelly Creek from Deer Creek to the junction of the Middle Fork Kelly Creek and North Fork Kelly Creek. Westslope cutthroat trout was the dominant salmonid species with a moderate average density of 1.7 Age 2+ fish/100m². The survey also found rainbow trout, bull trout and mountain whitefish.

Bull Trout Spawning Surveys - Surveys were conducted on 15 streams within the North Fork Clearwater River drainage. Approximately 23 miles of stream within the upper North Fork Clearwater River, Moose Creek, Skull Creek, Quartz 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, Quartz Creek, Orogrande Creek, Boundary Creek, North Fork Clearwater River, Swamp Creek, Lake Creek, Goose Creek, Long Creek, Slate Creek, Bostonian Creek, Niagara Gulch, Placer Creek and Vanderbilt Creek.

Bull trout spawning (111 redds) was documented in 12 of the 15 streams. As in previous years, the surveys found major concentrations of fluvial or adfluvial bull trout spawning activity in the Long Creek, Vanderbilt Creek and Bostonian Creek drainages. The highest number of redds observed in any known major bull trout drainage within the upper North Fork Clearwater River subbasin during the past ten years was found in Vanderbilt Creek in 2005; 41 redds were documented in the two mile stream reach. Major concentrations of redds were also found in Goose Creek, Boundary Creek and upper North Fork Clearwater River. Multiple surveys on some of these streams are scheduled for survey by the Forest in 2006.

IDFG Population Monitoring - IDFG also conducted fish population monitoring via snorkeling 22 permanent sites in eight streams (Isabella Creek, Beaver Creek, Collins Creek, Skull Creek, Orogrande Creek, French Creek, Little Moose Creek and Ruby Creek); bull trout were found in Isabella Creek and Skull Creek (Idaho Department Fish and Game. 2006. Provisional data from Region 2 Idaho Department Fish and Game, Lewiston, Idaho). Adult bull trout were observed in Isabella Creek and Skull Creek. Juvenile bull trout were observed in Little Moose Creek. `

As part of their ongoing monitoring program, personnel from the Idaho Department of Fish and Game (IDFG) also conducted fish population monitoring via snorkeling and creel census activities within the mainstem North Fork Clearwater River and other selected tributaries.

North Fork Clearwater River Bull Trout Studies: In 2005, the IDFG and the Forest continued a partnership project regarding bull trout studies within the North Fork Clearwater River subbasin. This was the final year of the study. The project (started in 2000) is primarily designed to determine the movements of bull trout collected from Dworshak Reservoir. In 2005, the IDFG marked and monitored movements of 100 adult bull trout. The IDFG collected tissue samples from bull trout, and the University of Idaho is analyzing the tissues for genetic information. The Forest assisted the IDFG in conducting fish population monitoring and spawning ground surveys. Besides validating known spawning areas, the tracking of over 792 adult bull trout during the past six 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 five 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 2005 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 2004. Various field reviews and monitoring activities have supported the conclusion that the habitat conditions for most drainages are most likely similar to 1998-2004 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: No major watershed restoration activities (i.e., road obliteration, new riparian fence construction, instream restoration projects) were completed in 2005.

Road Decommissioning: Mine reclamation funds were obligated in 2005 for the decommissioning of approximately 5.0 miles of road during 2006 within the upper Palouse River drainage as part of the Mizpah Mine project. The project will be completed in May 2006.

Habitat Monitoring: Stream channel and substrate conditions were monitored at permanent sites on several streams (Strychnine Creek, Little Sand Creek, and Gold Creek). See ***Riparian section*** for more information. 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 2005.

Water Temperature Monitoring: 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 2005 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:

- The desired rainbow trout and brook trout rearing temperature of 20°C was met at nine streams (Big Creek, Big Sand Creek, Little Sand Creek, Gold Creek, Palouse River (at gage and downstream Wagner Gulch), North Fork Palouse River, Mannering Creek, Meadow Creek (downstream Blakes Fork Creek) and Strychnine Creek.
- East Fork Meadow Creek exceeded the standard for one day.

Water temperatures at all eleven 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 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: 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 2005.

FISHERIES (2006)

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 Endangered Species Act (ESA) threatened species of bull trout and steelhead trout and sensitive species of westslope cutthroat trout, spring Chinook salmon, redband trout and Pacific lamprey.

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 and project ESA consultations.

ACCOMPLISHMENTS/FINDINGS

PACFISH

No formal review by the PACFISH Implementation Review Team was conducted on the Forest in 2006. 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. In 2006, the Forest conducted a review of one timber harvest unit (#6) and associated road on Johnson Gold Timber Sale within the Lolo Creek drainage to determine compliance with Forest Plan direction as amended by PACFISH. The review noted one incident involving the placement of one burn pile within the riparian area. The review reemphasized the need to have slash piles located outside riparian areas. Other than some access issues (skid trails open for vehicle access and need for a better road closure device) no other incidents were observed on this timber sale. This project met PACFISH standards and guidelines and did not retard the attainment of the Riparian Management Objectives (RMOs).

INFISH

In 2006, the Forest conducted a review on one timber harvest unit (#3) and associated roads (USFS road # 5253B) on the Tamarack Bugs Timber Sale within the North Fork Clearwater River drainage to determine compliance with Forest Plan direction as amended by INFISH. The review found that the project met INFISH standards and guidelines and did not retard the attainment of the Riparian Management Objectives (RMOs).

Frequency of Measurement: Annual
Reporting Period: Annual

Information for non-fisheries is included in the section entitled ***Soil and Water*** for water quality and stream condition for non-fisheries beneficial uses.

MONITORING ACTION

The Forest fisheries biologist will coordinate the monitoring of critical anadromous and inland fish streams to determine habitat conditions and population trends. Forest field crews will measure key habitat characteristics, 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 2006. 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 North Fork Clearwater River drainages. In 1999, this intensity was maintained or expanded in most drainages. However, similar to 2000-2005, monitoring efforts in 2006 were substantially decreased from previous years due to budget constraints.

ACCOMPLISHMENTS/FINDINGS

FOREST OVERVIEW

Stream Inventory (Physical): As in the past six years, budget constraints limited the number of stream surveys and associated monitoring, as no seasonal personnel were employed during the field season. Although the Forest did not complete or fund any stream surveys via in 2006, Forest personnel did complete substrate monitoring on selected streams. See ***Riparian section*** for more information.

Stream Inventory (Biotic): The Forest completed fish population surveys via snorkeling and spawning ground surveys on approximately 28.6 miles of stream.

Lake Inventory (Biotic): Through a partnership with the Idaho Department of Fish and Game, the Forest contributed fisheries funds to assist IDFG personnel in the resurvey of a high mountain lake (Florence Lake) within the Selway Bitterroot Wilderness area; approximately 31 acres of lake were surveyed.

Lake Restoration: Through the same partnership with IDFG, the Forest contributed fisheries funds to assist IDFG personnel in the removal of non-native brook trout in three high mountain lakes in the upper North Fork Clearwater River drainage. Approximately 10 acres of lake were affected by the project.

Stream Improvement: Project targets in 2006 focused on riparian restoration, watershed restoration and fish passage improvement projects. Approximately 11.2 miles of stream were improved using fisheries funds. Other Forest funds and non-USFS partnership funds contributed to the completion of 50.8 miles of stream habitat improvements. Stream habitat was improved either directly through culvert replacements and road drainage removals and riparian habitat protection or indirectly through road decommissioning projects.

The 2006 stream improvement projects were completed on various streams across the Forest. The fisheries program funded two riparian restoration projects within the Potlatch River drainage that will assist with the improvement and/or protection of approximately 7.5 miles of stream and adjacent riparian areas. Fisheries funds were used to assist road decommissioning projects within the North Fork Clearwater River, Potlatch River, Palouse River and Lochsa River drainages. Fisheries funds were also used in several

partnership projects in 2006 to improve fish passage. Forest funds and funds from the Nez Perce Tribe (Bonneville Power Administration and Idaho State Office of Species Conservation) were used for five culvert replacements in the Lolo Creek and Lochsa River drainages. As in past years, riparian fencing projects involving fence replacement, construction and maintenance were completed to meet Forest Plan Riparian Management Objectives (RMOs); starting in 2006, this work was funded by the range program.

Stream Temperature Monitoring: The stream temperature monitoring program in 2006 monitored approximately 327 sites across the Forest. Stream temperature data for 297 sites were processed in 2006. This includes streams that were monitored during the summer of 2006 and multi-year units deployed during previous years to collect data in 2002 and later years. This monitoring report summarizes the data collected during 2006 on 282 sites on 236 streams; this does not include the 13 units that were retrieved in 2006 with 2002 through 2005 data. Temperature data for 20 sites are not available (instruments still instream [11], missing units [5], equipment failures [3], or exposed units prevented data collection [1]). During 2006, only nine units were lost, vandalized or had equipment failures; this is approximately three percent of the units deployed in 2006. Fifty-three units deployed in years 2002-2006 are still out in the field and are not included in the above figures. Dependent upon budgets, streams will be monitored for at least five consecutive years.

The 2006 summer showed stream flows substantially below the average stream flows during the summer months (Table 1). For example, the mean monthly stream discharges during June through September were approximately 66 percent of the average discharge recorded for the Lochsa River during the 95-year period (1911-2006). Given the low stream flows, higher stream temperatures would be expected, especially considering that the summer of 2006 was warmer than the summers of 2004 and 2005 based on air temperatures units stationed throughout the Forest. However, the 2006 summer was somewhat cooler than the warm summer of 2003 and most likely exhibited a more "normal" temperature regime during the summer months. In 2006, approximately 9 percent (21 streams) of the streams monitored exceeded the state's cold water biota standard. This is higher than 2005 data (9% vs. 3%), the 2004 data (9% vs. 6%) and 2003 data (9% vs. 6.5%). Of these 21 streams, thirteen streams exceeded the state cold water biota standard for five days or less.

Table 1. Comparison of air temperature data, stream flows and water temperature information collected within selected watersheds across the Clearwater National Forest during 2003-2006

Year	Number of Air Temperature hours exceeding13° C Jun 15-Sept 30	Percent of Historic Average June-Sept Stream Flow	Number of Streams Monitored	Number of Streams Exceeding State Cold Water Biota Standard
2003	12,122	72.8%	260	13
2004	9,369	119.8%	230	13
2005	9,591	58.8%	243	6
2006	11,379	65.6%	236	21

Over the past several years numerous questions have been posed about why streams are not meeting various standards. While stream flows and associated snow pack in the drainages, summer precipitation, 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 2006 stream temperature data from streams (185 streams) located in wilderness/roadless/undeveloped areas and developed areas within the two major subbasins (Lochsa River and North Fork Clearwater River) showed a 3% difference in streams meeting the state spawning standard of 13º C (Table 2). There was basically no difference between these wilderness/roadless/undeveloped areas and developed areas in the years 2002-2005. Only nine streams out of the 88 streams (10%) within wilderness/roadless/undeveloped areas met state spawning standards for steelhead trout and westslope cutthroat trout. In comparison, only 13 streams out of the 97 streams (13%) 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 were 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 190 streams located in wilderness/roadless/undeveloped areas and developed areas within the two major subbasins (Lochsa River and North Fork Clearwater River) showed 85 of 87 streams (98%) located in wilderness/roadless/undeveloped areas met the state cold water biota standard while 96 out of 103 streams (93%) in the developed areas of the drainages met the standard (Table 3). This is a slight change from 2005 (99% wilderness/roadless/undeveloped areas and 97% in the developed areas in these drainages met the state cold water biota standard).

Table 2. Comparison of state spawning standards between wilderness/roadless/undeveloped and developed streams within the Lochsa River and North Fork Clearwater River subbasins during 2003-2006

Year	Number wilderness/ roadless/ undeveloped streams monitored for state spawning standards	Number of wilderness/ roadless/ undeveloped streams meeting state spawning standards	Percent of wilderness/ roadless/ undeveloped meeting state spawning standards	Number of developed streams monitored for state spawning standards	Number of developed streams meeting state spawning standards	Percent of developed streams meeting state spawning standards
2003	71	8	11%	93	10	11%
2004	83	9	11%	93	10	11%
2005	89	12	14%	101	15	15%
2006	88	9	10%	97	13	13%

Table 3. Comparison of state cold water biota standard between wilderness/roadless/undeveloped and developed streams within the Lochsa River and North Fork Clearwater River subbasins during 2003-2006

Year	Number of wilderness/ roadless/ undeveloped streams monitored for state cold water biota standard	Number of wilderness/ roadless/ undeveloped streams meeting state cold water biota standard	Percent of wilderness/ roadless/ undeveloped meeting state cold water biota standard	Number of developed streams monitored for state cold water biota standard	Number of developed streams meeting state cold water biota standard	Percent of developed streams meeting state cold water biota standard
2003	71	70	99%	99	96	97%
2004	83	83	100%	99	95	96%
2005	90	89	99%	107	104	97%
2006	87	85	98%	103	96	93%

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.

POTLATCH RIVER WATERSHED

Watershed Status: No natural or anthropogenic events occurred on USFS lands in the Potlatch River watershed during 2006 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 1998-2006 conditions. 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 program funded two riparian restoration projects within the Potlatch River drainage that will assist with the improvement and/or protection of approximately 7.5 miles of stream and adjacent riparian areas. The range program took over the funding of the riparian fence maintenance projects that fisheries funded over the past 14 years; approximately 9.75 miles of riparian areas including stream banks and stream channels were protected from grazing. As part of the Abes Animals Timber Sale, a short segment of existing road was relocated under the timber sale and the existing segment was decommissioned using fisheries and engineering funds. No other major watershed restoration activities (i.e., road decommissioning, instream restoration projects) were scheduled in 2006.

Riparian Restoration Projects: These two projects included riparian plantings along fish bearing streams and large woody debris placements in headwater stream channels. The primary purpose of this project was to expedite the natural recovery trend in selected riparian areas within the upper Potlatch River drainage (Clearwater River subbasin). The Ecosystem Analysis at the Watershed Scale (EAWS) document prepared for the upper Potlatch River watershed in 1997 identified that riparian plantings and headwater stream stabilization were activities recommended for future projects; these would assist in the recovery of the aquatic resources. The West Fork Potlatch Ecosystem Management Project (EIS) signed in January 2002 identified riparian areas along selected streams that needed streamside shade, future large woody debris, and/or bank stabilization work.

Riparian areas identified via previous stream surveys were planted with various shrubs and conifers within riparian zone. Stream channels of previously identified stream reaches were surveyed to determine if the existing number of large woody debris (LWD) were substantially lower than the average number of LWD found in unaltered headwater streams. Stream reaches that had low levels of LWD were assessed and areas flagged for treatment. LWD placements were completed using hand labor.

The riparian shrub plantings are expected to provide improved stream bank conditions through stabilization and short-term riparian shade along 0.5 miles of Nat Brown Creek. The riparian conifer plantings are expected to provide long-term riparian shade and increased the large woody debris recruitment levels along 1.5 miles of Nat Brown Creek and Porcupine Creek. Another 1.5 miles of stream adjacent to the project areas would benefit from the riparian plantings; a total of 3.5 miles of stream are expected to show benefits from the project. Surveys of approximately 20 miles of headwater streams identified approximately four miles that needed additional large woody debris to maintain stream channel stability and minimize stream channel scouring, erosion and eventual sediment deposition in downstream fish-bearing streams. The large woody debris placements in the selected headwater tributaries is expected to contribute to the stream channel recovery in approximately four miles of downstream fish-bearing streams. Overall these two restoration activities focused on the two primary limiting factors (high water temperatures and excessive sedimentation) within the upper Potlatch River system. Reduction of summer water temperatures and anthropogenic sediment sources would assist the steelhead trout recovery efforts within the drainage.

Riparian Fence Maintenance - Fences on 19 permanent riparian enclosures and six temporary riparian exclosures were maintained in 2006:

- Seven exclosures along the East Fork Potlatch River to protect 1.9 miles of stream.
- One exclosure along Ruby Creek to protect 0.25 miles of stream.
- Two pond exclosures within the Corral Creek watershed.
- A "Hi-Tensile" electric fence (2.3 miles) along Cougar Creek to protect one mile of stream.
- Five miles of "Hi-Tensile" fence along the West Fork Potlatch River and Feather Creek to protect 1.7 miles and 0.75 miles of stream respectively.
- One temporary electric fence and two permanent fences on Corral Creek and Hog Meadow Creek to protect the 1993 stream reconstruction projects along two miles of stream.
- Approximately one mile of "Hi-Tensile" fence along Nat Brown Creek to protect 0.5 miles stream.
- A permanent fence (Hank's fence) within the East Fork Corral Creek drainage to protect 0.5 miles of stream.
- The East Fork Big Bear Creek exclosure to protect 0.25 miles of stream.

Road Decommissioning – Engineering and fisheries funds were used to decommission (obliterate) approximately 0.5 miles of existing road along Talapus Creek within the upper West Fork Potlatch River drainage. Habitat conditions along approximately 2.0 miles of Talapus Creek are expected to improve for steelhead trout and possibly bull trout via removing existing sediment sources.

Habitat Monitoring: Stream inventories of all fish-bearing streams within the Potlatch River drainage have been completed on National Forest System lands during 1990-1995. Resurveys of specific streams are planned every five to ten years dependent upon stream conditions and management proposals. In 2005, the Forest completed resurveys of habitat, substrate, and fish population conditions via contract on 13 selected sensitive stream reaches within eight streams in the Potlatch River drainage to determine if stream conditions have changed since the previous surveys (USDA Forest Service – Clearwater National Forest. 2006. 2005 watershed and fisheries monitoring report).

Stream Habitat Surveys - In 2006, no resurveys were scheduled within the Potlatch River drainage.

Stream Channel and Substrate Conditions - Stream channel and substrate conditions were monitored at permanent sites on one stream: Potlatch River (upstream West Fork Potlatch River). See ***Riparian section*** for more information.

Water Temperature Monitoring: Stream temperature monitoring was conducted at 14 sites on 9 streams in the Potlatch River drainage in 2006 to evaluate habitat conditions for steelhead trout. From 1990-1996 and 1998-2006 the Forest has collected temperature data on selected streams 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. Sixteen 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.

Comparison of the 2006 stream temperature data from the monitoring sites, the 14 monitoring sites on 9 streams with available data and the desired maximum temperatures as defined for the "low fishable" standard in the Forest Plan revealed that:

- The mainstem Potlatch River (at Little Boulder Creek), East Fork Potlatch River (mouth), Moose Creek (downstream of Moose Creek Reservoir) and Nat Brown Creek (lower and upper) did not meet the DFC (less than 20°C) for steelhead trout rearing.
- Four of the 14 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.
- An additional four of the 14 sites, Corral Creek, mainstem Potlatch River above West Fork Potlatch River, Ruby Creek and mainstem West Fork Potlatch River at mouth exceeded the DFC (less than 20°C) for steelhead trout rearing on five days or fewer.

In 2006, four sites, mainstem Potlatch River (at Little Boulder Creek), mainstem East Fork Potlatch River (mouth), Moose Creek (downstream of Moose Creek Reservoir) and mainstem West Fork Potlatch below Stout property exceeded the state standard for cold-water biota of the daily maximum of 22°C and the maximum daily average of 19°C. An additional two sites, Nat Brown Creek (lower) and Ruby Creek exceeded the state cold water biota standard on two days. The state temperature standard of 13°C or below for the spring spawning period (for steelhead trout) was not met at any of the 14 sites. All streams exceeded the bull trout maximum summer rearing temperature of 12°C (consecutive seven-day average of daily maximums) that EPA issued as final temperature guidance for water quality standards throughout the Pacific Northwest.

Fish Population Monitoring: In 2006, within the exception of steelhead trout spawning surveys, no fish population monitoring was scheduled within the Potlatch River drainage. 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 2006 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 2006 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). No major fires occurred in 2006. None of the 14 suppression fires were more than one acre. Various field reviews and monitoring activities have supported the conclusion that the habitat conditions are most likely similar to 1998-2005 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 to budget constraints, aquatic restoration and enhancement work within the Lolo Creek watershed were primarily completed with engineering and Tribal cooperative funds in 2006. With the exception of the completion of two miles of road decommissioning, fisheries funds were primarily 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.

Riparian Fencing – Fence maintenance on existing riparian enclosures was completed in 2006 using range funds. Approximately 4.2 miles of riparian areas including stream banks and stream channels within the Lolo Creek drainage (4.2 miles) were protected from grazing.

Fish Passage Improvement – In conjunction with the ongoing watershed restoration projects, the Forest concentrated fish enhancement efforts on three culvert replacement projects that would improve access to approximately 2.5 miles of stream.

Fisheries funds (13 percent) and engineering funds (87 percent) were used for one culvert replacement project within the Eldorado Creek drainage. The Forest also provided funds for the project design, environmental analyses, consultations and monitoring. The culvert replacement on Fan Creek will improve access for westslope cutthroat trout and other aquatic organisms to approximately 0.5 miles of stream. The new structure will also reduce the risk of a culvert failure and potential sediment input into approximately two miles of habitat within the impact zone downstream of the culvert site. Although these culverts are located upstream of Eldorado Falls, a partial migration barrier to anadromous fish, the improved access may also benefit steelhead trout whenever production and downstream migration is improved in the Eldorado Creek drainage.

Fisheries funds (7 percent), engineering funds (51 percent) and funds from the Nez Perce Tribe (42 percent) were used for two culvert replacement projects within the upper Lolo Creek drainage. The Forest and the Nez Perce Tribe also provided funds for the project design, environmental analyses, consultations and monitoring. The culvert replacements within the Belle Creek and mainstem Lolo

Creek will improve access for westslope cutthroat trout, possibly steelhead trout, bull trout and other aquatic organisms to approximately 2.0 miles of stream. The new structures will also reduce the risk of a culvert failure and potential sediment input into approximately 6.6 miles habitat within the impact zone downstream of the culvert site

Road Decommissioning – No road decommissioning projects were completed during 2006. Road decommissioning projects identified under the White White and Brick Trout projects were scheduled in 2006; however, both decisions were withdrawn due to legal action. Future road decommissioning projects in the White White and Brick Trout project areas will be included in new environmental analyses and subsequent decisions.

Habitat Monitoring: The mainstem Lolo Creek and nine tributaries have been designated water quality limitd segments (WQLS) by the state of Idaho. The primary pollutants of concern are sediment and water temperature. Stream inventories of all fish-bearing streams within the Lolo Creek drainage have been completed on National Forest System lands between 1991 and 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. In 2006, no resurveys were scheduled within the Lolo Creek drainage.

Stream Habitat Surveys - In 2006, no resurveys were scheduled within the Lolo Creek drainage.

Stream Channel and Substrate Conditions - Stream channel and substrate conditions were monitored at permanent sites on one stream, Lolo Creek. See ***Riparian section*** for more information.

Water Temperature Monitoring: 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 have 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.

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. Comparison of the 2006 stream temperature data and the desired maximum temperatures as defined for appropriate standards in the Forest Plan revealed that:

- The desired steelhead trout rearing temperature of 17°C was met at seven streams (Dutchman Creek, Knoll Creek, Mike White Creek, Fan Creek, Lunch Creek, Nevada Creek, and Trout Creek) out of the eleven streams monitored with a "high fishable" standard. Lolo Creek, Eldorado Creek and Musselshell Creek did not meet the "high fishable" standard for steelhead trout rearing.
- The desired spring Chinook trout rearing temperature of 17°C was not met at the current or potential spring Chinook salmon streams (Lolo Creek, Yoosa Creek, Eldorado Creek and Musselshell Creek).
- 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 six streams monitored with a "high fishable" standard. Chamook Creek exceeded the standard on three days.
- The desired westslope cutthroat trout rearing temperature of 18°C or below (moderate fishable standard) was met in Mud Creek. Gold Creek exceeded the standard on three days.
- The desired westslope cutthroat trout rearing temperature of 20°C or below (low fishable standard) was met in Dan Lee Creek.

Overall, water temperatures within 17 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 Lolo Creek (11 days) and Musselshell Creek (at the mouth [19 days]) exceeded the state cold water biota standard. The state standard of 13°C for the spring spawning period

(steelhead trout) was not met on any of the monitored streams in the Lolo Creek subbasin. Four streams (Dutchman Creek, Knoll Creek, Lunch Creek and Trout Creek) exceeded the spawning period standard by seven days or fewer. All streams exceeded the bull trout maximum summer rearing temperature of 12°C (consecutive seven-day average of daily maximums) that EPA issued as final temperature guidance for water quality standards throughout the Pacific Northwest.

Fish Population Monitoring: For the last 19 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).

Steelhead trout (age 1+) densities of 0.72 fish/100m² observed in 2006 were slightly higher than those observed in 2005 (Figure 1). The densities were below the 18-year average (1988-2005) of 2.21 age 1+ fish/100m². Population data continues to indicate that steelhead trout production is very low in Lolo Creek. The low densities of steelhead trout (0.72 age 1+ fish/100m²) 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.

Densities of spring Chinook salmon juveniles of 7.03 fish/100m² observed in 2006 were about the same densities observed in 2004; densities observed in 2004 were the lowest observed by the Forest since 1996 (Figure 2). Similar to 2004, the densities were below the 18-year average (1988-2005) of 38.1fish/100m². The low densities of spring Chinook salmon observed by the Forest were validated by the Nez Perce Tribe's snorkeling work. However the Tribe's monitoring project did not involve snorkeling similar stream reaches within the mainstem of Lolo Creek prior to 2005; fish population monitoring was substantially reduced in 2005 and 2006. The Tribe observed lower densities (2.42 fish/100m²) within the same index area, but the surveys were conducted at sites with lower amounts of pool habitat, as compared to the Forest's monitoring sites; pool habitat usually exhibits a higher rearing potential than other habitat types (Nez Perce Tribe 2006. Provisional data from Nez Perce Tribal Fisheries Department, Orofino, Idaho).

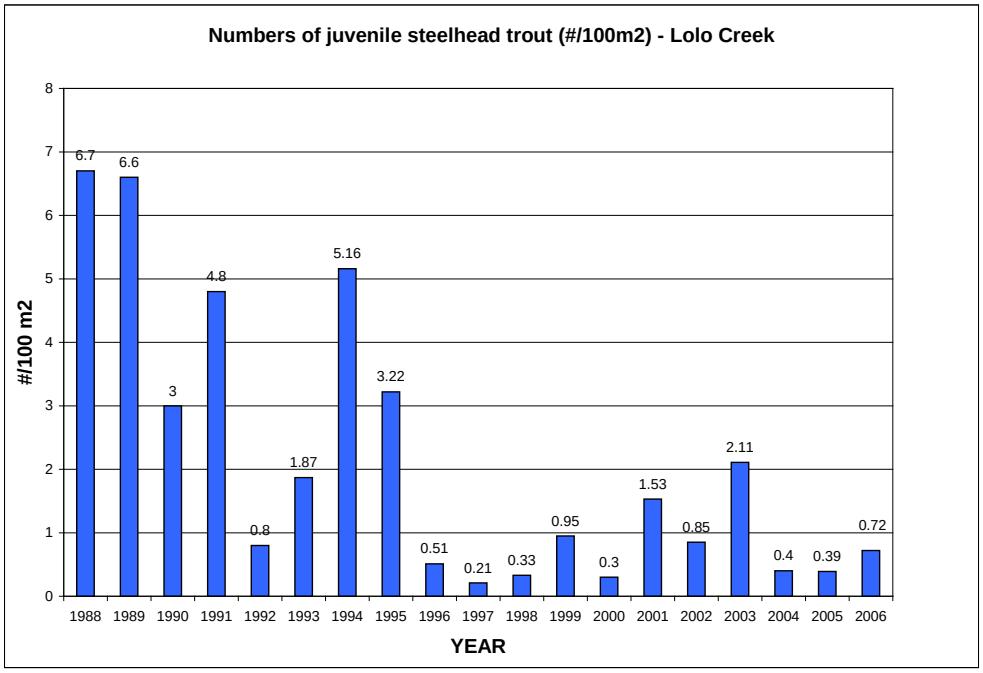


Figure 1. Comparison of the average densities (#/100m²) of juvenile steelhead trout (age 1+) that were observed for survey period 1988-2006 at permanent snorkeling stations on Lolo Creek by the Clearwater National Forest (data for 1997 and 2000 are different stations conducted by the Nez Perce Tribe within the same stream reach).

The lower densities (7.03 fish/100m²) in 2006 as compared to 2005 were most likely the result of better spawning conditions and stream flows during the 2004 spawning period. The densities were substantially higher than the lowest densities (0.21 fish/100m²) documented by the Forest in 1996, substantially lower than the highest densities (91.8 fish/100m²) documented in 2003.

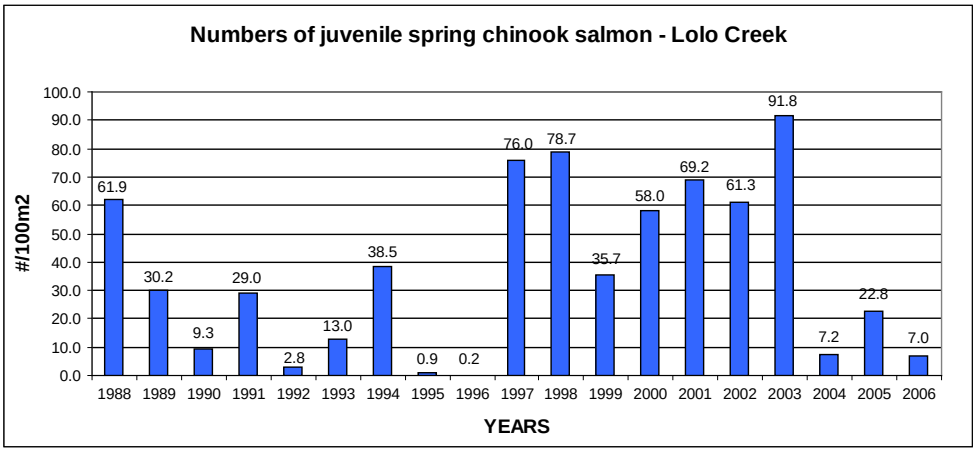


Figure 2. Comparison of the average densities (#/100m²) of juvenile spring Chinook salmon (age 0+) that were observed for survey period 1988-2006 at permanent snorkeling stations on Lolo Creek by the Clearwater National Forest (data for 1997 and 2000 are different stations conducted by the Nez Perce Tribe within the same stream reach)

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 are complementary in the establishment of trends for steelhead trout and spring Chinook salmon.

As part of the continuing Idaho supplemental studies being conducted in the Lolo Creek drainage, the Nez Perce Tribal Fisheries Department completed the 2006 Lolo Creek spring Chinook spawning ground surveys. These surveys were conducted in the mainstems of Lolo, Eldorado, Musselshell, and Yoosa Creeks.

Results of the 2006 surveys indicated that a total of nine redds were located within the Lolo Creek drainage; all nine redds were located within mainstem Lolo Creek (Figure 3). No redds were observed in Musselshell Creek, Eldorado Creek or Yoosa Creek. The number of redds within the Lolo Creek drainage was about 2 percent of the 2001 redd count (the highest in the 16-year monitoring period). The total redd count was only 20 percent of the 2005 redd count and substantially below the previous five-year average (2001-2005) of 196 redds. Unlike 2005, the 2006 redd count shows a lower count than marginal spawning period of 1988-1999 which had an average of 29 redds. If the exception high count of 141 in 1997 were omitted, the average for the eleven-year period (1988-1996, 1998-1999) was approximately 19 redds. The reason for the low number of redds in 2006 is a combination of the low adult returns to Lolo Creek (135 adults) and the adults kept for broodstock (101 adults) for the Nez Perce Tribal rearing facility (Nez Perce Tribe. Nez Perce Tribe Chinook salmon and steelhead adult escapement and spawning ground 2006 summary report. Nez Perce Tribe Fisheries Department, Lapwai, Idaho). Unlike 1999-2001, no hatchery supplementation of adult spring Chinook salmon was done by the Tribe during the 2002-2006 spawning seasons (Personal communication with Sherman Sprague, fisheries biologist, Nez Perce Tribal Fisheries Department, Orofino, Idaho).

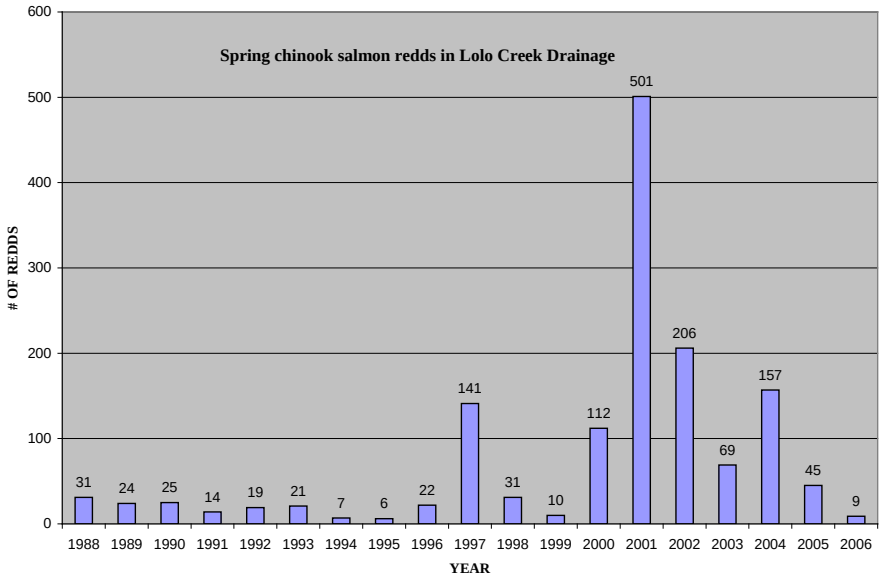


Figure 3. Comparisons of spring Chinook salmon redd counts observed within the Lolo Creek drainage during 1988-1999 (data provided by Idaho Department of Fish and Game [1988-89], U.S. Forest Service [1990-1991] and Nez Perce Tribe [1992-2006])

OROFINO CREEK WATERSHED

Watershed Status: No natural or anthropogenic events occurred in the USFS drainages within the Orofino Creek watershed during 2006 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 2006. None of the six suppression fires was over one acre. Various field reviews have supported the conclusion that the habitat conditions for most drainages are most likely similar to 1998-2005 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 Improvement: No major habitat improvement projects (road decommissioning, fish passage, etc.) were scheduled during 2006.

Habitat Monitoring: As in 2001-2005, stream surveys that were scheduled for Orofino Creek in 2006 were not completed due to budget constraints. Dependent upon funding, surveys will be rescheduled for 2008.

Water Temperature Monitoring: 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 1996-2005, Orofino Creek at the Forest Service boundary was monitored for summer stream temperatures in 2006. In addition, stream temperature data was collected at five tributary sites and upper Orofino Creek (upper Orofino Creek drainage) during 2006. Comparison of the 2006 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. The state standard of 13°C for the spring spawning periods (for westslope cutthroat trout) was exceeded at all sites, with Gezel Creek exceeding the standard on seven days.

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 2006 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 2006. Various field reviews and monitoring activities have supported the conclusion that the habitat conditions are most likely similar to 1998-2005 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. However, anadromous fish numbers may vary annually due to influences outside the watershed.

Habitat Improvement: No major habitat improvement projects (road decommissioning, fish passage, etc.) were scheduled during 2006.

Habitat Monitoring: Since the stream inventories of all fish-bearing streams within the Middle Fork Clearwater River drainage were completed on National Forest System lands during 1996, no additional habitat surveys were scheduled for 2006.

Water Temperature Monitoring: Stream temperatures were monitored throughout the summer at the mouths of Big Smith Creek, Little Smith Creek and Swan 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 2006 stream temperature data from the three streams 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 at Little Smith Creek. Big Smith Creek and Swan Creek did not meet this standard. These 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 meet the "high fishable" standards for steelhead trout.
- Big Smith Creek, Little Smith Creek and Swan 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. As for bull trout, Big Smith Creek, Little Smith Creek and Swan Creek have not been designated potential bull trout spawning habitat; they also have exceeded the maximum summer rearing temperature of 12°C (consecutive seven-day average of daily maximums) that EPA issued as final temperature guidance for water quality standards throughout the Pacific Northwest.

LOCHSA RIVER WATERSHED

Watershed Status: No natural or anthropogenic events occurred in the USFS drainages within the Lochsa River watershed during 2006 that caused visible or measurable changes to the aquatic environment. Overall, 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). Only four of the 35 suppression wildfires were larger than one acre; these included Marker 128 Fire (97 acres), Clark (38), Crab (10) and Cabin (5). Marker 128 Fire burned along the Lochsa River within smaller non-fish bearing drainages in a previously burned brush/timber face area; no suppression action was taken on this fire. The Clark and Crab Fires were within

roadless areas. Fourteen wildfires occurred within the roadless/wilderness portions of the Lochsa River drainage. These fires were designated wildland fire use, and no suppression actions were employed. The larger fires included: Kettle Lake (437 acres), Kettle 2 (798), Warm Springs (205) and Rabbit (2,200). Cursory aerial reviews of the three fires within the Selway Bitterroot Wilderness area indicated no major changes to riparian conditions. Preliminary field reviews noted no major changes in riparian conditions along fish-bearing streams within the Rabbit Fire area.

Various field reviews and monitoring activities have supported the conclusion that the habitat conditions are most likely similar to 1998-2005 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. However, anadromous fish numbers may vary annually due to influences outside the watershed.

Habitat Improvement: Most improvement work regarding the aquatic resources was focused on watershed restoration (i.e., road decommissioning and culvert removal). 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 Forest and Tribe participated in the design, implementation and monitoring of these 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 3.2 miles of stream.

Lower Lochsa River Area – Other than general road maintenance work, the Forest did not initiate any project that had direct or indirect habitat improvement for the aquatic resources during 2006. Due to pending legal proceedings, additional watershed restoration activities including substantial road obliteration and riparian planning projects that are scheduled under the North Lochsa Face analysis are on hold.

Fish Passage Improvement - Upper Lochsa River Area – In 2006, the Forest used fisheries improvement funds on two culvert replacement projects.

Fisheries funds (1 percent), engineering funds (13 percent) and NOAA funds directed to the Idaho State Office of Species Conservation through the Nez Perce Tribe (86 percent) were used for two culvert replacement projects within the Colt Killed (White Sand) Creek drainage. The Forest and the Nez Perce Tribe also provided funds for the project design, environmental analyses, consultations and monitoring. The two culvert replacements on Salvage Creek, tributary of Colt Creek, will improve access for westslope cutthroat trout, steelhead trout, bull trout and other aquatic organisms to approximately 3.2 miles of stream. The new structures will also reduce the risk of a culvert failure and potential sediment input into approximately 3.5 miles habitat within the impact zone downstream of the culvert site.

Road Decommissioning - Upper Lochsa River Area – The main habitat restoration activity within the upper Lochsa River drainage involved the road decommissioning project in the Badger Creek, Haskell Creek, Spruce Creek and Beaver Creek drainages. The road decommissioning work reduced potential erosion sources and mass wasting areas and is expected to accelerate the recovery of stream channel and habitat conditions. Fisheries and engineering funds were used with funds from the Nez Perce Tribe in the decommissioning of approximately 26.2 miles of road within the upper Lochsa River drainage.

Approximately 4.5 miles of road within the Badger Creek drainage were permanently decommissioned in 2006 using engineering and Tribal funds. Habitat conditions along approximately 2.0 miles of Badger Creek are expected to improve for bull trout, steelhead trout and westslope cutthroat trout via removing existing sediment sources. Since 2001, the Forest has decommissioned approximately 54 miles of road and placed 3.6 miles of road into intermittent storage within the Badger Creek drainage. The road decommissioning portion of the watershed restoration efforts in the Badger Creek drainage was completed in 2006.

Approximately 8.1 miles of road within the Haskell Creek drainage were permanently decommissioned in 2006 using engineering and Tribal funds. Habitat conditions along approximately 1.5 miles of Haskell Creek are expected to improve for bull trout, steelhead trout and westslope cutthroat trout via removing existing sediment sources.

Approximately 9.0 miles of road within the Spruce Creek drainage were stabilized in 2006 using engineering and Tribal funds; 1.0 miles of road were placed into intermittent storage, and approximately 9.0 miles of road were permanently decommissioned. Habitat conditions along approximately 6.5 miles of Spruce Creek are expected to improve for bull trout, steelhead trout and westslope cutthroat trout via removing existing sediment sources.

Approximately 4.5 miles of road within the Beaver Creek drainage were stabilized in 2006 using fisheries and engineering funds; 3.7 miles of road were placed into intermittent storage, and approximately 0.8 miles of road were permanently decommissioned. This project was authorized under the Beaver Triangle Timber Sale. The road decommissioning work removed three culverts from which would reduce the risk of a culvert failure and potential sediment input from tributaries of Beaver Creek into approximately 2.0 miles bull trout habitat within the impact zone downstream of the culvert site in Beaver Creek.

Habitat Monitoring: 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 2006, no resurveys were scheduled within the Lochsa River drainage.

Lower Lochsa River Area:

Stream Habitat Surveys - In 2006, no resurveys were scheduled within the lower Lochsa River drainage.

Stream Channel and Substrate Conditions – 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 20 years. 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. During 2001-2003, surveys noted an increasing trend. However, the trend reversed in 2004 and 2005 (Figure 4). In 2006 a decreasing trend was reversed again. 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 in 2002-2003. Similar to Pete King Creek, the increasing trend was reversed in Deadman Creek in 2004, but unlike Pete King Creek an increase was observed in 2005. In 2006, a slight decrease was observed. At both streams, the 2006 levels were 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 seven percentage points in 2006 (Figure 4). Since no new sediment sources (i.e. landslides road failures) were identified during 2000-2006, the decrease is most likely the aftermath of a pulse of instream sediment being transported through the system. 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.

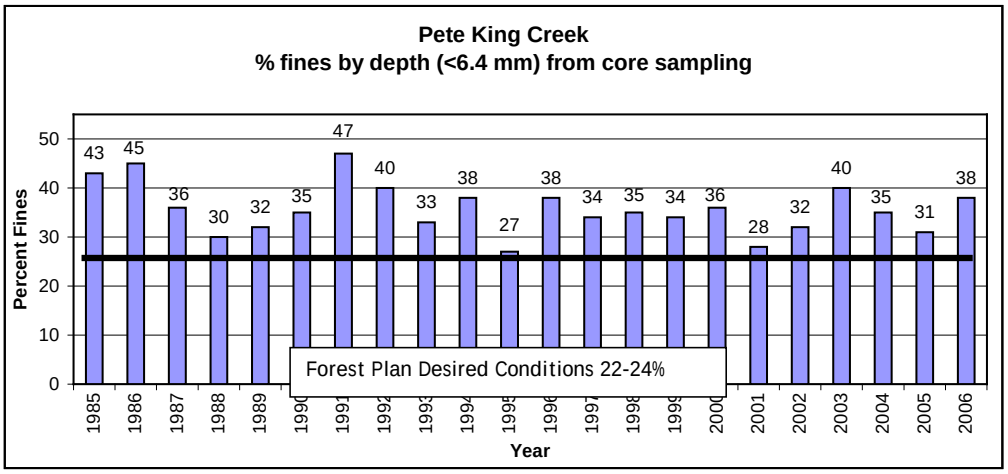


Figure 4. Comparison of average percent fines by depth (<6.4 mm) for years 1985-2006 at permanent substrate monitoring sites in lower Pete King Creek within the Lochsa River drainage

At the Deadman Creek stations, the substrate conditions showed a slight decrease in percent fines from 35% to 32% between 2005 and 2006 respectively (Figure 5). Similar to Pete King Creek, no new sediment sources (i.e., landslides, road failures) were identified during 2000-2006. Therefore, the increase is most likely the aftermath of a pulse of instream sediment being transported through the system during the past six years (2000-2005). 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, 2002-2003, and in 2005 most likely show that the decrease is temporary and that sediment impulses resulting from past anthropogenic activities are still present in the drainage. Information collected in the next three years will hopefully show if a long-term decreasing trend is apparent or if sediment conditions will continue to fluctuate.

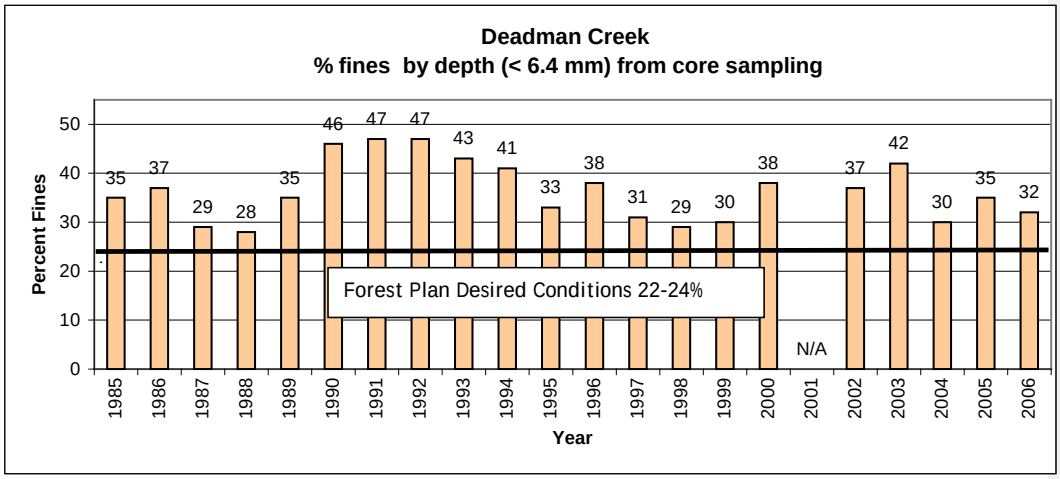


Figure 5. Comparison of average percent fines (<6.4 mm) for years 1985-2006 at permanent substrate monitoring sites in lower Deadman Creek within the Lochsa River drainage. No data was collected in 2001.

Stream channel and substrate conditions were monitored at four permanent sites on Pete King Creek, Canyon Creek, Deadman Creek and Fish Creek in 2006. See ***Riparian chapter*** for more information.

Upper Lochsa River Area:

Stream Habitat Surveys - In 2006, no resurveys were scheduled within the upper Lochsa River drainage.

Stream Channel and Substrate Conditions - Stream channel and substrate conditions were monitored at two permanent sites on Spruce Creek and Waw'aalamnine (Squaw) Creek in 2006. See ***Riparian chapter*** for more information.

Water Temperature Monitoring: Stream temperatures were monitored throughout the summer at 100 sites on 85 streams within the Lochsa River drainage. Temperature data for an additional 10 sites are not available (instruments still instream [5], missing units [3] or equipment failures [2] prevented data collection). The Forest has been collecting water temperature data from 1990-2006 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 2006 stream temperature data from the 90 monitoring sites on the 75 streams with available data with desired maximum temperatures as defined for the "high fishable" and "no effect" standard in the Forest Plan revealed that:

- 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.
- The desired steelhead trout rearing temperature of 15°C (no effect) was met at one stream, Fern Creek, out of the thirteen streams monitored with a "no effect" standard. Dan Creek exceeded the standard on five days.
- The desired steelhead trout rearing temperature of 17°C (high fishable) was met at 24 streams out of the 33 streams monitored with a "high fishable" standard. Colt Creek (1day), Skookum Creek (5 days), Imnamatnoon (Papoose) Creek (1day) and South Fork Canyon Creek (1day) exceeded the standard on five days or fewer.
- The desired spring Chinook trout rearing temperature of 15°C (no effect) was met at one stream (Waw'aalamnine [Squaw] Creek above West Fork Waw'aalamnine [Squaw] Creek) of the five major streams with Chinook habitat. One additional site on those streams, Crooked Fork Creek (upstream Hopeful Creek) exceeded the standard on only two days.
- The desired westslope cutthroat trout rearing temperature of 13°C was not met at any of the six streams monitored with a "no effect" standard.
- The desired westslope cutthroat trout rearing temperature of 16°C (high fishable) was met at 17 of the 22 streams monitored with a "high fishable" standard. Lost Creek exceeded the standard one day and Pack Creek exceeded it on three days.

Overall, water temperatures of 71 of the 75 monitoring streams 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. The four sites on the mainstem Lochsa River exceeded the standard from three to twenty days while the remaining two streams, Crooked Fork Creek and Colt Killed Creek, exceeded the standard on one and two days respectively. The state standard of 13°C for the spring spawning period (steelhead trout) was met at five streams (Bridge Creek, Fern Creek, Parachute Creek, Spring Creek and Williams Lake Creek). An additional four streams exceeded the standard by two days or fewer. The state standard of 13°C for the spring period for westslope cutthroat trout was met at one stream, Muleshoe Creek. Crab Creek exceeded the standard on five days. Only Bridge Creek and Muleshoe Creek met the bull trout maximum summer rearing temperature of 12°C (consecutive seven-day average of daily maximums) that EPA issued as final temperature guidance for water quality standards throughout the Pacific Northwest.

Fisheries Population Monitoring:

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 and inclement weather conditions during late August limited the number of sites to the Pete King Creek and lower Fish Creek drainages. No fish population sampling was completed in Deadman Creek. Fish population monitoring was not completed during 2005 in the upper Fish Creek and Hungery Creek drainages. Average steelhead juvenile densities at the Pete King Creek sites showed moderate levels similar to 2004 while densities at the lower Fish Creek sites showed higher numbers than in previously surveyed years. 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 drainage has been conducted over a number of years to assess the trend in steelhead production within developed watersheds within the lower Lochsa River drainage (Figure 6).

The 2006 data indicates that steelhead trout populations within Pete King Creek have remained at the 2004 levels which are similar to the 24-year average of 8.7 age 1+ fish/100m². Fish population data collected by the Forest showed densities of juvenile steelhead (age 1+) averaged about 8.6 fish/100m² in lower Pete King Creek. In 2006, the fish population monitoring only included six of the ten original transects; changes in stream conditions have resulted in a majority of non-pool habitats at four transects. These transects do not meet the original selection criteria for the monitoring project.

The 2006 densities are still below the desired densities of juveniles (age 1+) >15 fish/100m^2 (Figure 8). In past years, the low numbers of juvenile steelhead trout in Pete King Creek were most likely due to a two conditions: (1) fair-to-poor habitat conditions reducing 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.

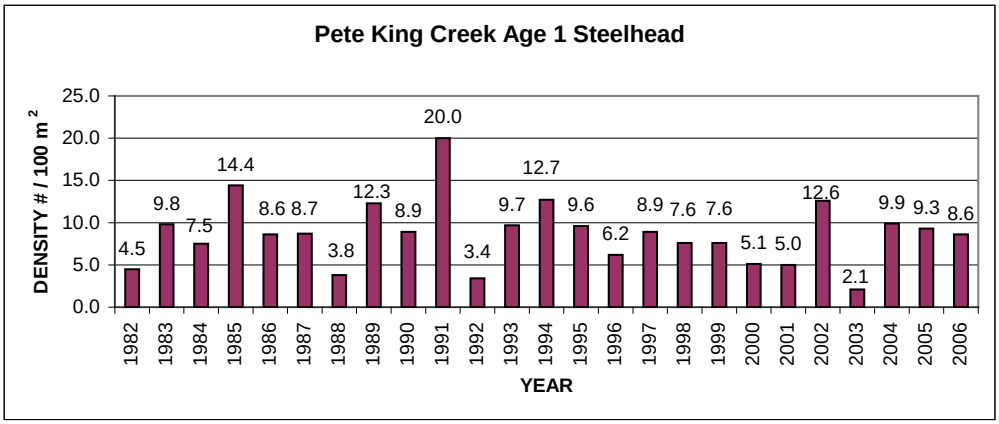


Figure 6. Comparison of the average densities (#/100m²) of juvenile steelhead trout (age 1+) that were observed for survey period 1982-2006 permanent snorkeling stations on Pete King Creek in the Lochsa River drainage by the Clearwater National Forest. Only six of the ten sites were monitored in 2006 due to habitat changes.

The 2006 data indicate steelhead trout populations within Deadman Creek have remained stable since 2000; no sampling was conducted in 2001 and 2005. Fish population data collected by the Forest in 2006 showed densities of juvenile steelhead (age 1+) averaged about 22.1 fish/100m² in lower Deadman Creek;

the densities are moderately higher than the desired densities of juveniles (age 1+) >15 fish/100m² (Figure 9) and higher than the 22-year average of 12.3 fish/100m². The high densities observed during the past five years (2001 and 2005 excluded) most likely indicate that Deadman Creek has a strong and stable steelhead population. However, due to downriver adult and juvenile escapement problems, and the relatively short monitoring period in relation to the 4- to 5-year life cycle for steelhead trout, the trend could be temporary and reversed in future years. Monitoring data over at least two additional life cycles (eight years) would be needed to support any firm conclusions.

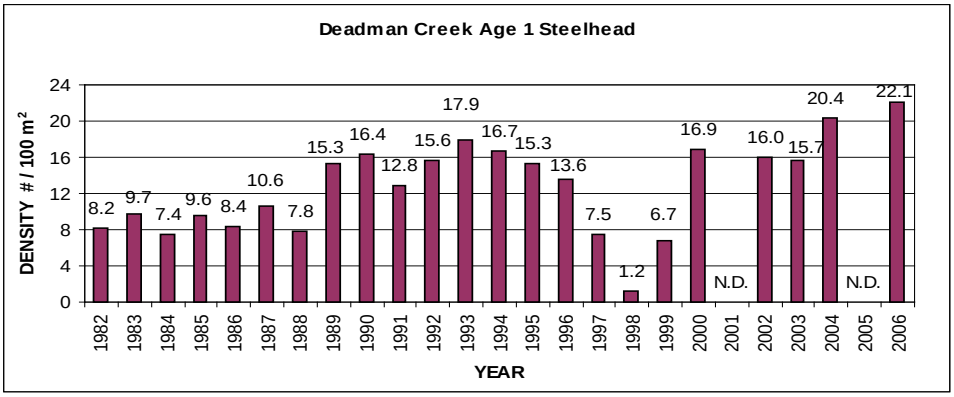


Figure 7. Comparison of the average densities (#/100m²) of juvenile steelhead trout (age 1+) that were observed for survey period 1982-2006 permanent snorkeling stations on Deadman Creek in the Lochsa River drainage by the Clearwater National Forest. No data was collected in 2001 and 2005.

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 8 and 9). Budget and time constraints in 2006 limited fish population sampling to sites within lower Fish Creek and lower Hungery Creek.

In comparison to 2002-2003 average (no data was collected in 2004), the average steelhead trout juvenile densities in 2006 showed a moderate increase (45%) at the lower Fish Creek sites (Figure 8). The 2006 densities (19.3 fish/100m²) were slightly higher than those observed in 2005 (18.3 fish/100m²) and are above the desired densities of juveniles (age 1+) >15 fish/100m² (Figure 8); the average density observed in 2006 is exactly the same as the period of record (24-year average) of 18.3 fish/100m².

The densities at the Hungery Creek sites (11.4 fish/100m²) were lower than 2003 densities (no monitoring was completed in 2004-2005) and below the desired densities of juveniles (age 1+) >15 fish/100m² (Figure 9). The densities observed in 2006 were also lower than the period of record (26-year average) of 15.6 fish/100m².

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 maintain 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.

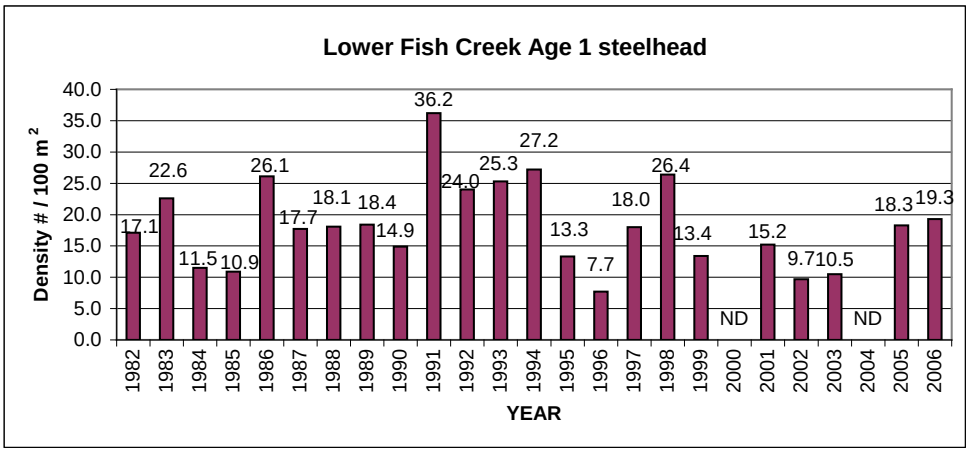


Figure 8. Comparison of the average densities (#/100m²) of juvenile steelhead trout (age 1+) that were observed for survey period 1982-2006 permanent snorkeling stations on lower Fish Creek in the Lochsa River drainage by the Clearwater National Forest. No data was collected in 2000 and 2004.

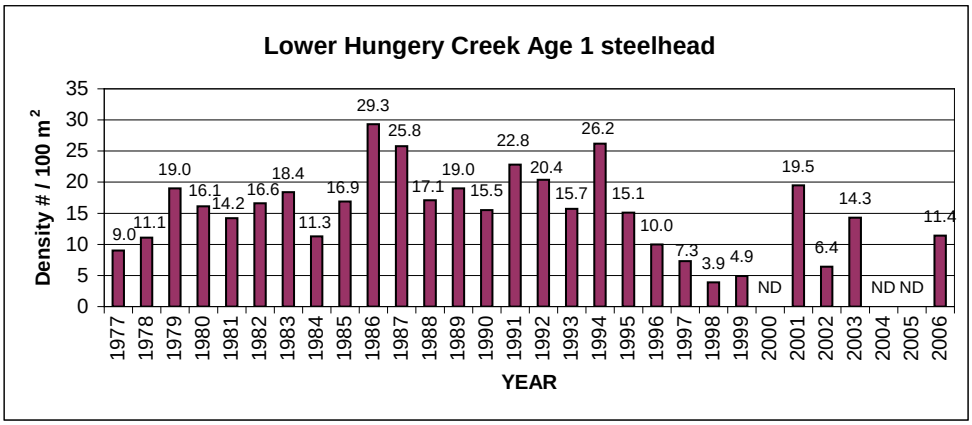


Figure 9. Comparison of the average densities (#/100m²) of juvenile steelhead trout (age 1+) that were observed for survey period 1977-2006 permanent snorkeling stations on lower Hungery Creek (Fish Creek drainage) in the Lochsa River drainage by the Clearwater National Forest. No data was collected in 2000, 2004-2005.

As part of the continuing Idaho supplemental studies being conducted in the Lochsa River drainage, the U.S. Fish and Wildlife Service completed the 2006 spring Chinook spawning ground surveys in the lower five miles of Pete King Creek. The survey found one redd during the 2006 spawning period (U.S. Fish and Wildlife Service. Provisional data from Idaho Fishery Resource Office, Dworshak National Fish Hatchery, Ahsahka, Idaho). Spring Chinook spawning in Pete King Creek occurs infrequently as 0 redds were found during 1992-96, 1998-99, 2003 and 2005 survey periods. One or two redds were documented during the 1997, 2000 and 2002 spawning seasons. Three redds were observed during the 2004 spawning season. 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 other priorities, the Forest conducted limited fish population monitoring (via snorkeling) in the upper Lochsa River drainage during 2006. Permanent fish population monitoring stations were only monitored via snorkeling in Badger Creek.

As part of a research study regarding the effects of road obliteration on instream conditions, two culvert replacements and one culvert removal, the Forest has been monitoring Badger Creek since 2000. Data collected in 2006 indicate steelhead production is occurring annually with fair-to-moderate densities (6.2 age 1+ fish/100m^2) of juvenile steelhead observed upstream of the culvert replacements. The densities observed during 2006 were higher than the 2005 densities (4.56 age 1+ fish/100m^2) and similar to densities recorded in 2003 and 2004 (6.20 and 6.10 age 1+ fish/100m^2 respectively). Westslope cutthroat trout densities in Badger Creek showed fair numbers of juvenile fish (age 0+ and 1+), but relatively low densities of older fish (age 2+ fish).

In 2006, the Forest continued bull trout spawning ground surveys on selected streams within the Lochsa River drainage. Due to time constraints, surveys were only conducted on the two streams. Approximately 4.1 miles of stream were surveyed during the spawning period of September through early October. Long-term index areas in two major bull trout streams in the upper Lochsa River drainage were surveyed: Waw'aalamnine (Squaw) Creek, West Fork Waw'aalamnine (Squaw) Creek. Spawning (56 redds) was documented during multiple surveys in these two streams.

A summary of bull trout redds counted during the past 13 years (1994-2006) for the Waw'aalamnine (Squaw) Creek drainage is shown in Figure 10. Other than a decline in 2006, the redd counts have been on an upward trend. During the earlier surveys (prior to 1999) only one survey was conducted; counts are assumed to be low and most likely do not reflect the actual redd counts. In addition, the 1995-96 flood event modified the culvert outlet at the mouth of the West Fork Waw'aalamnine (Squaw) Creek, which caused a fish migration barrier during low stream flows. The absence or low number of redds found during spawning surveys reflect the effects of the migration barrier during the 1996-2000 migration periods and subsequent spawning seasons. The culvert was replaced during the summer of 2000 with a bottomless arch structure; the redd counts increased substantially the following years.

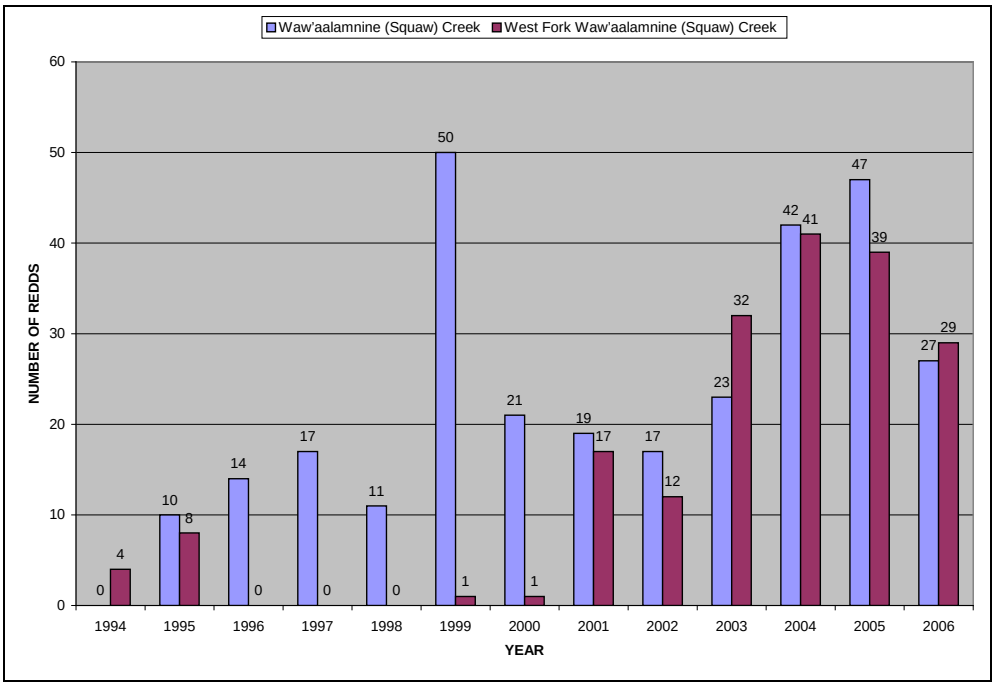


Figure 10. Number of bull trout redds observed by Forest in Waw'aalamnine (Squaw) Creek and West Fork Waw'aalamnine (Squaw) Creek during 1994-2006 spawning season

As part of the continuing Idaho supplemental studies being conducted in the Lochsa River drainage, the Nez Perce Tribal Fisheries Department completed the 2006 spring Chinook spawning ground surveys in Imnamatnoon (Papoose) and Waw'aalamnine (Squaw) Creeks. Results of these surveys indicated that spring Chinook spawning was substantially below the 14-year average in Imnamatnoon Creek and Waw'aalamnine Creek (Figures 11 and 12). A total of 8 and 7 redds was located within Imnamatnoon Creek and Waw'aalamnine Creek respectively. This compares to an average of 33.7 redds/year in Imnamatnoon Creek and 10.9 redds/year in Waw'aalamnine Creek during 1992-2005 survey period.

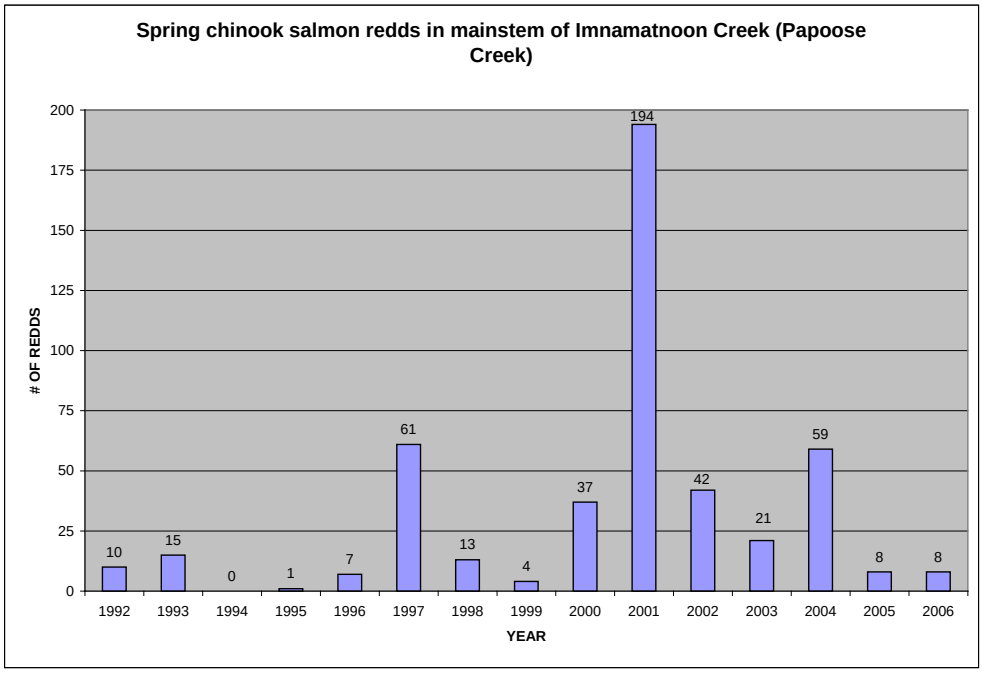


Figure 11. Number of spring Chinook salmon redds observed by Nez Perce Tribe in Legendary Bear (Papoose Creek) during 1992-2005 spawning season (provisional data, Nez Perce Tribe).

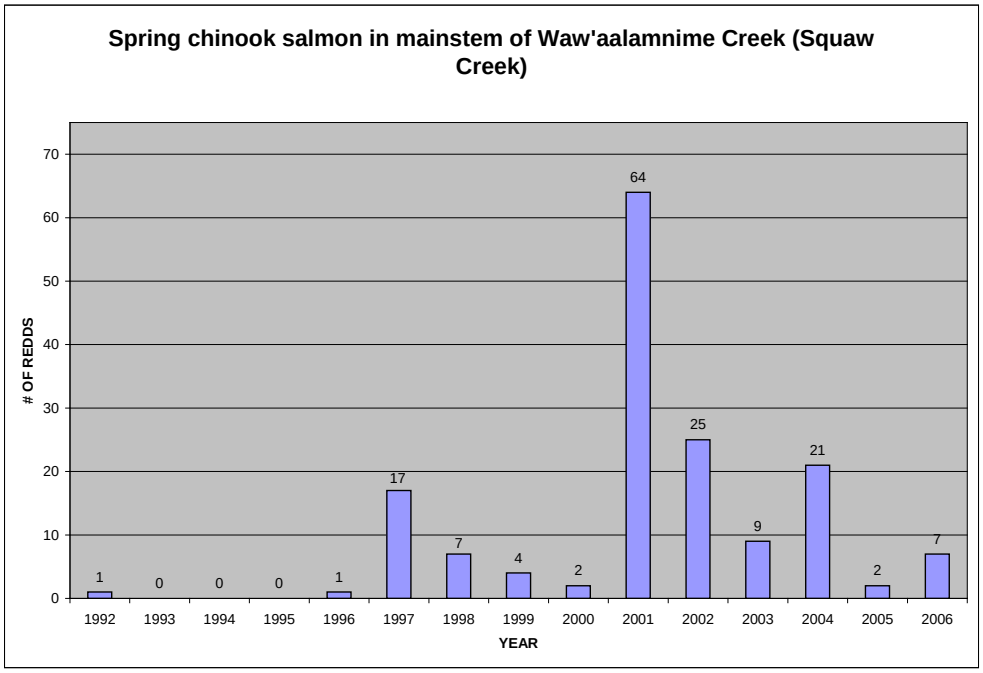


Figure 12. Number of spring Chinook salmon redds observed by Nez Perce Tribe in Fishing Creek (Squaw Creek) during 1992-2005 spawning season (provisional data, Nez Perce Tribe).

NORTH FORK CLEARWATER RIVER WATERSHED

Watershed Status: With the exception of a small area of fire line construction in the Bar Creek drainage as part of the Bar Fire containment efforts, no natural or anthropogenic events occurred in the USFS drainages within the North Fork Clearwater River watershed during 2006 that caused visible or measurable changes to the aquatic environment. Overall, 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). Only five of the 43 suppression wildfires were larger than one acre; these included North Swan (1.5 acres), Birch Ridge (5.5), Upper Hidden Creek (25), Fuzzy (3) and Tamarack (1.5). Nineteen wildfires occurred within the roadless/wilderness portions of the North Fork Clearwater River drainage. These fires were designated wildland fire use and no suppression actions were employed. The larger fires more than 100 acres included Bar Creek (2,076 acres), Hansen Meadows (744), Slide Creek (1,430), Cave 1 (300), Sled (1,700) and Corral (685). Cursory aerial reviews of these fires indicated no major changes to riparian conditions. Preliminary field reviews noted no major changes in riparian conditions along fish bearing streams within the Slide Creek fire.

During containment actions on the Bar Creek Fire, a fuel break was constructed along Bar Creek from Road 247 (near the mouth) upstream approximately 200 meters. While minimal soil disturbance was observed, the fuel break did remove large woody debris (LWD) from the stream channel and most likely caused some instability of existing pieces of LWD, especially the smaller “round-sized” chucks. Some opening of the riparian canopy was also observed due to the removal of alder and/or brush. Fortunately the lower

reaches of Bar Creek show relatively low gradients, with lots of LWD and a low propensity of flushing stream flows. The stream is a relatively small cutthroat trout stream with some low quality habitat available for bull trout although no bull trout have been observed during fish population surveys.

Based on a field review by the Forest hydrologist and Forest fisheries Biologist on November 1, 2006, no immediate remedial or restoration measures were recommended. Since the existing levels of LWD are adequate, no additional LWD placements are necessary. Besides some movement of the smaller chunks of LWD during high stream flows, only minor channel alterations (scouring/deposition) adjacent to the areas where LWD was removed is expected. The one main concern involved the potential of plugging the two undersized culverts under Road 247 prior to the stream's flowing into the mainstem North Fork Clearwater River. Forest personnel have agreed to monitor (daily if necessary) during the 2007 spring runoff period and clean any LWD from the culvert inlets. These culverts were authorized to be replaced with structures that permit passage of aquatic organisms under the Middle Black project; the project is pending on future funding.

To prevent riparian alterations during fire containment and/or suppression efforts in the future, the Forest has initiated a review process to have appropriate Forest personnel assess situations, provide recommendations and facilitate any required consultations.

Various field reviews and monitoring activities have supported the conclusion that the habitat conditions are most likely similar to 1998-2005 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 1990s.

Habitat Improvement: Due to budget constraints, aquatic restoration and enhancement work within the North Fork Clearwater River watershed were limited in 2006 to an ongoing road decommissioning project. Fisheries funds supplemented Forest funds from engineering and watershed to complete road decommissioning activities in the Deception Gulch drainage and along the mainstem North Fork Clearwater River. Fisheries funds were also used to assist the projects in the environmental analyses, ESA consultations, project design 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.

Road Decommissioning - Since 1999, the Forest has been working on completing (as funds are available) the road decommissioning portion of the watershed restoration project for the Deception Gulch drainage and adjacent drainages in the upper North Fork Clearwater River watershed. During 2006, the Forest completed 14.8 miles of road decommissioning and placed 3.0 miles of road into intermittent storage within Deception Gulch drainage and along the mainstem North Fork Clearwater River using engineering and fisheries funds. The road decommissioning and storage work provided improved watershed conditions for 6.2 miles of stream, including Deception Gulch and the mainstem North Fork Clearwater River.

Riparian Fencing - One temporary electric fence that was installed in 1996 around the sediment trap in the upper Elk Creek drainage was maintained in 2006. This provided protection of the riparian vegetation and maintained the integrity of the sediment trap from stream bank alterations.

Watershed Improvement - Other than road decommissioning activities in the Deception Gulch area, fisheries assisted the watershed program in the Pleasant Fire watershed restoration project. The project involved mulching and woody debris placements in headwater channels within some of the high intensity burn areas within the Pleasant Fire (2004) within the upper Cayuse Creek drainage. This work was completed in August through September 2006.

Habitat Monitoring: Stream inventories of the majority of fish-bearing streams within the North Fork Clearwater River drainage have been completed on National Forest System lands during 1988-2005. Approximately 154 miles of stream remain to be inventoried; the mileage is primarily in the roadless areas within the Kelly Creek, Cayuse Creek and Fourth of July Creek drainages. Due to budget constraints, no new inventories or resurveys were scheduled within the North Fork Clearwater River drainage. In 2006, the Forest completed two projects involving the collection of stream channel and substrate information.

Projects included stream channel and substrate monitoring at permanent sites via measuring channel geometry and instream sediment and substrate coring.

Stream Channel and Substrate Conditions - Stream channel and substrate conditions were monitored at permanent sites near the mouths of three streams (Fourth of July Creek, Weitas Creek and Orogrande Creek). See ***Riparian section*** for more information.

Substrate Monitoring - The fifth year of the substrate-monitoring project in lower Moose Creek (mouth upstream to Little Moose Creek) was completed in 2006 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 averaged 21.4% for the 2002-2006 period. The monitoring data showed that the average percent fines were 23.0%, 18.7%, 23.4%, 25.0% and 16.8% for 2002-2006 respectively. The five-year average of approximately 21.4% 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 2007-2010.

Water Temperature Monitoring: The Forest has been collecting water temperature data from 1992 to 2006 to determine temperature problems and prioritize riparian recovery efforts. Due to the 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 2006, stream temperatures were monitored at 138 sites on 124 streams within the North Fork Clearwater River drainage. Temperature data for nine of these sites are not available (instruments still instream [6], missing units [1], or equipment failures [2]). Comparison of the 2006 stream temperature data from the 129 monitoring sites on the 115 streams with available data with the desired maximum temperatures as defined for the appropriate standards in the Forest Plan Forest Plan revealed that:

- The desired westslope cutthroat trout rearing temperature of 13°C (no effect) was monitored at 15 streams. The standard was met at Birch Creek, Mink Creek, and Weasel Creek. The standard was not met at any of the five sites on the mainstem North Fork Clearwater River.
- The desired westslope cutthroat trout rearing temperature of 16°C (high fishable) was met at 46 streams out of the 76 streams monitored with a “high fishable” standard. In addition, 17 sites exceeded the standard by five days or fewer.
- The desired westslope cutthroat trout rearing temperature of 18°C (moderate fishable) was met at eight of the nine streams monitored with a “moderate fishable” standard. The ninth stream, Beaver Creek exceeded the standard on five days.
- The desired westslope cutthroat trout rearing temperature of 20°C (low fishable) was met at 11 streams out of the 12 streams monitored with a “low fishable” standard. Orogrande Creek (at mouth) exceeded the standard on nine days.
- The desired brook trout rearing temperature of 17°C (high fishable) was met at West Fork Elk Creek and Johnson Creek. The other stream monitored for this standard, Elk Creek (upstream of the town of Elk River), exceeded the standard for 37 days.
- The desired brook trout rearing temperature of 20°C (low fishable) was met at Oviatt Creek. Partridge Creek and Long Meadow Creek exceeded the standard on five and eleven days respectively.

Overall, water temperatures of 110 of 115 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 mainstem North Fork Clearwater River; monitoring data showed that two sites on the mainstem North Fork Clearwater River (upstream Weitas Creek (9 days) and upstream Orogrande Creek (9 days)) did not meet the state cold water biota standard. Kelly Creek (mouth [1 day]), Cayuse Creek (upstream Toboggan Creek

[6 days]), Long Meadow Creek (4 days) and Orogrande (mouth [4 days]) also exceeded the standard. The state standard of 13°C for the spring period for westslope cutthroat trout was met at 10 streams (Bostonian Creek [above Niagara Creek], Cache Creek, Coyote Creek, Falls Creek, Game Creek, Mire Creek, Niagara Gulch, Shell Creek, Vanderbilt Gulch [above Placer Creek] and Weasel Creek). An additional eight streams exceeded the standard for five days or fewer. Three streams monitored (Bostonian Creek [above Niagara Gulch], Coyote Creek, Niagara Gulch) met the bull trout maximum summer rearing temperature of 12°C (consecutive seven-day average of daily maximums) that EPA issued as final temperature guidance for water quality standards throughout the Pacific Northwest. An additional seven streams (Cache Creek, Falls Creek, Game Creek, Mire Creek, Shell Creek and Vanderbilt Gulch [above Placer Creek] and Weasel Creek) exceeded bull trout standard for five days or fewer.

Fish Population Monitoring: As in past years, bull trout spawning surveys were conducted on selected streams during 2006. IDFG also conducted fish population monitoring at some of their permanent monitoring sites.

Bull Trout Spawning Surveys - Surveys were conducted on seven streams within the North Fork Clearwater River drainage. Approximately 10.1 miles of stream within the upper North Fork Clearwater River and Moose Creek drainages were surveyed by the Forest during the spawning period of September through early October. The streams included Lake Creek, Goose Creek, Long Creek, Bostonian Creek, Niagara Gulch, Placer Creek and Vanderbilt Creek.

Bull trout spawning (68 redds) was documented in six of the seven streams. As in previous years, the surveys found major concentrations of fluvial or adfluvial bull trout spawning activity in the Lake Creek, Vanderbilt Creek and Bostonian Creek drainages.

The second highest number of redds observed in any known major bull trout drainage within the upper North Fork Clearwater River subbasin during the past ten years was found in Vanderbilt Creek in 2006; 35 redds were documented in the two-mile stream reach. Major concentrations of redds were also found in Bostonian Creek and Goose Creek. Multiple surveys on some of these streams are scheduled for survey by the Forest in 2007.

Comparison of redd count data collected in index areas of the four major spawning streams within the upper North Fork Clearwater River drainage indicates an average of nearly 52 redds over the past four years. Prior to 2003, only one survey was conducted on these streams; the surveys were usually conducted during the last two weeks in September. During 2003, two surveys were conducted on three of these streams. Based on the relatively early spawning timing observed in 2003 and the low number or absence of adult bull trout observed during surveys conducted during mid-September, the 1994-2002 annual redd counts were most likely underestimates of the actual spawning success due to the inability to distinguish older redds. Therefore, surveys were scheduled earlier in September, and where necessary multiple surveys were scheduled during late August to mid- September to obtain an accurate count. Figure 12 displays the redd count information available for the bull trout spawning index areas that are monitored each year.

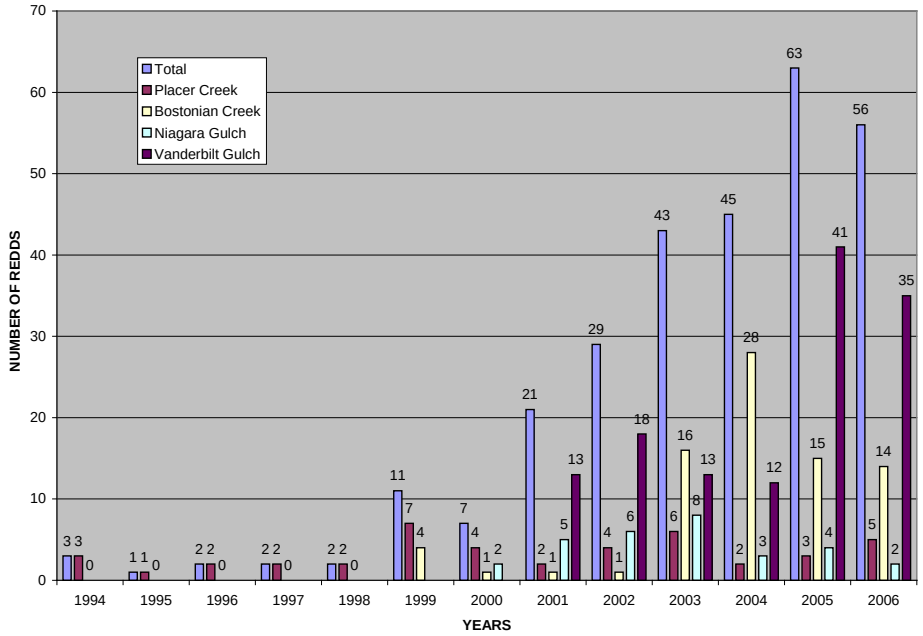


Figure 12. Number of bull trout redds observed by Forest and IDFG personnel within spawning index areas on four streams within the upper North Fork Clearwater River drainage (1994-2006)

IDFG Population Monitoring - IDFG also conducted fish population monitoring via snorkeling 21 permanent sites in 11 streams (Isabella Creek, Beaver Creek, Collins Creek, Skull Creek, Quartz Creek, Beaver Dam Creek, Middle Creek, Orogrande Creek, French Creek, Little Moose Creek and Ruby Creek); bull trout were found in Isabella Creek and Skull Creek (Idaho Department Fish and Game. 2006. Provisional data from Region 2 Idaho Department Fish and Game, Lewiston, Idaho). One adult bull trout was observed in Skull Creek. One juvenile bull trout was observed in Isabella Creek.

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

Ecosystem Monitoring and Adaptive Management of High Lakes Project: In 2006, the IDFG and the Clearwater and Nez Perce National Forests started a partnership project to establish and document the cooperation between the parties in funding field surveys, collection and analysis of data, and adaptive management activities related to high lakes management within the Forests under the title Ecosystem Monitoring and Adaptive Management of High Lakes within the Department's Clearwater Region of Idaho. This project is a continuation of previous challenge cost-share (CCS) agreement projects between the Forest Service and the IDFG where comprehensive mountain lake data were collected to determine lake status and management classification.

As a result of these past efforts, a management plan has been developed to guide future high lakes management utilizing the data collected in previous work. Included in the plan is a landscape-based, ecosystem level approach to monitor native macro-fauna status and trend relative to the level of introduced fish populations and the amount of fishless habitat at the watershed scale. Criteria establishing levels of fishless habitat have been proposed, and a monitoring strategy is in development. The Idaho Department of Fish and Game and the Forest Service administering the high lakes in the IDFG's Clearwater Region have entered discussions on the development of a long-term monitoring plan and an active

restoration strategy to remove non-native fish from selected high lakes. The entities have agreed to complete in late 2006 a master agreement for 2007-2011 and which will be updated annually via supplements.

The ecosystem monitoring and adaptive management of high lakes project is primarily composed of two activities:

Activity 1: Monitoring and evaluation of ecosystem level impacts related to high lakes fisheries management activities. In general, Activity 1 will result in a long-term data set to evaluate trends in native fauna related to relative levels of introduced fish populations at the HUC 5 watershed level. Additional work under Activity 1 will include assessments of fish populations downstream of high lakes to determine population level effects of fish introductions. This information will advance the native fish risk assessment portion of the mountain lake plan and provide baseline information for additional adaptive management activities undertaken in Activity 2.

Activity 2: Management-related activities geared toward reducing legacy threats from past management activities. Activity 2 will represent active adaptive management addressing risks to native fauna. Activity 2 will include efforts to remove non-native fish species from mountain lakes and tributaries downstream from mountain lakes.

Specific actions proposed for the 2006 field season for Activity 1 and included under the agreement for both forests were as follows:

- Implementation of landscape-based monitoring and evaluation program as described in the high lakes plan. Monitoring will be conducted in selected drainages on the Nez Perce National Forest in 2006.
- Determine distribution and genetic status of fish populations downstream of high lakes in the selected drainages.
- Management plan and database development and maintenance.
- Implement annual stocking program.

Specific actions proposed for the 2006 field season under Activity 2 for the Clearwater National Forest include:

- Implement year three of electro-fishing brook trout removal from Ice Lake outlet.
- Assess success of removal effort at Ice Lake and need for future efforts.
- Begin brook trout eradication process in Fly Lake, Heather Lake and Platinum Lake; determine brook trout abundance and introduce tiger musky via helicopter.
- Survey Florence Lake to determine level of natural fish reproduction and recreational impacts.

In 2006, specific accomplishments on the Clearwater National Forest included:

- IDFG crews continued brook trout removal via electro-fishing for a 0.5-mile stream reach downstream of Ice Lake.
- The restoration of three high mountain lakes in the upper North Fork Clearwater River drainage via the stocking of sterile predator fish (tiger musky) to remove non-native brook trout. Approximately 10 acres of lake will be restored following the elimination of brook trout.
- IDFG personnel resurveyed Florence Lake within the Selway Bitterroot Wilderness area; approximately 31 acres of lake were surveyed.

PALOUSE RIVER DRAINAGE

Watershed Status: No natural or anthropogenic events occurred on USFS lands in the Palouse River watershed during 2006 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 2006. Various field reviews and monitoring activities have supported the conclusion that the habitat conditions for most drainages are most likely similar to 1998-2005 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: During 2006, the Forest completed two road decommissioning projects; no other watershed restoration activities (i.e., road decommissioning, new riparian fence construction, instream restoration projects) were completed in 2006.

Road Decommissioning – Mine reclamation funds were obligated in 2005 for the decommissioning of approximately 4.2 miles of road during 2006 within the upper Palouse River drainage as part of the Mizpah Mine project. The restoration of this road provided long-term benefits to approximately 1.5 miles of Mizpah Creek.

A smaller road decommissioning project within the East Fork Meadow Creek was completed in 2006. Fisheries and engineering funded the decommissioning of approximately 0.4 miles of Road 3944, which provided long-term benefits to approximately 1.0 miles of East Fork Meadow Creek.

Habitat Monitoring: Stream inventories of all fish-bearing streams within the Palouse River drainage have been completed on National Forest System lands during 1990-1998. Resurveys of specific streams are planned every five to ten years dependent upon stream conditions and management proposals.

Stream Habitat Surveys - In 2006, no resurveys were scheduled within the Palouse River drainage.

Stream Channel and Substrate Conditions - Stream channel and substrate conditions were monitored at permanent sites near the mouths of three streams (Blakes Fork Creek, White Pine Creek, and East Fork Meadow Creek). See ***Riparian section*** for more information.

Water Temperature Monitoring: 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 2006 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:

- The desired rainbow trout and brook trout rearing temperature of 20°C was met at six streams, Big Creek, Big Sand Creek, Little Sand Creek, Gold Creek, North Fork Palouse River and Strychnine Creek.
- Meadow Creek, mainstem Palouse River and Meadow Creek (below Blakes Fork Creek) exceeded the standard for four days while East Fork Meadow Creek (11 days), Mannering Creek (8 days) exceeded the standard slightly longer.

Water temperatures at six of the ten streams, Big Creek, Big Sand Creek, Little Sand Creek, Gold Creek, North Fork Palouse River and Strychnine Creek, 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 remaining four streams, East Fork Meadow Creek, Meadow Creek (below Blakes Fork Creek), Mannering Creek and Palouse River (at gage and below Wagner Gulch), exceeded the standard on 3 days or fewer. 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: Due to the absence of ESA–listed and sensitive fish species (i.e., steelhead trout, bull trout, westslope cutthroat trout, spring Chinook salmon), fish population monitoring is not scheduled on an annual basis within the Palouse River drainage; no monitoring was conducted in 2006.

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 National Historic Landmark 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 American Indian tribes 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 had any effects on heritage resources. If this determination is made, consultation with the Idaho SHPO is carried out and necessary mitigation is prescribed.

Accomplishments/Findings

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 inventories 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. The Forest also has an active program to inventory additional areas of the Forest outside of project areas and monitor historic properties.

Thirty-six section 106 projects were completed during FY2005 and an additional 26 projects in FY2006. Fifty-four of these involved field inventory and site evaluation. Sixty-two new historic properties were identified. In addition to the section 106 undertakings, the Clearwater had an active section 110 program. In addition condition assessments were carried out for 150 historic properties. The goal of the condition assessments is to document site conditions and determine the cost of bringing sites up to a minimal standard of protection.

The Heritage Program continued its efforts to collect data necessary for the development of heritage resource management plans. One of the goals is to collect information about traditional cultural properties and historic Forest Service management activities that have shaped the landscape. Specific accomplishments include the inventory and organization of historic records, documentation and analysis of historic land use on the Forest and the collection of Nez Perce ethnographic data.

Table 1 shows the number of projects surveyed and the number of sites identified during the course of project planning in FY05 and FY06. Results of these surveys are coordinated through a consultation process with the Idaho State Historic Preservation Office and the Advisory Council on Historic Preservation.

Table 1. Heritage Resource Surveys

YEAR	PROJECTS TESTED*	PROJECTS SURVEYED	ACRES SURVEYED (CLEARED)	NUMBER OF SITES IDENTIFIED
1990	0	30	2,747	21
1991	5	85	5,227	20
1992	14	62	6,496	19
1993	10	40	2,117	69
1994	4	41	3,886	52
1995	1	35	5,522	12
1996	5	46	3,947	20
1997	2	25	6,613	12
1998	6	31	2,300	5
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
2004	1	29	4,710	20
2005	0	36	5,731	27
2006	0	18	4,254	35

*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

Preparation for and participation in the Lewis and Clark Bicentennial continued to be one of the highest Forest priorities. The Clearwater NF contains one of the most intact portions of the Lewis and Clark National Historic Trail. The Lewis and Clark Trail and the Nez Perce (Nee-Me-Poo) National Historic Trail are part of the Lolo Trail National Historic Landmark. In response to expected visitor use and the desire to preserve remains of this extremely important and nationally-significant historic resource, special measures were taken to protect this resource and associated sites. The Heritage Program worked closely with the Recreation Program to protect and monitor historic properties in the Landmark. Forest Heritage Program staff also continue to monitor recreation sites and historic properties, in partnership with the National Park Service, to provide ongoing protection for the trail and associated sites. During FY06, creation of the Lolo National Historic Landmark Heritage Preservation Plan was completed, outlining specific management goals related to heritage, recreation and public needs within the Landmark.

During recent heritage inventory surveys on the Palouse Ranger District, a number of undocumented railroad grade features were identified and recorded. However, each piece identified was likely part of a larger system constructed and used by the Potlatch Lumber Company between 1910 and 1930 and should be recorded within that context. Without larger-scale surveys, that context could not be known. The Potlatch Historic Logging Railroad project was undertaken in order to place these pieces of railroad grade into the context of a larger transportation system, allowing for greater understanding of each piece of grade and their position in space and time in context with local logging history. Prior to 2006, only 2.3 miles of railroad grade had been identified on the ground. In June and July 2006 Heritage crews from the Clearwater National Forest spent time walking potential railroad grade locations as identified by 1933 aerial photography and GIS. A Passport In Time project utilizing three volunteers finished the project. As a result of this project, an additional 25 miles of railroad grade were identified and 15 railroad grade features documented.

Site interpretation on the Clearwater National Forest was a major part of the Heritage Program. In 2005 and 2006 presentations were made to a wide range of individuals and groups, including the Society of American Foresters; the Lewis and Clark Symposium; Northwest Anthropological Conference; Washington State and Idaho State universities; University of Montana; local school groups; and campfire talks at Forest Service campgrounds. Over 50 sites were discussed and interpreted for the public. Heritage Program staff also worked closely with the Nez Perce National Historic Trail Program, taking part in the Preparing for Academic Excellence Program, the Nez Perce Tribe's Students for Success Language Camp and providing on-site interpretation along the Nee-Me-Poo Trail.

Building on last year's accomplishments, efforts to improve the way the Forest maintains and manages its site inventories, site records and other curated materials were continued. A new centralized document and record storage strategy was implemented and a set of standardized procedures is being integrated across the Forest.

The Heritage Program continued projects begun in recent years for a systematic collection of historic and ethnographic information related to prehistoric and historic use of the Forest. Historic features, including trail, road, and structural improvement locations, were collected from old maps and documents and entered into a GIS database. These data are now more accessible and readily available for use to meet management responsibilities.

LANDS

Item No. 12 – Land Ownership Adjustments

Frequency of Measurement: Annual
Reporting Period: Annual
FY05-06

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 FY05-06, the Forest continued to work on the completion of the ***BOISE FOOTHILLS/NORTHERN IDAHO LAND EXCHANGE***. Participants include the Clearwater National Forest, Idaho Panhandle National Forest, Idaho Department of Lands and the BLM.

That portion of the ***BOISE FOOTHILLS/NORTHERN IDAHO LAND EXCHANGE*** on the Clearwater National Forest involves 4,119.70 acres of federal land and 2,812.93 acres of non-federal lands. With the lands in this exchange identified and fieldwork completed, the appraisal was prepared, reviewed and the valuations approved. The agreement to Initiate was executed by all parties in April 2005. The United States Forest Service has determined that special legislation is needed to give the agency the necessary authority to process and consummate the exchange as currently proposed. In March 2006, S.1131, titled the "Idaho Land Enhancement Act," passed the Senate Energy/Resources committee and is in the cue for final consideration by the full Senate, then will be submitted to the House of Representatives.

The primary objective of the exchange for the Forest Service is improved land management through consolidation of landownership. This exchange is consistent with the management area objectives identified in the Forest Plan and the land adjustment criteria also within the Forest Plan.

Negotiations began in 2006 to acquire nearly 40,000 acres of checkerboard ownership currently owned by TWJ Holdings, L.L.C., and formerly owned and managed by Plum Creek Timberlands, L.P. The proposed land exchange will include the exchange of lands from the Clearwater, Idaho Panhandle, Nez Perce and Payette National Forests. Completion of this land exchange will consolidate management of federal landownership in an area that is a stronghold for threatened and endangered terrestrial and aquatic species.

Over the last ten years the Forest has been involved in seven land exchange cases. During that time, 31,078 acres have been acquired while 23,020 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-way acquisition and trespass cases.

Comment [rmorin1]: Don, this paragraph is from previous years report and since the Boise has not closed, the numbers have not changed from what Bill Jones had. RM.

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 94 and 95 operations were processed on the Forest during FY05 and FY06 respectively. There were 104 non-energy operations administered to standard in FY05, and 106 operations administered to standard in FY06. Of the operations administered in FY05, 14 were bonded non-energy operations. In FY06, 13 of the operations administered were bonded non-energy operations.

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 total operations processed and administered during FY05 and FY06.

Abandoned Mine Safety Closures

During FY06, seven abandoned mines were closed with bat friendly steel grates. All seven mines were public safety hazards.

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

24 ounces of gold were mined from the Forest during FY05 and Fy06. The value of this amount of gold would be approximately $8,400 at an average gold price of $400/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 8,817 tons of materials were produced from national forest lands in FY05/06 with an estimated value of $11,021.

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 assessments 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 range readiness, 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. This is an on-going process and there is a need to continue entering improvements.

ACCOMPLISHMENTS/FINDINGS

Range allotments are routinely monitored for use, possible resource damage and maintenance needs. Current range conditions overall are good. There are 16 cattle allotments and 18 grazing permits on the Forest. Two grazing permits were inactive this year with another taking non-use for the second season. There were approximately 4955 HMs this year. An HM is the use and occupancy of the range by one animal for one month. These numbers reflect the permitted animals on cattle allotments, and do not include animals associated with recreational visitors.

The Eldorado Canyon Allotment/Cedar Ck. Pasture #106 was grazed this year due to the Eldorado Canyon EA of 2005.

A cattle guard was installed in the Cedar Creek Allotment/Pasture (Rd 520) this year and about a mile of fence was constructed along section 6 of that allotment.

In 2006 a permanent fence was built to replace the temporary electric fence protecting the paved portion of the Potlatch Canyon Trail.

Several water crossings in allotments 24 and 49 have been identified as good candidates for hardening in summer 2007 and 2008.

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.
4. Accomplishments/Findings

ACCOMPLISHMENTS/FINDINGS

Normally, recreation use estimates are arrived at primarily by observation and professional opinion. Use estimates for developed recreation sites reflect more closely actual use since they are based on fees paid and information provided by recreational users at points of contact such as visitor centers.

General Forest Area Use

Inquiries regarding the route of Lewis and Clark crossing the Clearwater National Forest were slightly elevated in 2005 and 2006 as the Forest commemorated the anniversary years of the Lewis and Clark Bicentennial. Final implementation of interpretive signing, brochures, facility upgrade and construction, road repairs, resource monitoring, and a lottery permit system to manage visitor use and protect resources along the Lolo Trail occurred. Specific accomplishments associated with the Lewis and Clark Bicentennial effort on the Clearwater National Forest can be found in "The USDA Forest Service and the Lewis and Clark Bicentennial; Accomplishment Report 1998-2006" (*USDA, Forest Service, Northern Region)*.

Recreation use within the North Fork Clearwater River corridor remained steady in 2005 and 2006. Steady visitation was observed Memorial Day through Labor Day summer season, with fishing and dispersed camping being the main activities. 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.

Recreation on the Palouse continues to steadily increase, with an ever-increasing draw for motorized recreation. In addition Potlatch Corporation has begun to charge general access recreation fees and we are seeing a noticeable increase in use on FS ground.

Monitoring information for the Selway Bitterroot Wilderness is located in the ***Wilderness*** section.

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

Great Burn

In 2006 the Forest entered in to a participating agreement with the Great Burn Study Group. Under this agreement the forest helps fund the group to complete the following work in the Great Burn:

Apply herbicides to noxious weeds adjacent to the Kelly Creek Trail #567 and within Hansen Meadows.

Conduct a bug release off the Kelly Creek Trail #567 to kill plants not reached by herbicide application, post all treated areas and map and report treated areas in a written document to the Forest Service.

Evaluate campsites and stock staging areas at Leo Lake and clean up a highline and stock staging area away from the lake.

Rehabilitate campsites on lake shores in the Kidd Lake area and assess the need for signs.

Perform a small carnivore field study to set and remove traps in collection of hair samples in Moose Mountain and Bighorn/Weitas.

Perform monitoring trips on the North Fork Ranger District, evaluating the wild and remote character of various areas.

Inventory and pull noxious weeds as feasible in the eastern portion of Bighorn Weitas inventoried roadless area and the Goose Lake area.

Perform incidental repair or replacement of Forest Service signs in the Great Burn area of the North Fork Ranger District.

In addition to the work performed through this partnership, the forest also employed one back country ranger to patrol, monitor and assist in the implementation of many activities (including those listed above) throughout the Great Burn area.

Snowmobile Use Monitoring: Monitoring information for the Great Burn area is located in the ***Wilderness*** section and below under the Accomplishments/Findings section.

Developed Area Use

Fees collected in FY05 and FY06 increased slightly at developed campgrounds. For 2005 and 2006 recreation use in the table below is attributed to the amount of change reflected in fee collection from the previous year. Fee compliance checks remained low in FY05 and FY06 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 FeesCollected*	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06
Recreation Use (M Visitor Days)	1681	1808	1600	1328	1347	1576	1702	1673	1715	1509
Fees Collected	$85,572	$96,763	$85,907	$95,347	$96,664	$113,760	$124,000	$121,900	$124,974	$110,000
Recreation Use Change from Previous Year (%)	+35	+13	-11	-17	+1.5	+17	+8	-1.7	+2.5	-12

Recreation Facility Improvement

Emphasis continues to be placed on improving existing recreation 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. Money to fund these improvements comes mostly from Capital Improvement funds and from Idaho Department of Recreation – Recreational Vehicle Grant funds.

The Forest focused on upgrading aging sanitation facilities throughout the forest. During the summer of 2005 ten concrete vault toilets were installed as replacements of aging facilities at trailheads, dispersed sites and campgrounds across the forest. Improvements were made to interpretive facilities along the Lolo Motorway and U.S. Highway 12 with the construction of 37 new interpretive signs. Facilities were improved or replaced at three trailheads along U.S. Highway 12 and at trailheads across the Palouse Ranger District.

Also in FY05-06 work was completed on the Elk Creek Campground located near Elk River, Idaho. This project was a joint effort between the U.S. Forest Service and the Idaho Department of Parks and Recreation. The Forest received a Recreational Vehicle Grant totaling over $650,000 to construct campground and trailhead facilities at this site. Addition of electrical power at the Little Boulder Campground was also completed using IDPR Recreational Vehicle grant funds.

In FY 2006 the Lolo Creek Campground was expanded to include an additional 5 campsites with a vault toilet. Work is planned for FY 2007 to complete the work there with grant funds.

Bald Mountain Lookout was renovated in 2006 and is now operational.

During FY05 and FY06 the Forest focused on rehabilitating facilities associated with routes traveled by visitors during the Lewis and Clark Bicentennial.

Recreation Special Efforts

Partnerships

Partnerships continue to be important to the success of the Forest's recreation program. In FY05 and FY06, 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.

Partnerships remain an important part of operating Lolo Pass Visitor Center. Partners helping to support the visitor center include: Idaho Department of Transportation, Montana Transportation Department, Montana Chamber of Commerce and Northwest Interpretive Association.

The Forest received a More Kids in the Woods grant in partnership with the Moscow School District and the Palouse Clearwater Environmental Institute.

Partnerships supported through the Recreation Enhancement Act (REA) Program in FY 05 and FY 06 included:

Idaho Humanities Council and Lewis & Clark Speakers Bureau both partners supporting the Forest's Campground Fireside Program,

Lewis & Clark Heritage Foundation and National Park Service both partners supporting monitoring efforts along the Lolo Trail National Historic Landmark, I

Idaho Outfitters and Guides Licensing Board, and the Idaho Department of Fish and Game both partners supporting the Forest Service efforts to complete a statewide GIS mapping project to facilitate public knowledge and administration of the Outfitters and Guides on the three north Idaho Forests (Panhandle, Clearwater, and Nez Perce National Forests).

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 seventh 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 sites including campgrounds, trailheads and river access 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.

Treatment is aimed at reducing noxious weed occurrence and invasion. Treatments 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 of the sites treated are exhibiting significant decline in the area of noxious weed infestation. After a site has been treated for several years, weed proliferation appears to be reduced and treatment can then be less intensive. New sites have been identified for future treatment as sites treated for several years enter a maintenance stage.

Developed sites along the North Fork Clearwater River, at the Campgrounds on the Palouse, ATV trails and trailheads and elsewhere on the Forest were also treated to reduce the spread of noxious weeds.

RECREATION ENHANCEMENT ACT (REA)

Revenue from the REA program (previously known as the fee demonstration program) continued to play a vital role in providing value-added products and services to Forest visitors.

The Clearwater National Forest's REA program includes retention of revenues collected from the fee campground program on the Forest, all cabin and lookout rentals on the Forest, all recreation special use permits, including outfitter and guide permits, a recreation pass program for the Lolo Pass Visitor Center's winter program, and the Lewis & Clark Bicentennial recreation pass designated at promoting resource protection measures within the Lolo Trail National Historic Landmark.

Item No. 14 - Off Highway Vehicle Use Impacts

Frequency of Measurement: Annual
Reporting Period: Five Years

Monitoring Action

The Forest recreation staff annually prepares reports 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

Changes In Trail And Campsite Conditions At Fish Lake

In FY00, formalized monitoring of the effects of OHV activity on dispersed campsites at Fish Lake on the North Fork Ranger District was begun with the inventory of the location, number and physical condition of campsites at the lake, and recording of observations of the condition of the trail to the lake. These measurements and observations will be conducted annually to determine if trail and campsite conditions are changing over time. Some plant recovery has occurred with a scattering of grass and forbs, but the amount of foot traffic at campsites is keeping them essentially devoid of small vegetation. The installation of traffic barrier posts at campsites along the lake continues to be effective in deterring OHV users from driving and parking at campsites.

Monitoring of OHV activity on the trail to Fish Lake and at the lakeside campsites continued through FY06 with one or more visits to the lake during the July 4th through Labor Day holidays. Trail #419 was closed annually through approximately July 30th 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.

Changes In Trail And Campsite Conditions At Fish Lake

In FY00, formalized monitoring of the effects of OHV activity on dispersed campsites at Fish Lake on the North Fork Ranger District was begun with the inventory of the location, number and physical condition of campsites at the lake, and recording of observations of the condition of the trail to the lake. These measurements and observations will be conducted annually to determine if trail and campsite conditions are changing over time. The lake campsites were re-measured and photographed in September. There was no obvious change in conditions from 2003. Some plant recovery has occurred with a scattering of grass and forbs, but the amount of foot traffic at campsites is keeping them essentially devoid of small vegetation. The installation of traffic barrier posts at campsites along the lake continued to be effective in deterring OHV users from driving and parking at campsites.

Monitoring of OHV activity on the trail to Fish Lake and at the lakeside campsites continued in FY04 with one or more visits to the lake during the July 4th through Labor Day holidays. Trail #419 was closed through late July 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.

Response To Demands For OHV Opportunities

Construction of OHV system loop routes has taken place on the North Fork and Palouse Ranger Districts. NEPA is scheduled to be complete in 2007 for the Sheep Mountain/Camp 60 OHV Trail system, which will offer 58 miles of OHV riding opportunities on the North Fork District. The project was funded cooperatively with state OHV grant and federal monies.

Law Enforcement Reporting

Law Enforcement Statistics Relating To OHV Use*	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06
OHV Speeding	0	0	0	0	0	0	0	0	0	3
OHV Road Closure Violation Citations	1	0	8	2	2	0	0	5	2	4
OHV Off Road Violation Citations	0	0	0	0	0	0	0	2	0	1
OHV Trail Closure Violation Citations	1	0	0	0	0	0	6	1	2	0
Unauthorized Trail Building Citations	0	2	0	0	0	0	0	0	1	0
Incident Reports of Violations Related to OHV Use	48	116	137	188	190	107	72	96	110	127
Damaging a Natural Feature			1	0	1	0	0	4	0	0
OHV Parking Violation Citations*					2	0	0	0	0	0
No Registration for ATV Citations*								2	1	5
No Registration for Snowmobile Citations*								1	1	4
No State OHV Sticker on ATV Citations*					3	0	0	1	0	4
No State OHV Sticker on MC Citations*								1	0	4
No State OHV Sticker on ATV Incidents*					20	0	0	0	30	25
No State OHV Sticker on Snowmobiles*						5	1	0	45	36
Operating MC on road with suspended license*							1	0	0	0
Snowmobile Fatality								2	0	0
TOTAL	50	118	146	190	218	112	80	115		

*Source of information is LEIMARS law enforcement statistical report. Data regarding violations of requirement for an OHV sticker were not available for years prior to FY01 and were excluded from the TOTAL.

The number of incidents of violations of regulations by OHV users has risen commensurately with the increased amount of use. Instances of resource damage attributable to OHV use has also risen; particularly, incidents of unauthorized trail construction. Most conflicts associated with use of OHVs are still related to use on roads or trails, or are social conflicts between motorized and non-motorized users.

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.

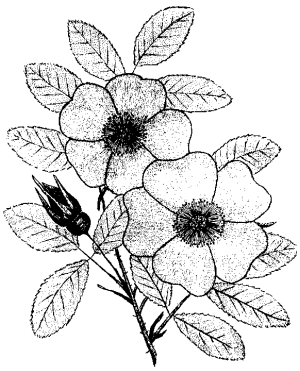
Accomplishments/Findings

The 1987 Forest Plan identified candidate research natural areas (RNA) that contained the forest, non-forest and aquatic types assigned by the Forest Service Northern Region guide. All except two of the candidate RNAs have been established. The ***"Research Natural Areas of the Northern Region: Status and Needs Assessment"*** (1996) identifies the forest herbaceous and aquatic types that are typical on the Clearwater National Forest.

The existing recommended Research Natural Areas are Fenn Mountain, Rhodes Peak, and Bull Run. Official designation will occur when an "***Establishment Report"*** is completed for the proposed RNAs. Reports are completed as funding is available.

The Forest has received one proposal from the public to establish a research natural area in Hemlock Creek. The initial assessment submitted with the proposal indicates that this location may contain the two *Tsuga mertensiana* types recommended for additions in the Regional Assessment.

During FY05 and FY06 no reports were prepared addressing Research Natural Area issues.



During FY05-06 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

There were no research projects initiated on the Clearwater National Forest in FY05-06.

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

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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 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.

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

In 2005, the Forest measured channel geometry and instream sediment in 18 streams across the Forest, in 2006, 14 streams across the Forest. Table 1 for each year lists these monitoring sites. Data collected at each site may be obtained by contacting the Forest hydrologist at the Supervisor's Office.

Table 1. Channel Morphology Sites - 2005

Subbasin	Stream	Beneficial Uses	Activities	Year(s) Data Collected
Lochsa River (17060303)	Badger Creek (above Trib cc)	Westslope cutthroat trout	Road decommissioning	2001, 2002, 2003, 2005
	Badger Creek Trib CC	Westslope cutthroat trout	Road decommissioning	2001, 2002, 2003, 2005
	Badger Creek (below Trib cc)	Westslope cutthroat trout	Road decommissioning	1989, 2001, 2002, 2003, 2005
Upper North Fork Clearwater River (17060307)	Toboggan Creek	Bull trout, westslope cutthroat trout	Baseline	1998, 2005
	Moose Creek (mouth)	Bull trout, westslope cutthroat trout	Mining	1990, 2000, 2002, 2005
	Moose Creek (above Independence)	Bull trout, westslope cutthroat trout	Mining	2000, 2005
	Swamp Creek	Bull Trout, Westslope Cutthroat Trout	Baseline	1988, 2005
	Osier Creek	Bull trout, westslope cutthroat trout	Mining, timber harvest	1995, 2005
	Deception Gulch	Bull trout, westslope cutthroat trout	Timber harvest, landslides	1989, 2002, 2005
	Elizabeth Creek	Bull Trout, Westslope Cutthroat Trout	Wildfire, Debris Torrent	1989, 1992, 1996, 2003, 2005
	Cold Springs Creek	Bull trout, westslope cutthroat trout	Timber harvest	1988, 2000, 2005
	Fro Creek	Westslope cutthroat trout	Baseline	2005
	Corral Creek	Westslope cutthroat trout	Baseline	2005
	Liz Creek	Bull trout, westslope cutthroat trout	Baseline	2005
	Yokum Creek	Westslope Cutthroat Trout	Baseline	2005
	Quartz Creek	Bull trout, westslope cutthroat trout	Timber harvest, landslides	1989, 2005
	Skull Creek	Bull trout, westslope cutthroat trout	Timber harvest	1989, 1998, 2005
Lower North Fork Clearwater River (17060308)	Isabella Creek	Bull trout, westslope cutthroat trout	Timber harvest, landslides	1988, 2005
	Salmon Creek	Bull trout, westslope cutthroat trout	Timber harvest, debris torrent	1998, 2005
	Johnson Creek	Brook trout	Timber harvest	2005

Table 1. Channel Morphology Sites – 2006

Subbasin	Stream	Beneficial Uses[1]	Activities	Year(s) Data Collected
Palouse River (17060108)	Blakes Fork Creek	Brook trout	Timber sales, grazing	1993, 1996, 1999, 2002, 2006
	East Fork Meadow Creek	Brook trout	Timber sales, grazing	1998,2002,2006
	White Pine Creek		Timber sales, grazing	1993, 1996, 2001, 2006
Lochsa River (17060303)	Spruce Creek	Steelhead trout	Timber sales	1997, 1998, 2006
	Squaw Creek	Chinook Salmon	Timber sales, road decommissioning	1993, 1995, 1996, 1997, 1998, 2006
	Fish Creek (Gage)[2]	Steelhead trout	Baseline	2006
	Deadman Creek (gage)	Steelhead trout	Timber sales	2006
	Canyon Creek (gage)	Steelhead trout	Timber sales	2006
	Pete King Creek (gage)	Steelhead trout	Timber sales	2006
Clearwater River (17060306)	Lolo Creek	Steelhead trout	Timber sales, grazing	1993, 1996, 2006
	Potlatch River (above West Fork)	Rainbow trout	Timber sales, grazing	1994, 1997, 2002, 2006[3]
Upper North Fork Clearwater River (17060307)	Fourth of July Creek	Westslope cutthroat trout	Baseline	2003, 2006
	Weitas Creek	Westslope cutthroat trout	Baseline	1998, 2003, 2006
	Orogrande Creek	Westslope cutthroat trout	Timber sales	1997, 2006

[1]Beneficial uses as listed in the Forest Plan.
[2]Gage sites had one transect measurement at the discharge measurement transect.
[3]No Wolman pebble count done in 2006 because the transects are located in a pool.

Table 2 for 2005 and 2006 provides a summary of the Wolman pebble count data for each of the sites measured.

Tables 2. Summary of Wolman pebble count data collected in 2005. Channel type, gradient, percent fine sediment, D50 (mean particle size) and D84 (two standard deviation from mean)

Stream	Channel Type	Gradient %	% Fines[1] 0-2mm	% Fines[2] 0-4mm	D50 in mm[3]	D84 in mm[4]
Badger Creek (above Trib CC)	C6b	3.2	14.0	18.2	39 (very coarse gravel)	113 (small cobble)
Badger Creek Trib cc	A4a	9.8	26.0	32.0	30 (coarse gravel)	110 (small cobble)
Badger Creek (below Trib CC)	A3	5.2	20.0	24.0	29 (coarse gravel)	154 (large cobble)
Toboggan Creek	C2b	2.1	5.8	11.8	142 (large cobble)	2349 (very large boulder)
Moose Creek	C4	0.7	12.4	16.9	48 (very coarse gravel)	106 (small cobble)
Moose Creek (above Independence)	B3	3.1	8.8	11.9	68 (small cobble)	189 (large cobble)
Swamp Creek	B4a	4.1	8.1	10.8	67 (small cobble)	190 (large cobble)
Osier Creek	B3	2.5	11.6	14.8	60 (very coarse gravel)	187 (large cobble)
Deception Gulch	B4	3.5	23.3	28.2	35 (very coarse gravel)	150 (large cobble)
Elizabeth Creek	A2	8.0	6.8	7.5	156 (large cobble)	462 (small boulder)
Cold Springs Creek	B3	4.5	7.0	11.0	110 (small cobble)	324 (small boulder)
Fro Creek	A3	8.1	3.1	3.7	228 (large cobble)	563 (medium boulder)
Corral Creek	B3a	5.6	7.0	8.4	170 (large cobble)	364 (small boulder)
Liz Creek	B2a	5.9	6.6	7.6	234 (large cobble)	620 (medium boulder)
Yokum Creek	B3a	6.6	19.0	21.5	133 (large cobble)	364 (small boulder)
Quartz Creek	B3	2.8	8.7	13.2	87 (small cobble)	221 (large cobble)
Skull Creek	B2	2.0	6.7	9.4	171 (large cobble)	645 (medium boulder)
Isabella Creek	B3	3.0	7.0	8.4	158 (large cobble)	439 (small boulder)
Salmon Creek	B4a	8.6	19.1	20.9	62 (very coarse gravel)	275 (small boulder)
Johnson Creek	A4	9.7	6.0	10.4	27 (coarse gravel)	160 (large cobble)

[1] Clay, silt and sand.
[2] Clay, silt, sand and very fine gravel.
[3] The mean particle size. The stream classification is based on the D50.
[4] The diameter that is equal to 84% of the bed particles. The choice of the 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 single parameter to describe bed particle size should be some size larger than the median.

Table 2. Summary of Wolman pebble count data collected in 2006. Channel type, gradient, percent fine sediment, D50 (mean particle size) and D84 (two standard deviation from mean)

Stream	Channel Type	Gradient %	% Fines[1] 0-2mm	% Fines[2] 0-4mm	D50 in mm[3]	D84 in mm[4]
Blakes Fork Creek	C4	1.4	16.7	17.7	19 (coarse gravel)	70 (small cobble)
East Fork Meadow Creek	C4	1.1	39.3	43.2	6.7 (fine gravel)	35 (very coarse gravel)
White Pine Creek	B4	3.4	35.4	35.9	31 (coarse gravel)	174 (large cobble)
Spruce Creek	B3	2.1	14.6	16.2	136 (large cobble)	438 (small boulder)
Squaw Creek	B3	2.7	15.8	16.0	125 (small cobble)	508 (small boulder)
Fish Creek (gage)	B2	2.0	17.5	21.3	300 (small boulder)	4100 (bedrock)
Deadman Creek (gage)	B3	2.6	29.6	32.9	70 (small cobble)	440 (small boulder)
Canyon Creek (gage)	C3b	5.0	30.4	31.3	85 (small cobble)	300 (small boulder)
Pete King Creek (gage)	B5	2.4	53.4	58.0	2 (sand)	100 (large cobble)
Lolo Creek	C3	0.9	22.9	24.7	94 (small cobble)	410 (small boulder)
Potlatch River (above West Fork)	E5[5]					
Fourth of July Creek	B3	1.8	6.7	8.7	125 (small cobble)	426 (small boulder)
Weitas Creek	B3c	1.5	9.0	11.6	165 (large cobble)	492 (small boulder)
Orogrande Creek	B3c	1.5	8.7	10.7	135 (Large Cobble)	418 (small boulder)

[1] Clay, silt, and sand.
[2] Clay, silt, sand, and very fine gravel.
[3] The mean particle size. The stream classification is based on the D50.
[4] The diameter that is equal to 84% of the bed particles. The choice of the 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 single parameter to describe bed particle size should be some size larger than the median.
[5] The Potlatch River (above West Fork) is a pool reach type and has a sand substrate. Therefore, no Wolman pebble count data was collected in 2006.

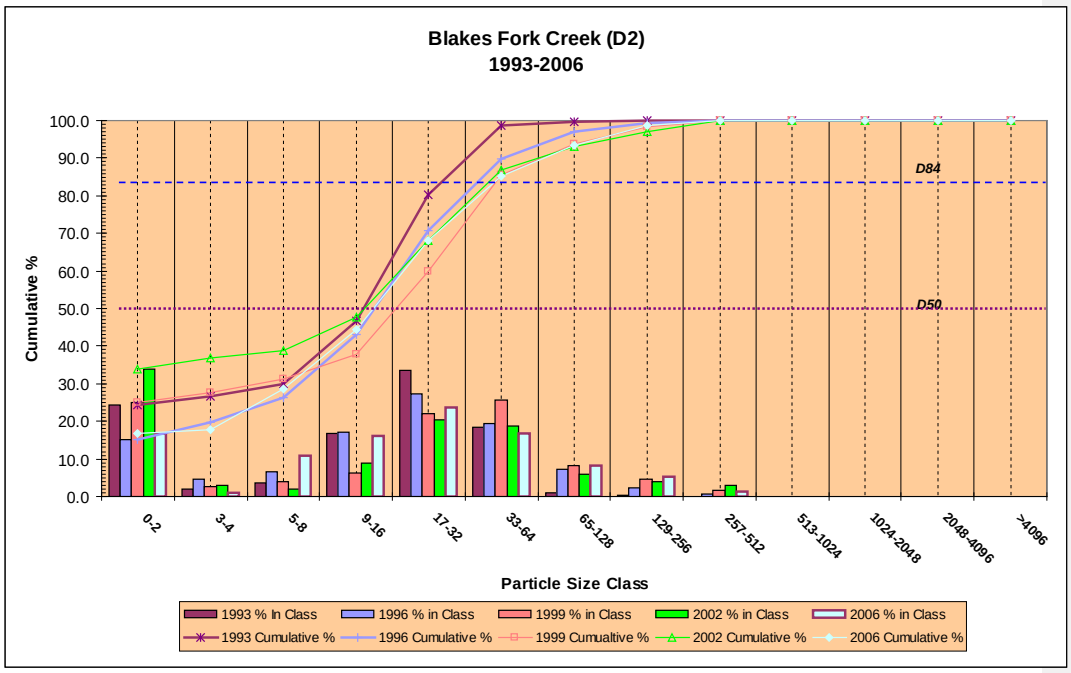
SUBSTRATE MONITORING IN THE PALOUSE RIVER SUBBASIN

Blakes Fork Creek: Blakes Fork Creek is monitored to analyze the effects of timber sales and grazing. Wolman pebble count information was collected for Blakes Fork Creek five times between 1993 and 2006. The channel type is a C4 (single thread, slightly entrenched, high width-to-depth ratio, moderate-to-high sinuosity, gravel substrate channel) with a gradient of 1.4 percent. Table 3 and Figure 1 show the Wolman pebble count data for the five years. There was a decline in sediment between 1993 and 1996, most likely a result of the 1995-1996 flooding, and an increase in sediment between 1996 and 2003. Between 2003 and 2006, sediment appears to be returning to post-flood levels.

Table 3. Blakes Fork Creek Wolman Pebble Count Data 1993, 1996, 1999, 2002 and 2006

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1993	24.4	26.5	17 (coarse gravel)	37 (very coarse gravel)
1996	15.1	19.6	19 (coarse gravel)	52 (very coarse gravel)
1999	24.9	27.6	23 (coarse gravel)	61 (very coarse gravel)
2002	33.7	36.8	17 (coarse gravel)	58 (very coarse gravel)
2006	16.7	17.7	19 (coarse gravel)	70 (small cobble)
Mean	23.0	25.6	19 (coarse gravel)	56 (very coarse gravel)

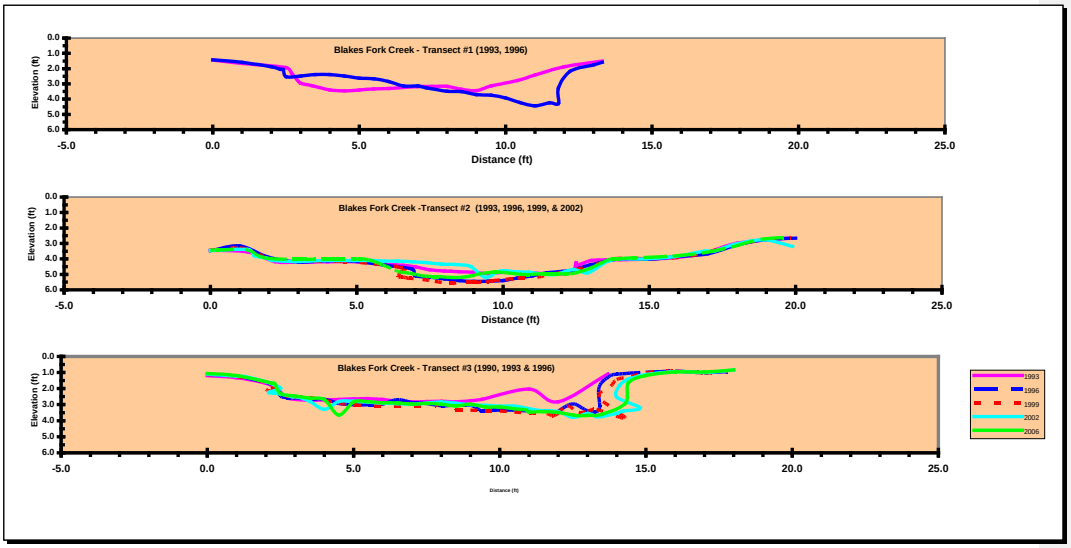
Figure 1. Blakes Fork Creek Wolman pebble count data 1993, 1996, 1999, 2002 and 2006



Increases in sediment that occurred between 1996 and 2003 may be partially associated with the right bank failure in transect 3 (Figure 2).

The riffle stability index in Blakes Fork Creek was determined to be 80 percent (approximately 80 percent of the channel substrate was mobile during bankfull flow) in 2006. This condition is common in C4 channel types where the mean streambed particle size is gravel.

Figure 2. Blakes Fork Creek cross sectional profile 1993-2006

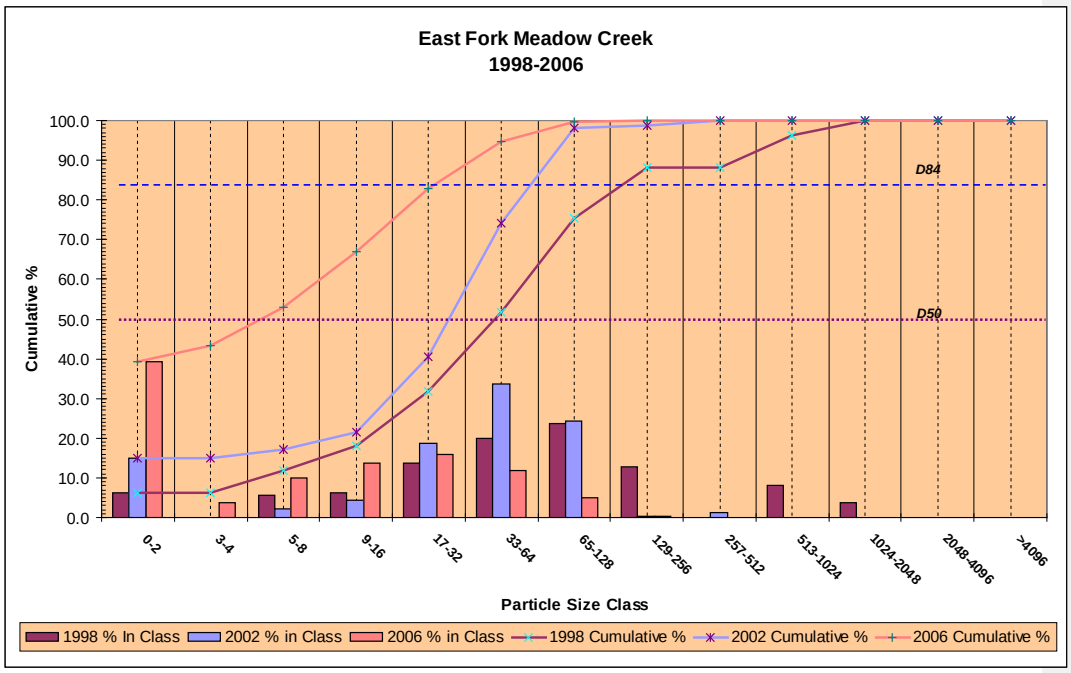


East Fork Meadow Creek: East Fork Meadow Creek is monitored to analyze the effects of timber sales and grazing. Wolman pebble count information was collected for East Fork Meadow Creek three times between 1998 and 2006. The channel type is a C4 (single thread, slightly entrenched, high width-to-depth ratio, moderate-to-high sinuosity, gravel substrate channel) with a gradient of 1.1 percent. Table 4 and Figure 3 show the Wolman pebble count data for the three years. There has been a substantial increase in sediment in the East Fork of Meadow Creek since 1998. Direct cause and effect is unknown. Two possibilities are timber harvest on private land in the watershed and/or natural channel deposition after the channel was scoured in the 1995-1996 flood.

Table 4. East Fork Meadow Creek Wolman pebble count data 1998, 2002 and 2006

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1998	6.4	6.4	11 (medium gravel)	31 (coarse gravel)
2002	14.8	14.8	11 (medium gravel)	44 (very coarse gravel)
2006	39.3	43.2	6.7 (fine gravel)	35 (very coarse gravel)
Mean	20.2	21.5	9.6 (medium gravel)	37 (very coarse gravel)

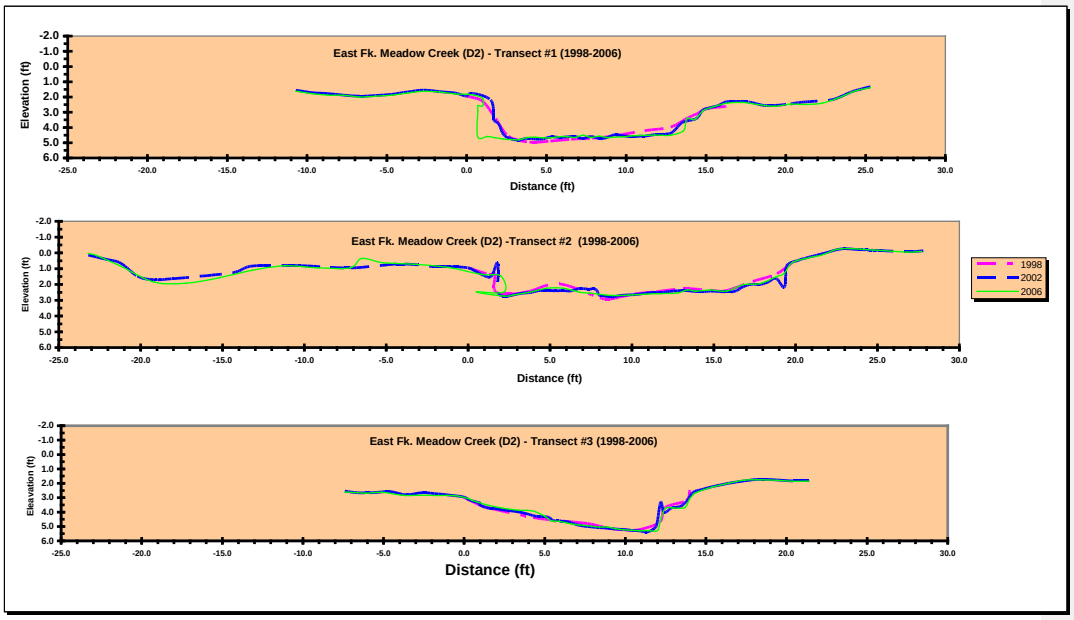
Figure 3. East Fork Meadow Creek Wolman pebble count data 1998, 2002 and 2006



One additional possibility of sediment increase is streambank erosion of the left bank in transect 1 between 2002 and 2006 (Figure 4).

The riffle stability index (RSI) for East Fork Meadow Creek in 2006 was 88 percent. RSI has varied from 86 to 95 percent between 1998 and 2006. This condition is common in C4 channel types but indicates their sensitivity to changes in sediment or stream flow.

Figure 4. East Fork Meadow Creek cross sectional profile 1998-2006

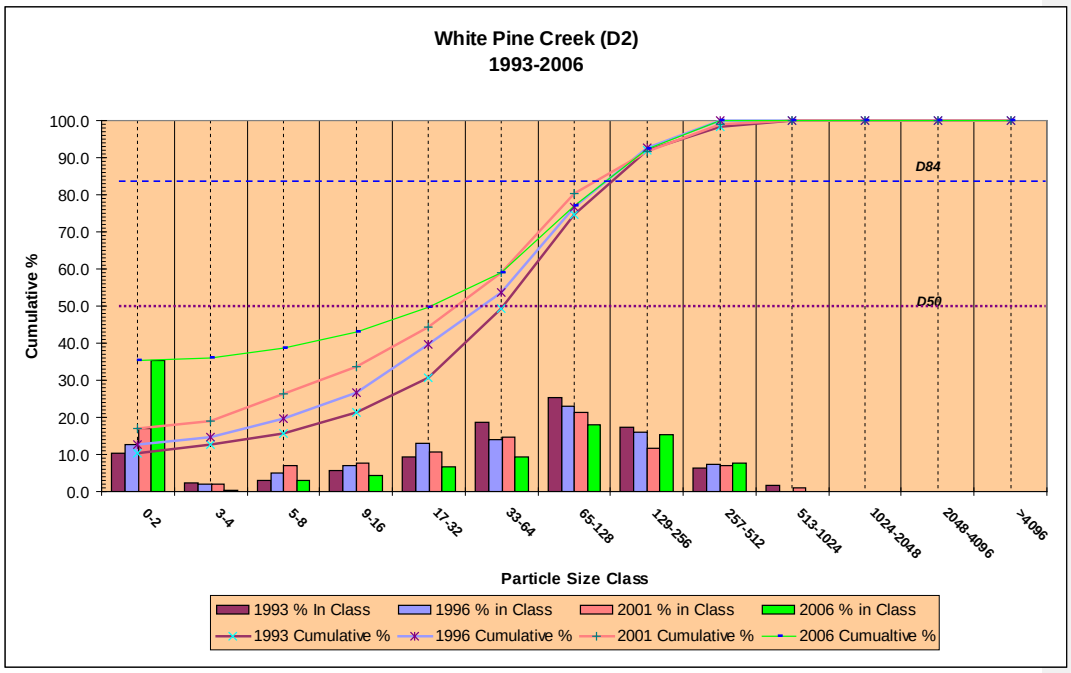


White Pine Creek: White Pine Creek is monitored to analyze the effects of timber sales and grazing. Wolman pebble count information was collected for White Pine Creek four times between 1993 and 2006. The channel type is a B4 (single thread, moderately entrenched, moderate width-to-depth ratio, low to moderate sinuosity, gravel substrate channel) with a gradient of 3.4 percent. Table 5 and Figure 5 show the Wolman pebble count data for the four years. There has been a substantial increase in sediment, especially between 2001 and 2006. The cause and effect of the sediment increase is not known. One possibility is the White Pine Timber Sale; however, there are no indications of large sediment inputs to the White Pine Creek watershed as a result of this timber sale.

Table 5. White Pine Creek Wolman Pebble Count Data 1993, 1996, 2001 and 2006

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1993	10.3	12.6	64 (very coarse gravel)	185 (large cobble)
1996	12.4	14.7	54 (very coarse gravel)	177 (large cobble)
2001	17.1	19.2	42 (very coarse gravel)	159 (large cobble)
2006	35.4	35.9	31 (coarse gravel)	174 (large cobble)
Mean	18.8	20.6	48 (very coarse gravel)	174 (large cobble)

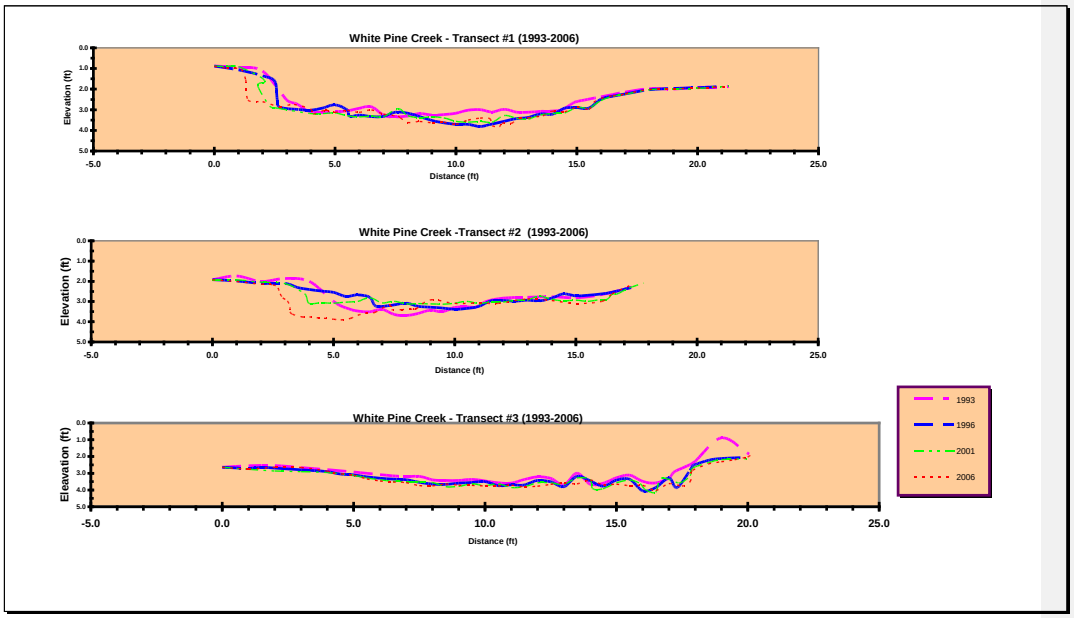
Figure 5. White Pine Creek Wolman pebble count data 1993, 1996, 2001 and 2006



Another possibility for the large increase in sediment is stream bank erosion of the left bank that was documented at transects 2 and 2 (Figure 6).

The RSI for White Pine Creek in 2006 was 85 percent. RSI has varied from 54 to 85 percent between 2001 and 2006. This could indicate that external factors are influencing the channel and instability is developing.

Figure 6. White Pine Creek cross sectional profile 1993-2006



Based upon the analysis of streams in the Palouse River watershed in 2006, specifically East Fork Meadow Creek and White Pine Creek, instability, bank erosion and sediment appear to be increasing. It is therefore important to repeat the RSI monitoring of these streams within the next three years by 2009. A field review of the two watersheds in the spring of 2007 is recommended to determine cause and effect of the apparent instability.

SUBSTRATE MONITORING IN THE LOCHSA RIVER SUBBASIN

Badger Creek (above Tributary CC): Badger Creek is being monitored to analyze the effects of road decommissioning. Wolman pebble count information was collected for Badger Creek in 2001, 2002, 2003 and 2005. A complete channel survey was done in 2001. The channel type is a C6b (single thread channel, slightly entrenched, moderate-to-high width-to-depth ratio, moderate-to-high sinuosity, silt and clay substrate) with a gradient of 3.2 percent. Bank stability was measured at 4.8. Table 6 shows the Wolman pebble count data for the four years.

Table 6. Badger Creek (above Tributary CC) Wolman pebble count data 2001-2005

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
2001	21	24	36 (very coarse gravel)	108 (small cobble)
2002	15	20	40 (very coarse gravel)	114 (small cobble)
2003	13	17	31 (coarse gravel)	108 (small cobble)
2005	14	18	39 (very coarse gravel)	113 (small cobble)
Mean	16	20	37 (very coarse gravel)	111 (small cobble)

The riffle stability index in Badger Creek above Tributary CC was determined to be 83 percent (approximately 83 percent of the channel substrate was mobile during bankfull streamflows) in 2005.

Badger Creek Tributary CC (mouth): Badger Creek is being monitored to analyze the effects of road decommissioning. Wolman pebble count information was collected in Badger Creek in 2001, 2002, 2003 and 2005. A complete channel survey was done in 2001. The channel type is an A4a (high gradient, deeply entrenched, low sinuosity, gravel substrate) with a gradient of 9.8 percent. Bank stability was measured at 4.8 and cobble embeddedness was 47 percent. Table 7 shows the Wolman pebble count data for the four years.

Table 7. Badger Creek Tributary CC Wolman pebble count data 2001–2005

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
2001	52	52	2 (sand)	77 (small cobble)
2002	40	41	28 (coarse gravel)	149 (large cobble)
2003	48	50	4 (very fine gravel)	109 (small cobble)
2005	26	32	30 (coarse gravel)	110 (small cobble)
Mean	42	44	21 (coarse gravel)	111 (small cobble)

Badger Creek (below Tributary CC): Badger Creek is being monitored to analyze the effects of road decommissioning. Wolman pebble count information was collected in Badger Creek below Tributary CC in 2001, 2002, 2003 and 2005. A complete channel survey was done in 2001. The channel type is an A3 (deeply entrenched, moderate gradient, low sinuosity, cobble substrate) with a gradient of 5.2 percent. Bank stability was measured at 4.8 and cobble embeddedness was 47 percent. Table 8 shows the Wolman pebble count data for the four years.

Table 8. Badger Creek below Tributary CC Wolman pebble count data 2001-2005

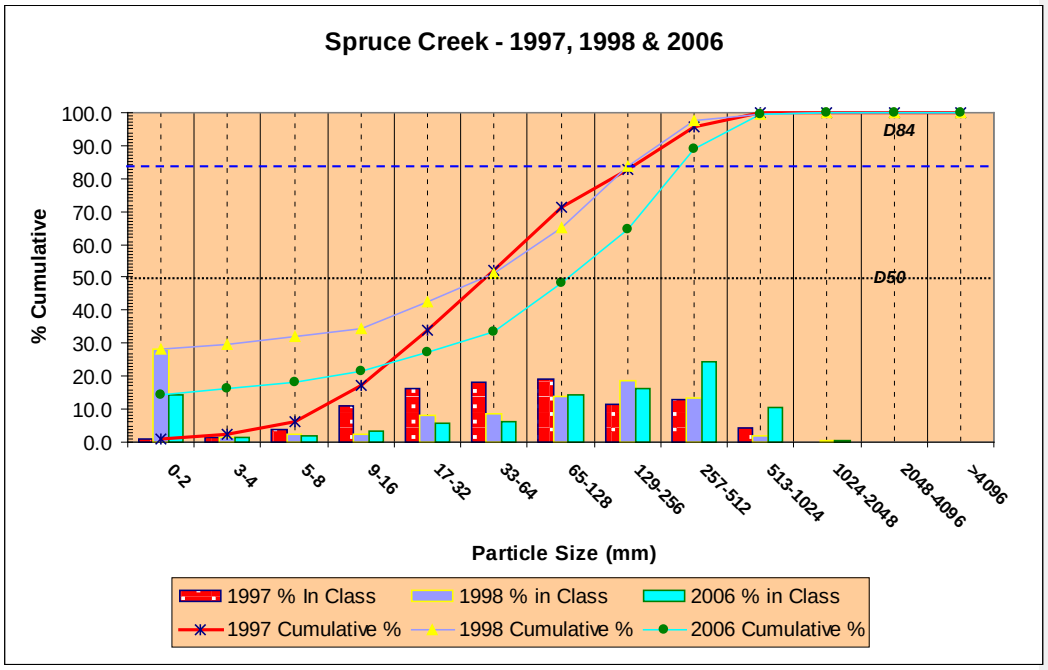
Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
2001	30	33	39 (very coarse gravel)	231 (large cobble)
2002	24	26	29 (coarse gravel)	156 (large cobble)
2003	20	25	31 (coarse gravel)	194 (large cobble)
2005	20	24	29 (coarse gravel)	154 (large cobble)
Mean	24	27	32 (coarse gravel)	184 (large cobble)

Spruce Creek: Spruce Creek is monitored to analyze the effects of road construction, timber harvest on private land and the 2003 Beaver Lakes Fire. Wolman pebble count information was collected for Spruce Creek in 1997, 1998 and 2006. The channel type is a B3 (moderate gradient, moderately confined, cobble substrate stream) with a gradient of 2.1 percent. Table 9 and Figure 7 show the Wolman pebble count data for the three years. There was a substantial increase in sediment in 1998, followed by a decrease between 1998 and 2006. The D50 and D84 have increased since 1997, perhaps to the point where the channel changed from a B4 (gravel) to a B3 (cobble). The RSI in 2006 was 45 percent, indicating the channel is stable with less than half the substrate moving at bankfull stream flows.

Table 9. Spruce Creek Wolman pebble count data 1997, 1998 and 2006

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1997	1.1	2.5	53 (very coarse gravel)	226 (large cobble)
1998	28.4	29.8	80 (small cobble)	329 (small boulder)
2006	14.6	16.2	136 (large cobble)	438 (small boulder)
Mean	14.7	16.2	90 (small cobble)	331 (small boulder)

Figure 7. Spruce Creek Wolman pebble count data 1997, 1998 and 2006

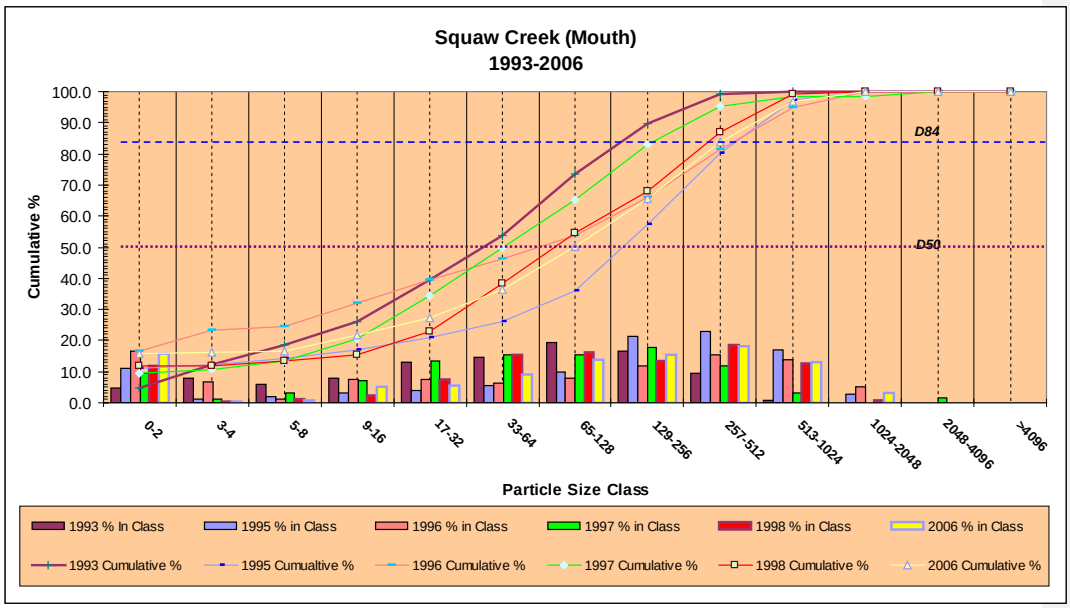


Squaw Creek: Squaw Creek is monitored to analyze the effects of landslides in the 1995-1996 flood and subsequent road obliteration. Wolman pebble count information was collected for Squaw Creek at the mouth in 1993, 1995, 1996, 1997, 1998 and 2006. The channel type is a B3 (moderate gradient, moderately confined, cobble substrate stream) with a gradient of 2.7 percent. Table 10 and Figure 8 show the Wolman pebble count data for the six years. There was an increase in sediment in 1996, following the 1995-1996 floods with numerous landslides in Squaw Creek. Since that time, sediment has declined slightly. The RSI in 2006 was 44 percent, indicating the channel is stable with less than half the substrate moving at bankfull stream flows.

Table 10. Squaw Creek Wolman pebble count data 1993, 1995, 1996, 1997, 1998 and 2006

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1993	4.6	12.4	53 (very coarse gravel)	200 (large cobble)
1995	11.0	12.2	201 (large cobble)	590 (medium boulder)
1996	16.8	23.4	92 (Small Cobble)	590 (medium boulder)
1997	9.4	10.6	64 (very coarse gravel)	271 (small boulder)
1998	11.8	12.0	47 (very coarse gravel)	457 (small boulder)
2006	15.8	16.0	125 (small cobble)	508 (small boulder)
Mean	11.6	14.4	97 (small cobble)	436 (small boulder)

Figure 8. Squaw Creek Wolman pebble count data 1993-2006



SUBSTRATE MONITORING IN THE UPPER NORTH FORK CLEARWATER RIVER SUBBASIN

Deception Gulch (mouth): Deception Gulch is being monitored to analyze the effects of historic timber harvest and landslides. Deception Gulch is a water quality limited segment (303d) stream with sediment as the pollutant of concern. Wolman pebble count information was collected for Deception Gulch in 1989, 2002 and 2005. A complete channel survey was done in 2002. The channel type is a B4 (moderate gradient, moderately confined, gravel substrate stream) with a gradient of 3.5 percent. Bank stability was measured at 4.8, and cobble embeddedness was 47 percent. Table 11 shows the Wolman pebble count data for the three years. There has been a decrease in fine sediments and an increase in D50 and D84 over the years.

Table 11. Deception Gulch Wolman pebble count data 1989-2005

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1989	37	37	15 (medium gravel)	78 (small cobble)
2002	33	38	28 (coarse gravel)	161 (large cobble)
2005	23	28	35 (very coarse gravel)	150 (large cobble)
Mean	31	34	26 (coarse gravel)	130 (large cobble)

Elizabeth Creek (mouth): Elizabeth Creek is being monitored to analyze the effects of a wildfire in 2000 and a subsequent debris torrent. Wolman pebble count information was collected for Elizabeth Creek in 1989, 1992, 1996, 2003 and 2005. A complete channel survey was done in 1996 (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). The channel type is an A2 (deeply entrenched, high gradient, low sinuosity, boulder substrate) stream with a gradient of 8.0 percent. Bank stability was measured at 5.0 and cobble embeddedness was 30 percent. Table 12 shows the Wolman pebble count data for the five years.

Table 12. Elizabeth Creek Wolman pebble count data 1989-2005

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1989	1	1	221 (large cobble)	467 (small boulder)
1992	4	4	200 (large cobble)	460 (small boulder)
1996	4	5	200 (large cobble)	707 (medium boulder)
2003	10	11	113 (small cobble)	357 (small boulder)
2005	7	8	156 (large cobble)	462 (small boulder)
Mean	5	6	178 (large cobble)	491 (small boulder)

The riffle stability index in Elizabeth Creek was determined to be 53 percent (approximately 53 percent of the channel substrate was mobile during bankfull streamflows) in 2005.

Toboggan Creek (mouth): Toboggan Creek is being monitored to analyze the variability of natural sediment over time (baseline). The Toboggan Ridge Road built in the 1930s and some low-impact burning are the only anthropogenic activities within this watershed. Wolman pebble count information was collected for Toboggan Creek in 1998 and 2005. A complete channel survey was done in 1998 (Clearwater BioStudies Inc, Canby, Oregon. Habitat Conditions and Salmonid Abundance Within the Toboggan Creek Drainage, North Fork Ranger District, Summer 1998. March 1999). The channel type is a C2b (slightly entrenched, moderately sinuous, boulder substrate) stream with a gradient of 2.1 percent. Bank stability was measured at 4.9, and cobble embeddedness was 14 percent. Table 13 shows the Wolman pebble count data for the two years.

Table 13. Toboggan Creek Wolman pebble count data 1998-2005

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1998	5	6	167 (large cobble)	927 (medium boulder)
2005	4	4	142 (large cobble)	2349 (very large boulder)
Mean	5	5	155 (large cobble)	1638 (large boulder)

Moose Creek (mouth): Moose Creek is being monitored to analyze the effects of mining activities. Wolman pebble count information was collected for Moose Creek in 1990, 2000, 2002 and 2005. A complete channel survey was done in 1990 (Clearwater BioStudies Inc, Sherwood, Oregon. Habitat Conditions and Salmonid Abundance in Selected Streams Within the Moose Creek Drainage Area, North Fork Ranger District, Summer 1990. January 1991). The channel type is a C4 (slightly entrenched, moderate-to-high, width-to-depth ratio, moderate-to-high sinuosity, gravel substrate) stream with a gradient of 0.7 percent. Bank stability was measured at 4.6 and cobble embeddedness was 16 percent. Table 14 shows the Wolman pebble count data for the four years.

Table 14. Moose Creek (mouth) Wolman pebble count data 1990-2005

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1990	7	7	60 (very coarse gravel)	204 (large cobble)
2000	15	15	39 (very coarse gravel)	85 (small cobble)
2002	10	11	57 (very coarse gravel)	125 (small cobble)
2005	12	17	48 (very coarse gravel)	106 (small cobble)
Mean	11	13	51 (very coarse gravel)	130 (large cobble)

The riffle stability index for Moose Creek was determined to be 91 (approximately 91 percent of the channel substrate was mobile during bankfull streamflows) in 2005.

Moose Creek (above Independence Creek): Moose Creek is being monitored to analyze the effects of mining activities. Wolman pebble count information was collected for Moose Creek in 2000 and 2005. A complete channel survey was done in 1990. The channel type is a B3 (moderate gradient, moderately confined, cobble substrate) stream with a gradient of 3.1 percent. Bank stability was measured at 4.6, and cobble embeddedness was 16 percent. Table 15 shows the Wolman pebble count data for the two years.

Table 15. Moose Creek (above Independence Creek) Wolman pebble count data 2000-2005

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
2000	13	14	72 (Small Cobble)	208 (Large Cobble)
2005	9	12	68 (Small Cobble)	189 (Large Cobble)
Mean	11	13	70 (Small Cobble)	199 (Large Cobble)

The riffle stability index in Moose Creek above Independence was determined to be 82 (approximately 82 percent of the channel substrate is mobile during bankfull streamflows) in 2005.

Osier Creek (mouth). Osier Creek is being monitored to analyze the effects of past timber harvest and mining activities. Wolman pebble count information was collected for Osier Creek in 1988, 1992, 1995 and 2005. A complete channel survey was done in 1995 (Isabella Wildlife Works, Viola, Idaho. Fisheries Survey Report: Osier Creek Drainage, North Fork Ranger District. February 1996). The channel type is a B3 (moderate gradient, moderately confined, cobble substrate) stream with a gradient of 2.5 percent. Bank stability was measured at 5.0 and cobble embeddedness was 56 percent. Table 16 shows the Wolman pebble count data for the four years.

Table 16. Osier Creek Wolman pebble count data 1988-2005

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1988	13	15	41 (very coarse gravel)	192 (large cobble)
1992	17	22	23 (coarse gravel)	144 (large cobble)
1995	11	13	82 (small cobble)	213 (large cobble)
2005	12	15	60 (very coarse gravel)	187 (large cobble)
Mean	13	16	52 (very coarse gravel)	189 (large cobble)

The riffle stability index in Osier Creek was determined to be 72 (approximately 72 percent of the channel substrate was mobile during bankfull streamflows) in 2005.

Swamp Creek (mouth): Swamp Creek is being monitored to analyze the variability of natural sediment over time (baseline). There has been very little activity within this watershed. Wolman pebble count information was collected for Swamp Creek in 2005. A complete channel survey was done in 1989 (Clearwater BioStudies Inc., Sherwood, Oregon. Stream Conditions and Salmonid Abundance in the Swamp Ridge Area During Summer 1989. November 1989). The channel type is a B4a (moderate gradient, moderately entrenched, gravel substrate) stream with a gradient of 4.1 percent. Bank stability was measured at 4.9, and cobble embeddedness was 44 percent. Table 17 shows the Wolman pebble count data for this year.

Table 17. Swamp Creek Wolman pebble count data 2005

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
2005	8	11	67 (small cobble)	190 (large cobble)
Mean	8	11	67 (small cobble)	190 (large cobble)

The riffle stability index in Swamp Creek was determined to be 65 (approximately 65 percent of the channel substrate was mobile during bankfull streamflows) in 2005.

Cold Springs Creek (gage site): Cold Springs Creek is being monitored to analyze the effects of past road construction and timber harvest. Wolman pebble count information was collected for Cold Springs Creek in 1988, 2000 and 2005. A complete channel survey was done in 1996 (Clearwater BioStudies Inc., Canby, Oregon. Habitat Conditions and Salmonid Abundance in Selected Streams Within the Cold Springs Drainage, North Fork Ranger District, Summer 1996. March 1997). The channel type is a B3 (moderate gradient, moderately entrenched, cobble substrate) stream with a gradient of 4.5 percent. Bank stability was measured at 4.6 and cobble embeddedness was 17 percent. Table 18 shows the Wolman pebble count data for this year. A decrease in fine sediment and an increase in the D50 and D84 over the years should be noted.

Table 18. Cold Springs Creek Wolman pebble count data 1988-2005

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1988	24	24	36 (very coarse gravel)	242 (large cobble)
2000	8	8	98 (small cobble)	328 (small boulder)
2005	7	11	110 (small cobble)	324 (small boulder)
Mean	13	14	81 (small cobble)	298 (small boulder)

The riffle stability index in Cold Springs Creek was determined to be 53 (approximately 53 percent of the channel substrate was mobile during bankfull streamflows) in 2005. This measurement indicates a stable condition with half the substrate in Cold Springs Creek mobile during bankfull or higher stream flows.

Quartz Creek (gage site): Quartz Creek is being monitored to analyze the effects of past road construction and timber harvest. Wolman pebble count information was collected for Quartz Creek in 1989 and 2005. A complete channel survey was done in 1998 (Clearwater BioStudies Inc., Canby, Oregon. Habitat Conditions and Salmonid Abundance in the Quartz Creek Drainage, North Fork Ranger District, Summer 1998. March 1999). The channel type is a B3 (moderate gradient, moderately entrenched, cobble substrate) stream with a gradient of 2.8 percent. Bank stability was measured at 4.9, and cobble embeddedness was 20 percent. Table 19 shows the Wolman pebble count data for this 1989 and 2005.

Table 19. Quartz Creek Wolman pebble count data 1989-2005

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1989	2	2	83 (Small Cobble)	362 (Small Boulder)
2005	9	13	87 (Small Cobble)	221 (Large Cobble)
Mean	6	8	85 (Small Cobble)	292 (Small Boulder)

Skull Creek (above mouth): Skull Creek is being monitored to analyze the effects of past road construction and timber harvest. Wolman pebble count information was collected for Skull Creek in 1989, 1998 and 2005. A complete channel survey was done in 1998 (Isabella Wildlife Works, Post Falls, Idaho. Aquatic Survey Report: Skull Creek Drainage Volume #1, North Fork Ranger District. February 1999). The channel type is a B2 (low gradient, moderately entrenched, boulder substrate) stream with a gradient of 2.0 percent. Bank stability was measured at 4.9, and cobble embeddedness was 37 percent. Table 20 shows the Wolman pebble count data for the three years.

Table 20. Skull Creek Wolman pebble count data 1989-2005

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1989	3	5	98 (small cobble)	534 (medium boulder)
1998	2	3	149 (large cobble)	423 (small boulder)
2005	7	9	171 (large cobble)	645 (medium boulder)
Mean	4	6	139 (large cobble)	534 (medium boulder)

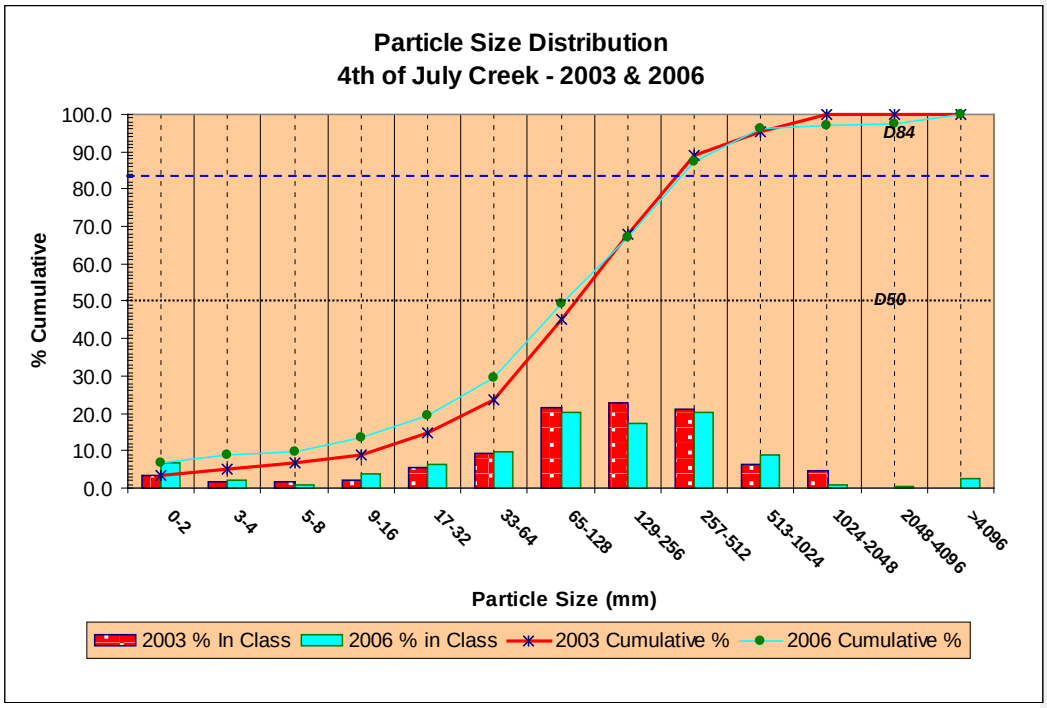
The riffle stability index in Skull Creek was determined to be 58 (approximately 58 percent of the channel substrate was mobile during bankfull streamflows) in 2005.

4th of July Creek: 4th of July Creek is monitored to analyze the variability of natural sediment over time (baseline). Wolman pebble count information was collected for 4th of July Creek in 2003 and 2006. The channel type is a B3 (moderate gradient, moderately confined, cobble substrate) stream with a 2003. The RSI for the reach was 60 percent, indicating a stable channel that moved slightly over half its substrate at bankfull stream flows.

Table 21. 4th of July Creek Wolman pebble count data 2003 and 2006

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
2003	3.3	5.0	147 (large cobble)	431 (small boulder)
2006	6.7	8.7	125 (small cobble)	426 (small boulder)
Mean	5.0	6.9	136 (large cobble)	429 (small boulder)

Figure 9. 4th of July Creek Wolman pebble count data 2003 and 2006

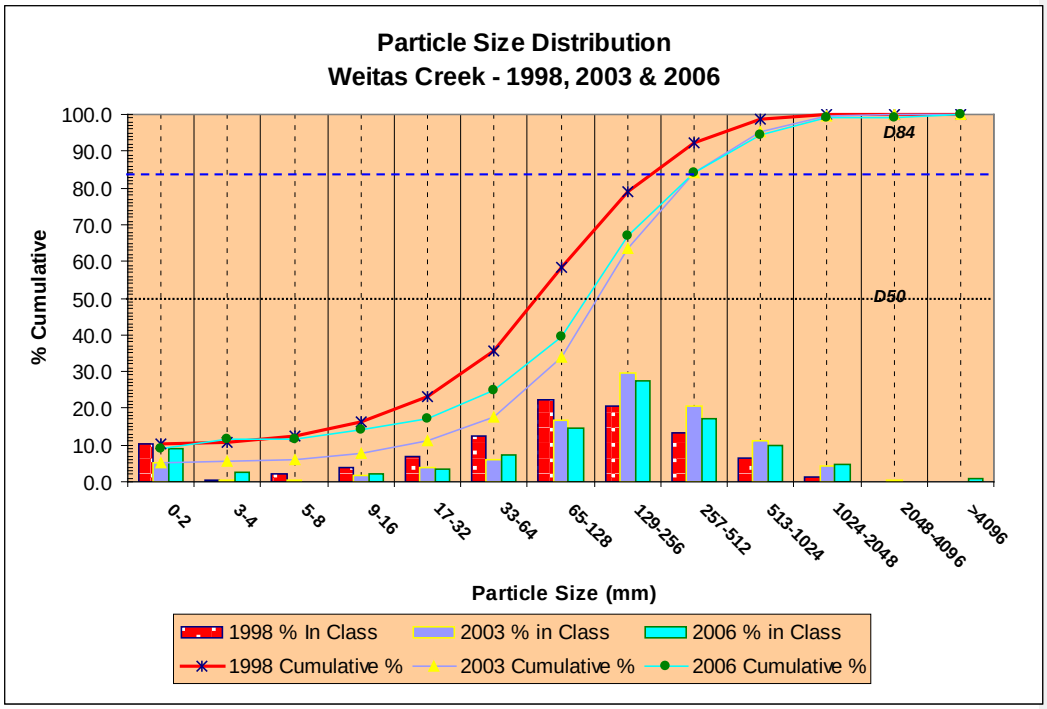


Weitas Creek: Weitas Creek is monitored to analyze the variability of natural sediment over time (baseline). Wolman pebble count information was collected for Weitas Creek in 1998, 2003 and 2006. The channel type is a B3c (low gradient, moderately confined, cobble substrate) stream with a gradient of 1.5 percent. Table 22 and Figure 10 show the Wolman pebble count data for the three years.

Table 22. Weitas Creek Wolman pebble count data 1988, 2003 and 2006

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1998	10.3	10.7	99 (small cobble)	335 (small boulder)
2003	5.1	5.5	186 (large cobble)	509 (small boulder)
2006	9.0	11.6	165 (large cobble)	492 (small boulder)
Mean	8.1	9.3	150 (large cobble)	445 (small boulder)

Figure 10. Weitas Creek Wolman pebble count data 1988, 2003 and 2006

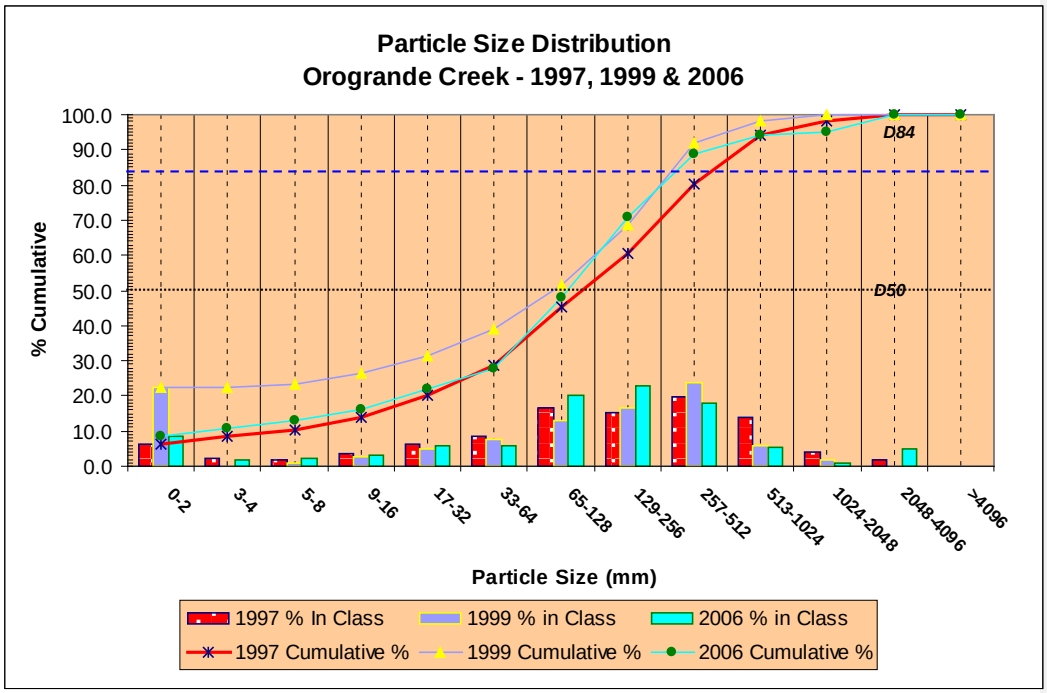


Orogrande Creek: Orogrande Creek is monitored to analyze the effects of private and Forest Service timber harvest and road-caused landslides. Wolman pebble count information was collected for Orogrande Creek in 1997, 1999 and 2006. The channel type is a B3c (low gradient, moderately confined, cobble substrate) stream with a gradient of 1.5 percent. Table 23 and Figure 12 show the Wolman pebble count data for the three years. There was a sharp increase in sediment in 1999, followed by a decrease after that. This could be a result of sediment from the landslides upstream reaching the mouth after two to three years. The RSI was 53 percent in 2006, indicating a stable channel that moves slightly more than half its substrate at bankfull stream flows.

Table 25. Orogrande Creek WOLMAN Pebble Count Data 1997, 1999 and 2006

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1997	6.4	8.6	159 (large cobble)	618 (medium boulder)
1999	22.2	22.5	116 (small cobble)	404 (small boulder)
2006	8.7	10.7	135 (large cobble)	418 (small boulder)
Mean	12.4	13.9	137 (large cobble)	480 (small boulder)

Figure 11. Orogrande Creek Wolman pebble count data 1997, 1999 and 2006



SUBSTRATE MONITORING IN THE LOWER NORTH FORK CLEARWATER RIVER SUBBASIN

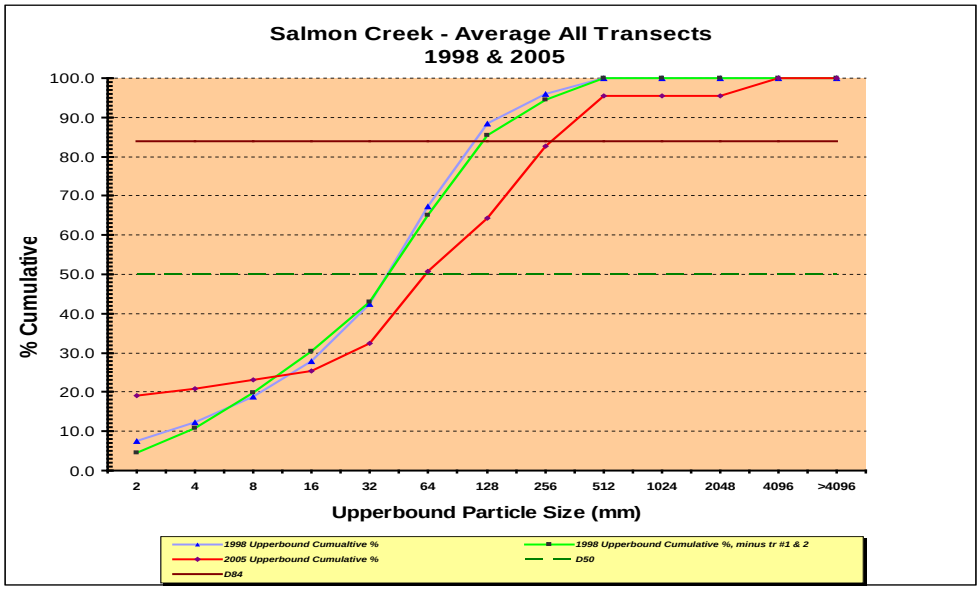
Salmon Creek (above mouth): Salmon Creek is being monitored to analyze the effects of timber harvest and a debris torrent. Wolman pebble count information was collected for Salmon Creek in 1998 and 2005. A complete channel survey was done in 1998 (Isabella Wildlife Works, Post Falls, Idaho. Aquatic Survey Report: Smith Ridge Study Area, North Fork Ranger District. February 1999). The channel type is a B4a (high gradient, moderately entrenched, gravel substrate) stream with a gradient of 8.6 percent. Bank stability was measured at 1.2 (highly unstable) and cobble embeddedness was 27 percent. Table 24 shows the Wolman pebble count data for the two years.

Table 24. Salmon Creek Wolman pebble count data 1998-2005

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1998	5	11	40 (very coarse gravel)	122 (small cobble)
2005	19	21	62 (very coarse gravel	275 (small boulder)
Mean	12	16	51 (very coarse Gravel)	199 (large cobble)

Fine sediment has increased in the channel between measurements in 1998 to 2005 (Figure 12). The D50 and D84 have increased from 1998 to 2005 from 40 and 122 to 62 and 275, respectively. An increase in the amount of fine sediments is most likely the result of a debris torrent that occurred between the two sample dates.

Figure 12. Salmon Creek particle size distribution 1998-2005



Isabella Creek (above mouth): Isabella Creek is being monitored to analyze the effects of timber harvest and landslides. Wolman pebble count information was collected in Isabella Creek in 1988 and 2005. A complete channel survey was done in 1990 (Clearwater BioStudies Inc., Sherwood, Oregon. Habitat Conditions and Salmonid Abundance in Selected Streams Within the Isabella Creek Drainage, North Fork Ranger District, Summer 1990. January 1991). The channel type is a B3 (moderate gradient, moderately entrenched, cobble substrate) stream with a gradient of 3.0 percent. Bank stability was measured at 4.9, and cobble embeddedness was 41 percent. Table 25 shows the Wolman pebble count data for the two years.

Table 25. Isabella Creek Wolman pebble count data 1988-2005

Year	% Fine Sediment 0-2 mm	% Fine Sediment 0-4mm	D50 in mm	D84 in mm
1988	12	12	212 (large cobble)	789 (medium boulder)
2005	7	8	158 (large cobble)	439 (small boulder)
Mean	10	10	185 (large cobble)	614 (medium boulder)

The riffle stability index for Isabella Creek was determined to be 50 (approximately 50 percent of the channel substrate was mobile during bankfull streamflows) in 2005.

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 500 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 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

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imported weed-free straw mulch (used in areas where natural mulch is scarce) cover most 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 maintenance.

In FY05, 21.4 miles of road were decommissioned at a cost of $8,000 per mile. This cost includes equipment, materials, labor and project administration and inspection. In addition, 15.0 miles of road were stored for future use in a hydraulically neutral condition such that the risk to aquatic resources was minimized. The cost of this "intermittent storage" work was approximately $4,400 per mile. In FY06, 58.1 miles of road were decommissioned at a cost of $6,200 per mile. In addition, 9.1 miles of road were stored in "intermittent storage" work for $3,000 per mile. The Nez Perce Tribe contributed funding and labor under a watershed restoration partnership for the decommissioning and storage of roads in the Upper Lochsa River and Lolo Creek drainages.

Table 1

Year	Reconstruction (Miles)	New Construction (Miles)	Decommissioning (Miles)	Intermittent Service (Miles)
1987	20.1	18.9	0	0
1988	45.4	49.2	0	0
1989	77.6	34.7	0	0
1990	39.8	31.5	0	0
1991	61.4	36.1	0	0
1992	66.4	37.2	9.5	1.6
1993	45.3	3.8	2.6	1.9
1994	61.6	8.6	1.4	0
1995	108.9	1.5	9	0.6
1996	72	1.8	15	0.3
1997	7.6	1	52	8.2
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	5.6	0.1	40.4	3
2003	24.4	0	33.3	4.6
2004	13.3	2.1	29.4	8.5
2005	15.1	4.0	21.4	15.0
2006	16.7	4.2	58.1	9.1
TOTAL	**831.0**	**245.4**	**601.0**	**84.3**

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 an employee of the Forest and an employee of the Tribe. 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 (Table 2). Approximately one monitoring segment is 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), the fifth year after decommissioning (year 5), and finally the tenth year (year 10) after decommissioning. The findings and discussion below apply only to monitoring segments that were visited in 2005 (Table 1) with the exception of mass failures, which are reported annually for all monitoring segments.

ACCOMPLISHMENTS/FINDINGS

Table 2. Monitoring Segments visited in 2005

Date Monitored	Year Of Decommissioning	Monitoring Year	Drainage	Road	Segment
6-Jul	2000	5	Doe Cr	566T200	1
12-Sep	2000	5	Eldorado	5120	1
25-Oct	2000	5	Doe Cr	566T200	2
3-Aug	2003	2	Pete King Cr	75158	1
24-Aug	2003	2	South Badger	5620A	1
19-Oct	2003	2	Parachute Cr	5649	1
7-Jul	2004	1	Crooked Fk	860605	1
28-Jul	2004	1	Fan Cr	5107A	1
17-Aug	2004	1	Deception Cr	734	1
14-Sep	2004	1	Badger Cr	75673	1
31-Aug	2005	0	Bridge Cr	75052	1
27-Sep	2005	0	Deception Cr	732	1
18-Oct	2005	0	Badger Cr	5621C	1

1. **Surface Erosion**: Is there surface erosion associated with the decommissioned road segment and how much? 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 (6 of 13 total) exhibited at least one instance of surface erosion. This compares with 68% of segments monitored in 2002, 46% in 2003, and 59% in 2004.
- Four segments (67% of the segments with surface erosion) showed signs of surface erosion outside of channel areas in the interfluvial zones. In past years, most of the surface erosion occurred within the fluvial zones (cross drain and stream grade channel areas).
  - Road 5620A (South Badger, year 2) exhibited rilling and sheet erosion over 30-40% of the entire segment. This segment is in a high risk landtype
  - Road 860605 (Crooked Fork, year 1) exhibited spotty surface erosion over 20-30% of the entire segment. Poor revegetation is the primary cause, due to sterile soil type and high elevation.
  - Road 734 (Deception Creek, year 1) exhibited surface erosion over 20% of the entire segment. This is due primarily to soil type (Revett Quartzite).
  - Road 5649 (Parachute Creek, year 2) exhibited surface erosion over 5% of the entire segment, probably due to previous overburn and attending soil modification/sterility issues.

There were 3 segments (50%) where there was surface erosion associated with cross drain channels. In all cases, surface erosion affected 20% or less of the total surface area of the channel.

Discussion: Most surface erosion occurs as a function of concentrated flow. Generally, 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). We observed a higher percentage of sheet erosion in the interfluvial zones this year than in the past years. This may be in part due to weather patterns, in part due to a reduction in total surface erosion, and in part due to specific site conditions as noted above.

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. Decommissioned road segments with known mass failures are designated as monitoring segments or noted as sites to visit annually.

Findings:

From a total of over 500 miles of road decommissioned on the Clearwater National Forest since 1996, there are 10 known mass failures over 10 cubic yards in size (Table 2). None of these are new this year.

- A road fill failure was noted at the beginning of a monitoring segment on an abandoned segment of road in 2003 (Road 5540-Canyon Creek).
- A fill failure into an intermittent stream was identified on an unmonitored portion of road 729 placed in "intermittent storage" in 2003. The treatment at this site was a slight outslope.
- One growing slump area was noted in 2003 on Road 564 of 26.6 cubic yards associated with glacial till.
- Five mass failures are associated with historic or pre-existing landslides.
- New movement associated with a pre-existing rotational slump on a 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.
- There are two existing failures on Road 4773 (340 cubic yards and 370 cubic yards), both associated with one historic landslide.

Discussion: Half of the large mass failures are associated with landslides that were evident prior to decommissioning the road and perhaps prior to road construction. However, there were at least three failures (roads 5540 and 729) observed 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.

Mass Failures

	DRAINAGE	DISTRICT	YEAR DECO	YEAR NOTED	SIZE (CY)	ASSOCIATED FEATURE / TREATMENT
564	Post Office	Powell	2001	2002	27*	Strong outslope in glacial till
729B	N. Fk. Face	North Fk	2001	2003	12	Stream grade channel
4773	Schwartz	Palouse	1995	1999	340	Outslope near top of old landslide
4773	Schwartz	Palouse	1995	1999	370	Cross drain channel, crosses old landslide
6056	Fish Cr	North Fk	1998	1998	12	Top old failure, stream grade channel
4801	Salmon Cr	North Fk	1998	1999	531	Old debris torrent, stream grade channel
5540	Canyon Cr	Lochsa	1997	1998	27	Sideslope saturation
5540	Canyon Cr	Lochsa	1997	2003	510*	fill failure into stream
830476	Deception	North Fork	2002	2002	10*"	preexisting rotational slump approx 1100cy
729	Deception	North Fork	1999	2003	550*	fill failure into intermittent stream

*-movement subsequent to decommissioning
"movement noted in 2005

~~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.~~

3. **Cross Drain Channels**: Are natural surface and subsurface drainage patterns restored?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:

In 2005, out of 12 cross drain channels monitored, the following was found:

- 3 (25%) in swales (draining primarily surface water)
- 9 (75%) in seeps (draining primarily converted ground water)

These were the following problem areas associated with cross drain channels:

- One mass failure
  - Approximately 5 CY slump in channel side (Road 5107A, Fan Cr). This cross drain channel drains a pre-existing slump.

- Surface Erosion: 3 incidents (25%)
  - Minor sheet erosion affecting 10% of total surface area (Road 5107A, Fan Cr)
  - Rilling and minor sheet erosion (Road 734, Deception)
  - Minor surface erosion (Road 5649, Parachute Cr)

Discussion: 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.

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 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. Surface erosion in cross drain channels is likely a result of concentrating flow in a feature that never evolved to handle concentrated flow. This year's monitoring results show a marked decrease in surface erosion associated with cross drain channels; half (52% and 46%) of channels monitored in 2004 and 2003 exhibited surface erosion while only 25% of those monitored in 2005 exhibited surface erosion. This reduction corresponds to our use of brush blankets. Revegetation of cross drain channels and reinfiltration of converted subsurface water should continue to be a major emphasis of the road decommissioning program.

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. Because of these disadvantages

and our corresponding success with brush blankets, we have discontinued the use of erosion control blankets on decommissioned roads.

4. **Revegetation**: Is there vegetation coverage? Is there succession to native plants? Are we seeing an invasion of weeds on the disturbed ground associated with decommissioned roads?

Revegetation goals are twofold: Short-term erosion prevention and long-term conversion to the native vegetation of the slope. The seed mixture used from 1999 – 2004 was designed to be aggressive in the short term and less persistent over time, promoting native species succession. All disturbed areas were 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. As the excavator operator works out the road, he uses the bucket and thumb to plant the conserved vegetation, including the root mass and surrounding soil, on the treated prism. The excavator 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.

Findings:

Figure 1. Changes in ground cover type over time on decommissioned road monitoring segments in 2005

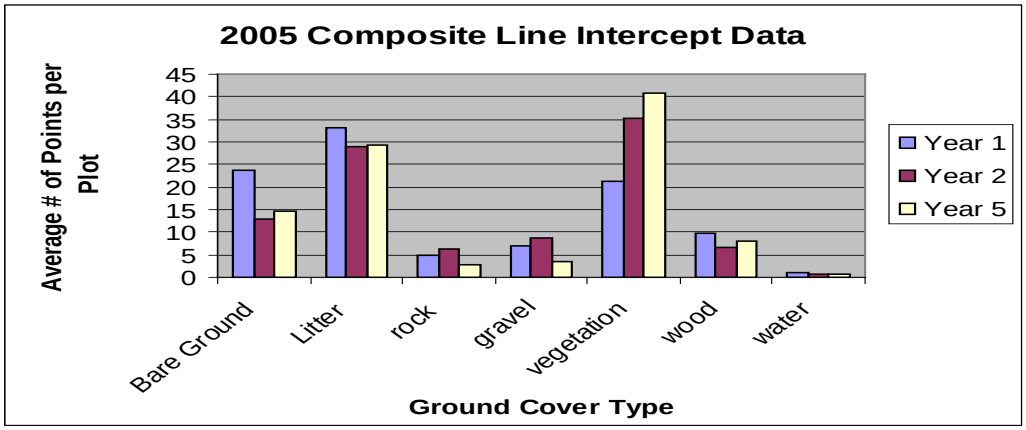
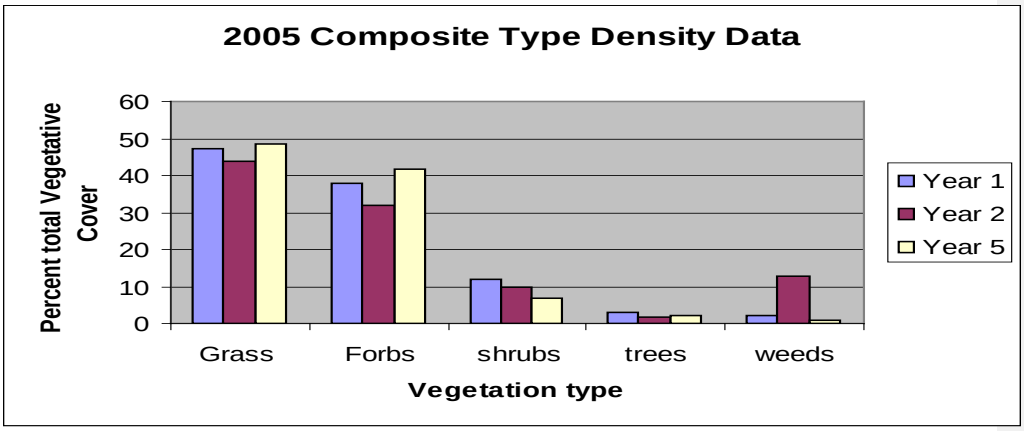


Figure 2. Breakdown of vegetative cover changes over time on segments monitored in 2005



Discussion: On average, the percentage of bare ground on monitoring segments decreased from 23.8 percent to 14.6 percent from the first year after decommissioning to year 5 after decommissioning while the amount of vegetative cover increased from 21.3 percent to 40.9 percent in the same timeframe (Figure 1). Ground cover generally appears to be sufficient as little surface erosion was noted.

There appears to be moderate succession to native species, although nonnative grasses are persistent to 5+ years (Figure 2). The grass mix used from 1999 through 2004 and part of 2005 consisted of:

- 15% perennial ryegrass
- 20% annual ryegrass
- 10% hard fescue
- 35% mountain brome
- 15% sheep fescue
- 5% white dutch clover

Much of this mix is non-native but somewhat non-persistent. When we started using this mix in 1999, the native seed mixes were quite expensive (5 – 10 times the cost of the above mix). However, as demand for the native mixes has increased, supply has increased and the cost has become comparable to the non – native. In 2005, we adjusted our seed mix to:

- 20% annual rye
- 25% Idaho fescue
- 35%mountain brome
- 20% bluebunch wheatgrass

The mix is native except for the annual rye grass, which is often used when a fast establishment is desired, but low long-term persistence. The annual rye grass will provide good ground cover for a year or two and then decrease, hopefully as the native species re-establish themselves. We will be monitoring the success of this new mix in preventing short term erosion and its persistence as compared to the old mix.

There is a higher percentage of shrubs on the segments that were decommissioned in 2004 and 2003 than on those that were decommissioned in 2000. This is probably a function of an increase in clump planting in the more recent years.

There is a strong weed component in the year 2 segments. Two of the three segments that were decommissioned in 2003 had knapweed present prior to decommissioning. By the second year after decommissioning, knapweed makes up 15 – 50 % of the vegetation on the segment. We have observed sites where 6 years after decommissioning, we have a knapweed monoculture on the disturbed ground. In general, segments that have little to no weed component prior to decommissioning, do not have a weed component after decommissioning.

On the North Fork, we have begun pre-treating (spraying) knapweed prior to decommissioning roads that have knapweed present. We believe that this is a very important step forest-wide. The Clearwater National Forest is currently working on an Environmental Impact Statement for weed treatment in the Lochsa and Lolo Creek drainages. Once this is in place, we will begin spaying weeds, knapweed in particular, prior to decommissioning roads. It appears that this step is essential to vegetation restoration on these sites. We will continue to monitor weeds on segments that have been pretreated.

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:

- Channel cross-sections
- Longitudinal surveys
- Wolman pebble counts (Wolman, 1954)

Findings:

- Nearly all channel cross sections show settlement of six to twelve inches over the first winter (see example Figure 3).
- 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 example figure 4).
- Wolman pebble counts indicated an overall increase in D50 of 9.6 millimeters and an overall increase of 7.8 millimeters at D84 for the average of all pebble counts conducted from year 1 to year 2 of monitoring, indicating moderate transport of fine materials away from the sites. Pebble counts were abandoned during setup of new segments (year 0 monitoring) because it was found that newly constructed channels were constructed largely of sediments and other fine materials which are washed away during the first year.

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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 erosion of the surface material in addition to recompaction of the surface.

The cross sections, the profiles and the pebble count all indicate that in the first year, in these newly constructed 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.

Figure 3. Example cross section. Three cross sections are taken on each stream grade channel (top, middle, and bottom).

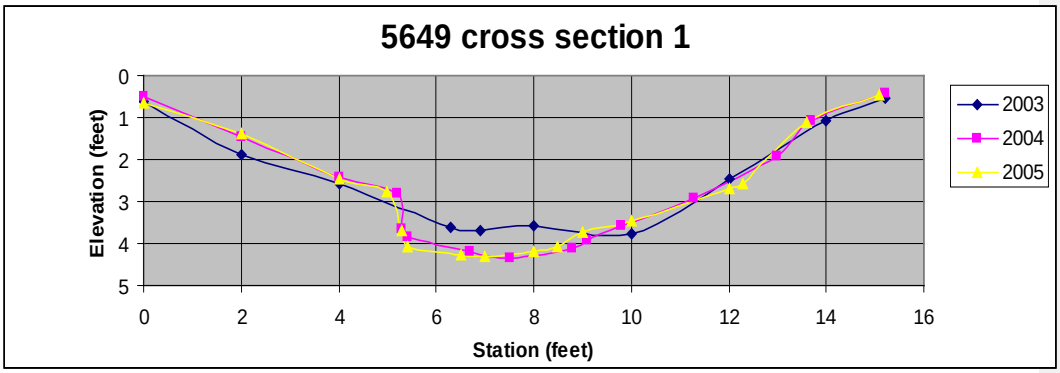


Figure 4. Example longitudinal profile at a stream grade channel

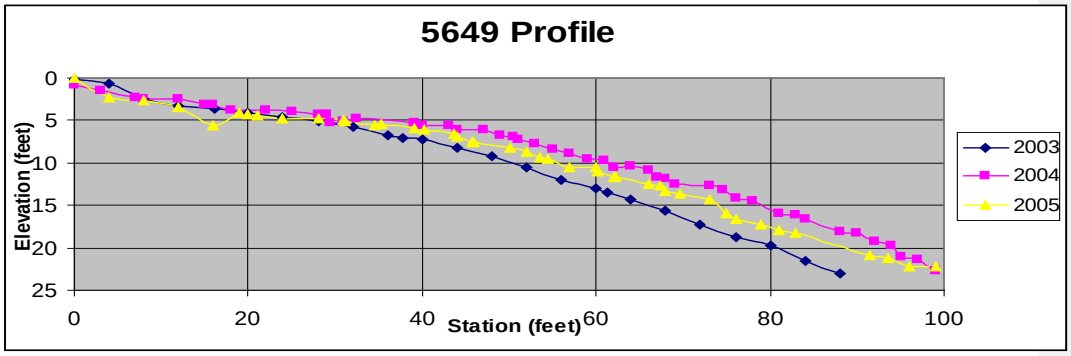


Table 4. Pebble count distribution

D_{50} for 2005 pebble counts			
Road #	**Cross Section #**	**Monitoring Year**	
		Year 1	**Year 2**
5620A	1	10.4	20.0
	2	6.4	15.0
	3	13.9	10.3
5649	1	16.0	20.9
	2	37.4	34.3
	3	14.6	23.8
	Average	16.45	20.72

*Pebble counts were dropped from Year 0 protocol in 2004, as newly constructed channels are composed of fine materials which wash out by year 1.

6. **General Prism Treatments** (recontour, outslope, decompact, abandon): Is the treatment appropriate for 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.

Findings:

Table 5. Road prism treatments by landtype

a. Low-to-moderate risk segments

Road #	Drainage	Yr	Abandon ft	Template Treatments				Landtype
				Decompact ft	Outslope ft	Recontour ft	Total ft	
5120	Cedar Cr	Yr5	0	452.2	835.4	66.4	1354	24A01
860603	Crooked	Yr1	0	0	1214	106	1320	32K66
5107A	Fan Cr	Yr1	0	0	475	848	1323	10A90
75052	Bridge Cr	Yr0	0	0	1056	264	1320	31S20
75673	Badger	Yr1	0	0	1122	198	1320	31G20
5621C	Badger	Yr0	0	0	1188	132	1320	31G20
734	Deception	Yr1	0	0	1056	264	1320	24R45
75158	Pete King	Yr2	0	0	1128	199	1327	31S20
Total			**0**	**452.2**	**8074.4**	**2077.4**	**10,604**	
Percent			**0%**	**4%**	**76%**	**20%**	**100%**	

b. High risk segments

Road #	Drainage	Yr	Template Treatments					Landtype
			Abandon	Decompact	Outslope	Recontour	Total	
			ft	ft	ft	ft	ft	
732	Deception	Yr0	0	0	1188	132	1320	50
5620A	Badger Face	Yr2	0	0	1240	310	1550	61G20
5649	Parachute	Yr1	0	330	726	264	1320	61G20
566T200-1	Doe Cr	Yr5	0	0	300	1467	1768	60G20
566T200-2	Doe Cr	Yr5	0	0	916	2475	3665	60G20 15U00
Total			0	330	4370	4648	9623	
Percent			0%	3%	45%	48%	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 recontouring 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 4a and 4b 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. In the future, we will focus more emphasis on techniques identified through monitoring as needed and successful.

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 has chosen to adjust the display of the road data to show the current miles of open roads and miles of restricted roads in a different manner than in previous years. The road information is broken down to show the different restriction groups of roads. The mileage in each travel code is shown. A brief description of the travel group appears below the table. This information will help the user picture what roads are open, when they are open and what type of vehicle is allowed. There is no information on snowmobile restrictions included in the table.

Accomplishments/Findings

The Clearwater National Forest development road system is made up of roads that vary from narrow single-lane unsurfaced to double-lane paved roads. This system of approximately 4,095 miles provides access to many areas. Road restrictions are a major component in resource protection. Driven by resource needs, including big game habitat needs and water quality, road restrictions are reviewed annually and revised when necessary to meet the current management situation.

Miles of Restricted Roads

Restriction Groups Travel Codes *	Miles	% of Total Designated Roads
CYA	1,037.3	25.3%
OSA	770.7	18,8%
OSS	117.5	2.9%
OYA	1,632.2	39.9%
OYS	537.5	13.1%
Total Designated Road Mileage	**4,095.2**	

CYA – Closed yearlong to all-wheeled vehicles
OSA – Open seasonally to all-wheeled vehicles
OYA – Open yearlong to all-wheeled vehicles
OSS - Open seasonally to small (motorcycle and ATV) but closed yearlong to full-sized vehicles
OYS – Open yearlong to small-wheeled vehicles (motorcycle and ATV

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 completed timber harvesting activities for fiscal years 2005 and 2006 to determine if Scenic Integrity Objectives (SIOs) were met for FY05-06. 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 eight timber sales were completed and closed out in FY05-06.

> One timber sale was completed in FY 2005. The project was Mountain Gulch Bugs on the Palouse District. The project included twenty-three harvest units of varying sizes scattered throughout the North Fork of the Palouse River drainage, with the majority of the harvesting activities taking place along the Palouse Divide road (FR #373). Most of the units were salvage harvesting with little visual effect from established travel corridors. Some openings were created, or existing openings were expanded, but since most were in the middleground or background viewing zone from travel corridors they met the moderate or low Scenic Integrity Objectives (SIOs) which apply to this area.
>
> Timber sales completed in FY 2006 included Johnson Gold on the Lochsa District; Nat Brown Intermediate and Big Sand Restoration on the Palouse District; Tamarack Bug, Tama and Dog Marquette on the North Fork District; and Cabin Country Salvage on the Powell District.
>
> Johnson Gold Timber Sale on the Lochsa District is located within the middleground viewshed of Forest Road 535 and within the background viewshed of the Nez Perce National Historic Trail (Trail #40), north and west of Gold Creek drainage. Removal areas stretched across a number of sections along the

ridge tops west of the creek. Harvesting activities met or exceeded the SIO of very low in the middleground view from road 535 and very low in the background view from Trail 40.

Nat Brown Intermediate contains 36 moderate to small harvest units to the west and east of Forest road #377 within the Nat Brown drainage near Bovill, Idaho. Although numerous, views of most of the cutting units are screened from the road. All units are located in the middleground viewing zone from Road #377 and meet the scenic quality objective of Moderate and Low for the area. Big Sand Restoration is located adjacent to Forest Road #381 east of Laird Park Campground. Some units are viewed from the Sand Mountain Trail # 330. The units are in the middleground viewing zone and meet the SIO of Low for that area.

View from Forest Road 700 toward Dog Marquette Timber Sale. View of harvesting activity is effectively screened from roadway.

Both Tamarack Bug and Tama timber sales are located to the east of Forest Road #250 along Tamarack Ridge. Neither timber sale is viewed from a travel corridor or use area and meets the SIO of Low for this area. Dog Marquette timber sale is located north of the North Fork Clearwater River, adjacent to Forest Road #700 near the Mallard Larkins Pioneer Area. Although Road #700 is not a designated travel corridor it does receive a lot of recreation traffic and concern for scenery will be high in this area. The sale area can be viewed from a number of locations along Trails 297 and from Dworshak Reservoir. Trail #240 is also adjacent to the project area, but no units are scene from the trail. While harvest units are evident from viewing sites along these routes, the modifications meet the SIO of Low for this area.

Cabin Country Salvage is located in the middlegreound viewshed to the west of U.S. Highway 12 and near the Powell Ranger Station. These small units are screened from view from the highway and the Ranger Station. All harvesting meets the SIOs of Moderate and Low for the area.

There were several prescribed fires on the Clearwater National Forest in FY05-06. The burns 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. Most burn areas were small in size 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 culvert replacement projects all of which were outside critical visual travel corridors this year. With most culvert replacement 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 FY05-06 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, including 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 1 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 320 stations. Contact the Forest fisheries biologist for water temperature information, or the Forest hydrologist for sediment, turbidity, stream flow, precipitation or SNOTEL information.

Table 1. Water Quality Monitoring Network 2005

Basin	Watershed - Location	Years[1]	Data Type
Palouse River (17060108)	Palouse River (Moscow Mountain)	48	SNOTEL, Precipitation (NRCS)
	Palouse River (Above Laird Park)	21	Suspended Sediment, Discharge
Lochsa River (17060303)	Lochsa River (Near Lowell)	79	Discharge (USGS)
	Pete King Creek (Walde Lookout)	39	Annual Precipitation
	Pete King Creek (Mouth)	30	Discharge, Suspended Sediment
	Canyon Creek (Mouth)	14	Discharge, Suspended Sediment
	Deadman Creek (Mouth)	18	Discharge, Suspended Sediment
	Fish Creek (Mouth)	38	Discharge, Suspended Sediment
	Badger Creek (Mouth)	10	Discharge, Suspended Sediment
	Papoose Creek (Mouth)	10	Discharge, Suspended Sediment
	Crooked Fork (Crooked Fork)	40	Snow Course (FS and NRCS)
	Crooked Fork (Lolo Pass)	49	SNOTEL, Precipitation (NRCS)
	White Sand Creek (Savage Pass)	68	SNOTEL, Precipitation (NRCS)
Clearwater River (17060306)	Potlatch River (Sherwin)	48	SNOTEL, Precipitation (NRCS)
	Potlatch River (Above Little Boulder Creek)	11	Discharge, Suspended Sediment
	Orofino Creek (Pierce R.S.)	54	Snow Course (FS and NRCS)
	Orofino Creek (Shanghi Summit)	67	SNOTEL, Precipitation (NRCS)
	Lolo Creek (Mouth)	26	Discharge (USGS)
	Lolo Creek (Hemlock Butte)	45	SNOTEL, Precipitation (NRCS)
	Lolo (Sec 6)	24	Discharge, Suspended and Bedload Sediment
	Eldorado Creek (Below Linda Creek)	15	Discharge, Suspended Sediment
Upper North Fork Clearwater River (17060307)	North Fork of the Clearwater River (Aquarius Bridge)	39	Discharge (USGS)
	Quartz Creek (Mouth)	22	Discharge, Suspended Sediment
	Quartz Creek (Indian Henry Ridge)	6	Annual Precipitation
	Cold Springs Creek (Mouth)	16	Discharge, Suspended Sediment
	Cold Springs Creek (Cool Creek)	20	SNOTEL, Precipitation (NRCS)
	Long Creek (Hoodoo Basin)[2]	38	SNOTEL, Precipitation (NRCS)
	Cayuse Creek (Cayuse Landing)	39	Annual Precipitation
	Weitas Creek (Doris Butte)	35	Annual Precipitation
	Weitas Creek (Creator Meadows)	42	SNOTEL, Precipitation (NRCS)
Lower North Fork Clearwater River (17060308)	Beaver Creek (Beaver Divide)	35	Annual Precipitation
	Elk Creek (Elk Butte)	42	SNOTEL, Precipitation (NRCS)
	Elk Creek (Road 1705)	25	Discharge, Suspended and Bedload Sediment

[1]Monitoring intensity can vary from several grab samples to automatic samplers that run for five months or more.

[2] Site is located in Montana.

The Forest processed 2,055 suspended sediment, 2,299 turbidity and 18 bedload samples in 2005. Bedload sediment samples were collected to determine the proportion of sediment moving as suspended and bedload in two watersheds. 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 2 and is available from the Forest Hydrologist at the Supervisor's Office.

Table 2 displays the period of record, mean daily discharge through 2004, 2005 mean daily discharge, mean daily suspended sediment through 2004 and mean daily suspended sediment in 2005. Mean daily discharge is calculated from 12 flow measurements per day and mean daily suspended sediment is a composite of four sediment samples.

Table 2. Water Quality Monitoring Results - 2005

Station	Period of Record Used in Analysis	Mean Daily Discharge (cfs) Through 2004	2005 Mean Daily Discharge (cfs)	Mean Daily Suspended Sediment Through 2004 (mg/l)	2005 Mean Daily Suspended Sediment (mg/l)
Palouse River[1] (Above Laird Park)	1986-2005	88	57		
Pete King Creek (Mouth)	1976-2005	45	26	18.9	6.6
Canyon Creek (Mouth)	1992-2005	45	30	10.6	5.3
Deadman Creek (Mouth)	1988-2005	42	28	11.8	6.3
Fish Creek (Mouth)	1958-1966 1976-2005	219	196	8.6[2]	2.6
Badger Creek (Mouth)	1983-1984 1988-1989 2001-2005	14	7	3.9	2.8
Potlatch River (Above Little Boulder Creek)	1995-2005	181	91	8.0	4.7
Lolo Creek (Sec 6)	1982-2005	95	106	11.0	4.9
Quartz Creek (Mouth)	1982 1984-2005	150	111	11.4	8.0
Cold Springs Creek (Mouth)	1983-1992 2000-2005	34	30	5.4	3.6
Elk Creek (Road 1705)	1982-2005	78	47	9.8	[3]
Mean of all stations		90	66	10.0	5.0

[1] Suspended sediment was not processed for the Palouse River in 2005

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

[3] Due to a problem with the sampler intake, much of the sediment data collected at Elk Creek in 2005 is inaccurate. The station requires additional analysis.

Generally, monitoring of suspended sediment has shown a recovery trend forest-wide from past management practices. Of the nine water quality stations where suspended sediment measurements were previously collected, none had sediment levels higher in 2005 than the mean of all previous years. Mean sediment levels were half the previous average, forest-wide. Much of the recovery is believed to be the result of less land disturbing activities, better application of BMPs, PACFISH and INFISH buffers, road decommissioning and better road location and design.

Turbidity has been monitored at ten to twenty stations before 1991 and after 1997. The results of turbidity monitoring in 2005 are presented in Table 3.

Table 3. Turbidity Monitoring Results. Period of record, mean daily turbidity through 2004. Maximum turbidity period of record, mean daily turbidity in 2005 and maximum turbidity in 2005.

Station	Period of Record	Mean Daily Turbidity (ntu) Through 2004	Maximum Turbidity (ntu) Period of Record	Mean Daily Turbidity (ntu) 2005	Maximum Turbidity (ntu) 2005
Palouse River (Above Laird Park)	1999-2005	4.5	99.9	4.3	72.9
Pete King Creek (Mouth)	1978-1990 1998-2005	3.4	49.9	2.4	26.6
Canyon Creek (Mouth)	1998-2005	2.0	27.0	1.7	9.2
Deadman Creek (Mouth)	1988-1990 1998-2005	2.4	46.9	1.7	9.8
Fish Creek (Mouth)	1998-2005	1.7	26.6	1.1	5.0
Badger Creek (Mouth)	1983-1984 1988-1989 2001-2005	1.2	23.2	1.0	5.7
Potlatch River (Above Little Boulder Creek)	1998-2005	3.6	38.1	3.1	30.5
Lolo Creek (Sec 6)	1985-1988 1990, 1998-2005	2.7	19.0	1.7	8.1
Quartz Creek (Mouth)	1988-1990 1998-2005	2.1	60.5	1.8	9.5
Cold Springs Creek (Mouth)	1983-1986 2000-2005	1.4	35.1	1.4	35.1
Elk Creek (Road 1705)	1982-1987 1990 1998-2005	2.7	87.0	[1]	
Mean of all stations		2.5		2.0	

[1] Due to a problem with the sampler intake, much of the turbidity data collected at Elk Creek in 2005 is inaccurate. The station requires additional analysis.

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 (50) NTU instantaneously or more than twenty-five (25) NTU for more than ten (10) consecutive days.

At the ten Clearwater National Forest water quality monitoring stations, 2,299 turbidity samples were collected and analyzed in 2005. Three samples exceeded the state turbidity criteria. The Palouse River exceeded 50 NTUs on March 28th and May 6th and 9th. All of these occurred during high precipitation events and discharge.

Elk Creek Suspended and Bedload Sediment: A total of 168 samples of bedload have been collected at the Elk Creek gaging station between 1978 and 2005 (See Table 4). Bedload varied from a high of 6.5 percent, to a low of 0.0 percent of the total sediment load in 2005. Mean bedload for 2005, based on nine samples was 15 pounds per day, or 2.9 percent of the total sediment load. Mean bedload for the period of record was 235 pounds per day, or 1.7 percent of the total sediment load. In recent years (1997-2005), bedload seems to be declining from historic (1980-1996) averages. This may be due to improving channel substrate conditions, watershed recovery from past landslides and application of best management practices.

Table 4. Elk Creek Suspended and Bedload Sediment Data for 1978 through 2005. 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	3,660	87.1	303	12.9	3,965
Mean 1997	340	21,500	97.9	451	2.1	21,962
Mean 1998	97.0	1,360	93.7	92.0	6.3	1,452
Mean 1999	157	3,750	90.4	294	9.6	4,045
Mean 2000	178	2,890	80.6	697	19.4	3,583
Mean 2001	81.1	692	94.4	41.0	5.6	733
Mean 2002	191	2,900	93.2	48.2	6.8	2,940
Mean 2003	104	1,344	96.5	47.8	3.5	1,392
Mean 2004	126	2,445	97.1	66.0	2.9	2,511
March 9, 2005	50	162	100.0	0.00	0.0	162
March 30, 2005	135	1,380	93.5	96.4	6.5	1,477
April 6, 2005	103	443	93.7	29.7	6.3	473
April 13, 2005	95	361	97.8	8.0	2.2	369
May 9, 2005	67	1,345	100.0	0.01	0.0	1,345
May 23, 2005	88	1,235	99.8	2.6	0.2	1,237
June 6, 2005	57	306	99.9	0.4	0.1	307
July 12, 2005	24	222	100.0	0.0	0.0	222
August 29, 2005	10	244	100.0	0.0	0.0	244
Mean 2005	**70**	**633**	**98.3**	**15.2**	**1.7**	**648**
Mean Period of Record	143 cfs	3,010 Lbs/day	91.2%	289 Lbs/day	8.8%	3,299 Lbs/day

Lolo Creek Suspended and Bedload Sediment: A total of 164 bedload samples have been collected and analyzed at Lolo Creek between 1980 and 2005 (Table 5). Bedload varied from a high of 1.4 percent to a low of 0.3 percent of the total sediment load in 2005. Mean bedload for 2005, based on nine samples was 65 pounds per day, or 0.9 percent of the total sediment load. Mean bedload for the period of record was 1,463 pounds per day, or 15.6 percent of the total sediment load. In recent years (1998-2005), 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 5. Lolo Creek Suspended and Bedload Sediment Data for 1980 Through 2005. 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	10,600	78.9	2,840	21.1	13,471
Mean 1998	144	3,220	97.0	96.0	3.0	3,319
Mean 1999	243	10,800	98.0	159	2.0	10,986
Mean 2000	226	6,560	86.0	1,070	14.0	7,624
Mean 2001	212	5,410	96.5	196	3.5	5,604
Mean 2002	306	10,300	97.4	171	2.4	10,500
Mean 2003	205	4,497	97.7	113	2.3	4,610
Mean 2004	248	5,664	97.9	150	2.1	5,815
March 30, 2005	183	4,139	99.0	41.3	1.0	4,180
April 7, 2005	149	2,489	98.9	26.6	1.1	2,516
April 13, 2005	163	2,206	99.4	12.2	0.6	2,218
April 27, 2005	201	5,427	99.0	54.1	1.0	5,481
April 29, 2005	177	4,790	99.7	14.1	0.3	4,804
May 11, 2005	232	5,275	98.7	67.5	1.3	5,343
May 13, 2005	204	7,274	98.8	91.9	1.2	7,366
May 17, 2005	230	16,414	98.6	226.3	1.4	16,641
May 18, 2005	272	6,893	99.3	48.4	0.7	6,942
Mean 2005	**212**	**6,101**	**99.1**	**64.7**	**0.9**	**6,166**
Mean Period of Record	218 cfs	7,915 lbs/day	84.4%	1,463 lbs/day	15.6%	9,379 lbs/day

2005 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 2005 water year (October 1, 2004 - September 30, 2005) was below the mean for the period of record. Records go back to the 1960s in most cases.

Beaver Divide received 41.76 inches in 2005 (80 percent of the period of record average); Cayuse Landing received 27.91 inches (71 percent of average); Doris Creek received 38.58 inches (91 percent of average); Walde Lookout received 45.15 inches (94 percent of average); and Indian Henry received 45.51 inches (80 percent of average). The mean precipitation for the five stations in 2005 was 39.78 inches, or 87 percent of the period of record average. Figure 2 shows precipitation at the five stations over the last ten years.

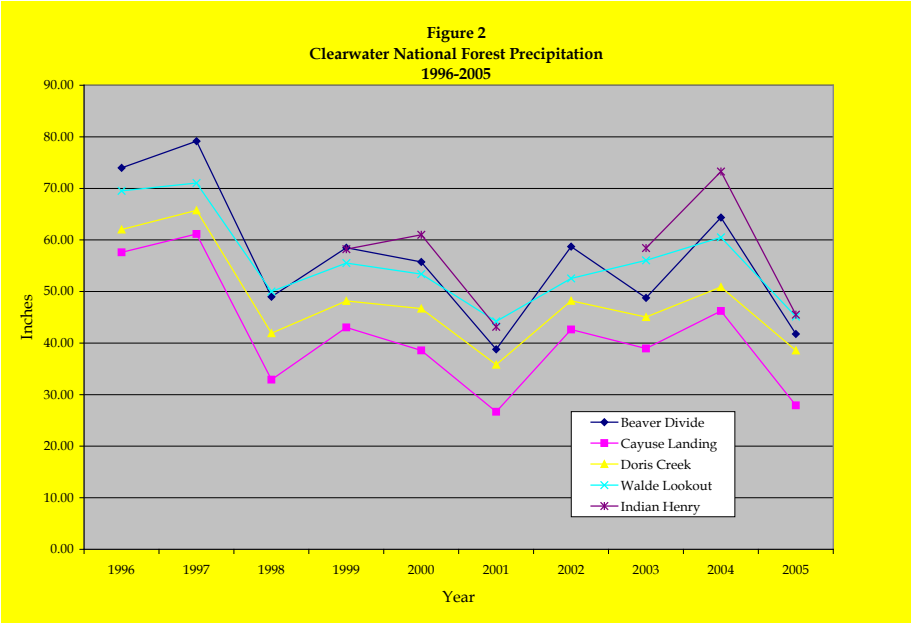


Table 7. Water Quality Monitoring Network 2006

Basin	Watershed - Location	Years[1]	Data Type
Palouse River (17060108)	Palouse River (Moscow Mountain)	49	SNOTEL, Precipitation (NRCS)
	Palouse River (Above Laird Park)	21[2]	Suspended Sediment, Discharge
Lochsa River (17060303)	Lochsa River (Near Lowell)	80	Discharge (USGS)
	Pete King Creek (Walde Lookout)	40	Annual Precipitation
	Pete King Creek (Mouth)	31	Discharge, Suspended Sediment
	Canyon Creek (Mouth)	15	Discharge, Suspended Sediment
	Deadman Creek (Mouth)	19	Discharge, Suspended Sediment
	Fish Creek (Mouth)	39	Discharge, Suspended Sediment
	Badger Creek (Mouth)	11	Discharge, Suspended Sediment
	Papoose Creek (Mouth)	11	Discharge, Suspended Sediment
	Crooked Fork (Crooked Fork)	41	Snow Course (FS and NRCS)
	Crooked Fork (Lolo Pass)	50	SNOTEL, Precipitation (NRCS)
	White Sand Creek (Savage Pass)	69	SNOTEL, Precipitation (NRCS)
Clearwater River (17060306)	Potlatch River (Sherwin)	49	SNOTEL, Precipitation (NRCS)
	Potlatch River (Above Little Boulder Creek)	11[2]	Discharge, Suspended Sediment
	Potlatch River (Near Spalding)	4	Discharge (USGS)
	Orofino Creek (Pierce R.S.)	55	Snow Course (FS and NRCS)
	Orofino Creek (Shanghi Summit)	68	SNOTEL, Precipitation (NRCS)
	Lolo Creek (Mouth)	27	Discharge (USGS)
	Lolo Creek (Hemlock Butte)	46	SNOTEL, Precipitation (NRCS)
	Lolo (Sec 6)	25	Discharge, Suspended and Bedload Sediment
	Eldorado Creek (Below Linda Creek)	16	Discharge, Suspended Sediment
Upper North Fork Clearwater River (17060307)	North Fork of the Clearwater River (Aquarius Bridge)	40	Discharge (USGS)
	Quartz Creek (Mouth)	23	Discharge, Suspended Sediment
	Quartz Creek (Indian Henry Ridge)	7	Annual Precipitation
	Cold Springs Creek (Mouth)	17	Discharge, Suspended Sediment
	Cold Springs Creek (Cool Creek)	21	SNOTEL, Precipitation (NRCS)
	Long Creek (Hoodoo Basin – in Montana)	39	SNOTEL, Precipitation (NRCS)
	Cayuse Creek (Cayuse Landing)	40	Annual Precipitation
	Weitas Creek (Doris Butte)	36	Annual Precipitation
	Weitas Creek (Creator Meadows)	43	SNOTEL, Precipitation (NRCS)
Lower North Fork Clearwater River (17060308)	Beaver Creek (Beaver Divide)	36	Annual Precipitation
	Elk Creek (Elk Butte)	43	SNOTEL, Precipitation (NRCS)
	Elk Creek (Road 1705)	26	Discharge, Suspended and Bedload Sediment

[1] Monitoring intensity can vary from several grab samples to automatic samplers that run for five months or more.
[2] Stream gauge was dropped from monitoring in 2005.

The Forest processed 1,549 suspended sediment, 1,566 turbidity and 16 bedload samples in 2006. Bedload sediment samples were collected to determine the proportion of sediment moving as suspended and bedload in two watersheds. 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 8 and is available from the Forest hydrologist at the Supervisor's Office.

Table 8 displays the period of record, mean daily discharge through 2005, 2006 mean daily discharge, mean daily suspended sediment through 2005 and mean daily suspended sediment in 2006. Mean daily discharge is calculated from 12 flow measurements per day and mean daily suspended sediment is a composite of four sediment samples.

Table 8. Water Quality Monitoring Results - 2006

Station	Period of Record Used in Analysis	Mean Daily Discharge (cfs) Through 2005	2006 Mean Daily Discharge (cfs)	Mean Daily Suspended Sediment Through 2005 (mg/l)	2006 Mean Daily Suspended Sediment (mg/l)
Palouse River [1] (Above Laird Park)	1986-2005	57	--	--	--
Pete King Creek (Mouth)	1976-2006	44	31	18.4	12.1
Canyon Creek (Mouth)	1992-2006	44	45	10.3	7.6
Deadman Creek (Mouth)	1988-2006	42	35	11.5	6.3
Fish Creek (Mouth)	1958-1966 1976-2006	218	195	8.2[2]	4.8
Badger Creek (Mouth)	1983-1984 1988-1989 2001-2006	13	8	3.7	7.0
Potlatch River [1] (Above Little Boulder Creek))	1995-2005	173	--	7.7	--
Lolo Creek (Sec 6)	1982-2006	95	63	10.7	6.4
Quartz Creek (Mouth)	1982 1984-2006	148	137	11.2	13.4
Cold Springs Creek (Mouth)	1983-1992 2000-2006	34	43	5.2	7.9[3]
Elk Creek (Road 1705)	1982-2006	77	62	9.8	5.9
Mean of all stations		86	69	9.7	18.2

[1] Gauge was dropped from monitoring in 2005.
[2] Suspended sediment in Fish Creek is representative of a granitic geology watershed with little or no timber harvesting and roads.
[3] Data from 5/12/2006 - 5/24/2006 was dropped it was not representative of the site and showed bias.

Generally, monitoring of suspended sediment has shown a recovery trend forest-wide from past management practices. Of the nine water quality stations where suspended sediment measurements were previously collected, three had sediment levels higher in 2006 than the mean of all previous years. Much of the recovery is believed to be the result of less land disturbing activities, better application of BMPs, PACFISH and INFISH buffers, road decommissioning and better road location and design.

Badger Creek, Cold Springs Creek and Quartz Creek all showed increases in sediment when compared to the mean of all previous years collected. Badger Creek has had large amounts of road obliteration in the past few years. An increase in sediment was expected but in the long term a decrease in sediment should occur. In both Cold Springs Creek and Quartz Creek the increase in sediment was small in comparison to the mean of all previous years collected. The increase of sediment warrants field verification this summer.

Turbidity has been monitored at ten to twenty stations before 1991 and after 1997. The results of turbidity monitoring in 2006 are presented in Table 9.

Table 9. Turbidity Monitoring Results. Period of record, mean daily turbidity through 2005. Maximum turbidity period of record, mean daily turbidity in 2006 and maximum turbidity in 2006.

Station	Period of Record	Mean Daily Turbidity (ntu) Through 2005	Maximum Turbidity (ntu) Period of Record	Mean Daily Turbidity (ntu) 2006	Maximum Turbidity (ntu) 2006
Palouse River (Above Laird Park)	1999-2005[1]	4.3	99.9	--	--
Pete King Creek (Mouth)	1978-1990 1998-2006	2.4	99.9	3.3	99.9
Canyon Creek (Mouth)	1998-2006	1.7	48.5	2.1	48.5
Deadman Creek (Mouth)	1988-1990 1998-2006	1.7	46.9	2.2	20.6
Fish Creek (Mouth)	1998-2006	1.1	26.6	1.8	13.4
Badger Creek (Mouth)	1983-1984 1988-1989 2001-2006	1.0	31.9	2.4	31.9
Potlatch River (Above Little Boulder Creek)	1998-2005[1]	3.1	38.1	--	--
Lolo Creek (Sec 6)	1985-1988 1990, 1998-2006	1.7	19.0	1.7	9.0
Quartz Creek (Mouth)	1988-1990 1998-2006	1.8	60.5	3.9	26.1
Cold Springs Creek (Mouth)	1983-1986 2000-2006	1.4	46.1	2.0	1.2[2]
Elk Creek (Road 1705)	1982-1987 1990 1998-2006	[2]	87.0	3.3	17.3
Mean of all stations		2.0	54.9	2.5	29.8

[1] Gauges were dropped from monitoring in 2005.
[2] Data from 5/12/2006 - 5/24/2006 was dropped it was not representative of the site and showed bias.

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 (50) NTU instantaneously or more than twenty-five (25) NTU for more than ten (10) consecutive days.

At the nine Clearwater National Forest water quality monitoring stations, 1,566 turbidity samples were collected and analyzed in 2006. Three samples exceeded the state turbidity criteria. Pete King Creek exceeded 50 NTUs on April 6th. There was a large culvert replace above the gauge in 2003 which is showing some signs of downcutting. This could be the possible point of sediment.

Elk Creek Suspended and Bedload Sediment:

A total of 179 samples of bedload have been collected at the Elk Creek gaging station between 1978 and 2006 (See Table 4). Bedload varied from a high of 8.8 percent, to a low of 0.0 percent of the total sediment load in 2006. Mean bedload for 2006, based on eleven samples was 32 pounds per day, or 1.3 percent of the total sediment load. Mean bedload for the period of record was 274 pounds per day, or 8.5

percent of the total sediment load. In recent years (1997-2005), bedload seems to be declining from historic (1980-1996) averages. This may be due to improving channel substrate conditions, watershed recovery from past landslides and application of best management practices.

Table 10. Elk Creek Suspended and Bedload Sediment Data for 1978 Through 2006. 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	3,660	87.1	303	12.9	3,965
Mean 1997	340	21,500	97.9	451	2.1	21,962
Mean 1998	97.0	1,360	93.7	92.0	6.3	1,452
Mean 1999	157	3,750	90.4	294	9.6	4,045
Mean 2000	178	2,890	80.6	697	19.4	3,583
Mean 2001	81.1	692	94.4	41.0	5.6	733
Mean 2002	191	2,900	93.2	48.2	6.8	2,940
Mean 2003	104	1,344	96.5	47.8	3.5	1,392
Mean 2004	126	2,445	97.1	66.0	2.9	2,511
Mean 2005	70	633	98.3	15.2	1.7	648
April 7, 2006	203	4,048	99.9	1.40	0.1	4,049
April 14, 2006	208	2,804	99.8	3.22	0.2	2,807
April 24, 2006	165	2,763	99.9	0.22	0.01	2,763
April 28, 2006	176	2,558	98.4	43.01	1.6	2,601
May 4, 2006	156	2,520	91.2	244.14	8.8	2,764
May 16, 2006	134	2,520	97.1	75.94	2.9	2,596
May 25, 2006	95	1,794	99.9	0.35	0.1	1,794
June 15, 2006	113	2,305	99.9	0.80	0.1	2,306
July 5, 2006	30	446	100.0	0.00	0.0	446
August 23, 2006	11	431	100.0	0.00	0.0	431
September 15, 2006	11	148	100.0	0.00	0.0	148
Mean 2006	**114**	**1,914.2**	**98.7**	**32.0**	**1.3**	**1,946**
Mean Period of Record	141	2,950 lbs/day	91.5 %	274 lbs/day	8.5%	3,223 lbs/day

Lolo Creek Suspended and Bedload Sediment: A total of 174 bedload samples have been collected and analyzed at Lolo Creek between 1980 and 2006 (Table 5). Bedload varied from a high of 1.3 percent to a low of 0.5 percent of the total sediment load in 2006. Mean bedload for 2006, based on five samples was 55 pounds per day, or 1.0 percent of the total sediment load. Mean bedload for the period of record was 1,423 pounds per day, or 15.4 percent of the total sediment load. In recent years (1998-2006), 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.

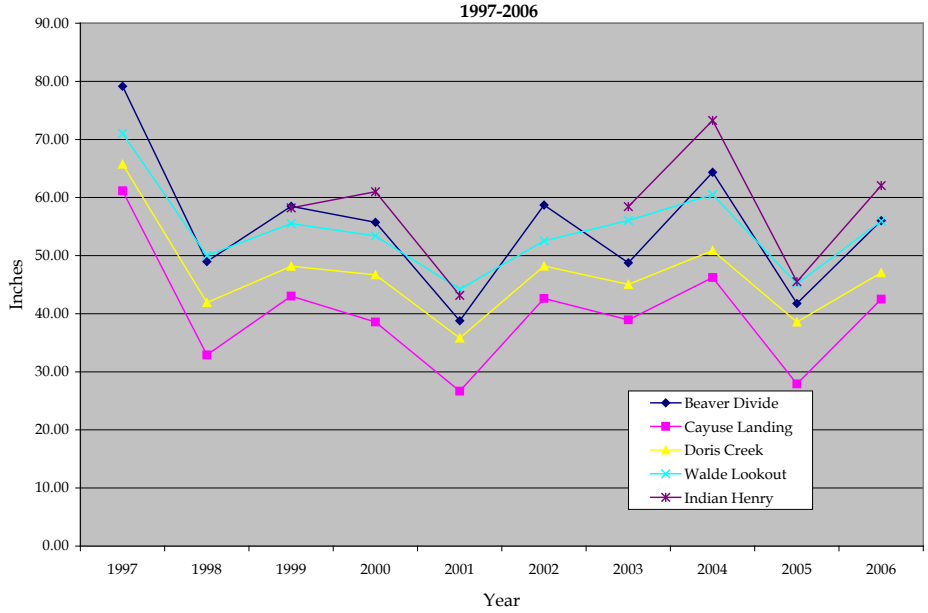
Table 5. Lolo Creek Suspended and Bedload Sediment Data for 1980 Through 2006. A comparison of discharge, depth integrated suspended sediment, and bedload sediment.

Date	Q - cfs	Suspended Sediment Lbs/day	% Suspended Sediment	Bedload Lbs/day	% Bedload	Total Sediment Lbs/day
Mean 1980-1997	164	10,600	78.9	2,840	21.1	13,471
Mean 1998	144	3,220	97.0	96.0	3.0	3,319
Mean 1999	243	10,800	98.0	159	2.0	10,986
Mean 2000	226	6,560	86.0	1,070	14.0	7,624
Mean 2001	212	5,410	96.5	196	3.5	5,604
Mean 2002	306	10,300	97.4	171	2.4	10,500
Mean 2003	205	4,497	97.7	113	2.3	4,610
Mean 2004	248	5,664	97.9	150	2.1	5,815
Mean 2005	212	6,101	99.1	64.7	0.9	6,166
May 9, 2006	235	3,931	98.7	52.0	1.3	3,983
May 12, 2006	227	5,026	99.5	26	0.5	5,052
May 17, 2006	304	10,659	98.9	116	1.1	10,775
May 24, 2006	216	4,884	98.8	61	1.2	4,945
June 5, 2006	151	2,609	99.2	20	0.8	2,629
Mean 2006	**227**	**5,422**	**99.0**	**55**	**1.0**	**5,477**
Mean Period of Record	218 cfs	7,844 Lbs/day	84.6%	1,423 Lbs/day	15.4%	9,267 Lbs/day

2006 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 2006 water year (October 1, 2005 - September 30, 2006) was slightly above the mean for the period of record. Records go back to the 1960's in most cases.

Beaver Divide received 56.01 inches in 2006 (107 percent of the period of record average); Cayuse Landing received 42.50 inches (107 percent of average); Doris Creek received 47.06 inches (110 percent of average); Walde Lookout received 55.95 inches (116 percent of average); and Indian Henry received 62.04 inches (108 percent of average). The mean precipitation for the five stations in 2006 was 52.71 inches, or 115 percent of the period of record average. Figure 2 shows presipitation at the five stations over the last ten years.

Figure 2
Clearwater National Forest Precipitation
1997-2006



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 Soil Scientist/Ecologist, 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 percent of timber sale units and 100 percent of all new permanent road construction for BMP implementation and effectiveness. The sale administrator and road contracting officers are responsible for BMP implementation.

ACCOMPLISHMENTS/FINDINGS 2005

The following individuals were involved in the 2005 BMP audits: Gary Cole, sale administrator; Dan Davis, Forest wildlife biologist; Joe Butsick, Forest wildlife biologist (detailer); Pat Murphy, Forest fisheries biologist; and Dick Jones, Forest hydrologist.

Table 11 summarizes the 2005 Forest Practices Act internal audit and includes the following information, by column:

1. FPA# (rule number in Rules Pertaining to the Idaho Forest Practices Act (Title 38, Chapter 13, Idaho Code – April 1, 2000).
2. Description of the FPA rule.
3. Number of BMPs observed Forestwide.
4. Number of BMP observations in compliance with the FPA rules (Implementation).
5. Percent of BMP compliance.
6. Number of occurrences where sediment or other pollutants were not delivered to a stream or draw (effectiveness).
7. Percent of BMP effectiveness.

Table 11. 2005 Forest Practices Act Audit Summary

	Description	# of Inspections	Implemented	% Implemented	Effective	% Effective
030	TIMBER HARVEST					
030.03	SOIL PROTECTION					
a.	Skidding Erosion	4	4	100	4	100
b.	30% Limitation	4	4	100	4	100
c.1.	Number of Skid Trails	4	4	100	4	100
c.2.	Tractor Size Appropriate	4	4	100	4	100
d.	Cable Yarding	4	4	100	4	100
030.04	LOCATION LANDINGS/SKIDS					
a.	Locate Landings and Skid Trails out of SPZ	4	4	100	4	100
b.	Size of Landings	5	5	100	5	100
c.	Landing Fill Stabilization	5	5	100	5	100
030.05	DRAINAGE SYSTEM					
a.	Drainage Skid Trails	4	4	100	4	100
b.	Drainage Landings	5	5	100	5	100
030.06	TREATMENT OF WASTE MATERIALS					
a.	Slash out of Class I Streams	1	1	100	1	100
b.	Slash out of Class II Streams	3	3	100	3	100
c.1.	Soil out of SPZ	3	3	100	3	100
c.2.	Oil, Fuel out of SPZ	4	4	100	4	100
030.07	STREAM PROTECTION					
a.	Lakes - Riparian Management Px	--	--	--	--	--
b.	Skidding, Stream Crossing SPZ	3	3	100	3	100
c.	Skidding in SPZ	4	3	75	4	100
d.	Cable Stream Crossing					
e.1.	Hardwoods, Shrubs, Grasses, Rocks - Shade	4	4	100	4	100
e.2.	Class 1 - 75% Current Shade	4	4	100	4	100
e.3.	Logging of SPZ	4	4	100	4	100
e.4-8.	Large Organic Debris	4	4	100	4	100
030.08	MAINTENANCE OF RELATED VALUES					
c.	Wet Areas	3	3	100	3	100
040	ROAD CONSTRUCTION AND MAINTENANCE					

	Description	# of Inspections	Implemented	% Implemented	Effective	% Effective
040.02	SPECIFICATIONS AND PLANS					
a.	Minimize Road Construction in SPZ	4	4	100	4	100
b.1.	Roads No Wider Than Necessary	4	4	100	4	100
b.2.	Minimize Cuts and Fills	4	4	100	4	100
c.	Plan for Natural Road Drainage	4	4	100	4	100
d.	Plan for Ditches and Culverts	4	4	100	4	100
e.	Installation of New Culverts					
e.1.	Fish Passage	1	1	100	1	100
e.2.	50 year Culvert Design	2	2	100	2	100
f	Minimum Stream Crossings	4	4	100	4	100
g.	Avoid Reuse of Roads in SPZ	2	2	100	2	100
040.03	ROAD CONSTRUCTION					
a.	Construction Followed Plan	4	4	100	4	100
b.	Debris Cleared From Drainage ways	3	3	100	3	100
c.	Stabilize Exposed Areas	4	4	100	4	100
d.	Compact and Minimize Soft Material in Fills	4	4	100	4	100
e.	Remove Berms on Outsloped Roads	1	1	100	1	100
f.	Quarry Drainage	--	--	--	--	--
g.	Minimize Erosion of Embankments at Culverts	3	3	100	3	100
h.	Wet Weather Delays	1	0	0	1	100
i.	Stabilize Cutslopes	4	4	100	4	100
j.	60% Slope Full Bench	--	--	--	--	--
040.04	ROAD MAINTENANCE					
a.	Sidecast Out of Streams	9	9	100	9	100
b.	Stabilize Slumps and Slides	--	--	--	--	--
c.	ACTIVE ROADS					
c.1.	Culvert and Ditch Function	5	5	100	5	100
c.2.	Crown and Waterbar	2	2	100	2	100
c.3.	Minimize Road Surface Erosion	4	4	100	4	100

	Description	# of Inspections	Implemented	% Implemented	Effective	% Effective
c.4.	Postpone Hauling During Wet Periods	2	2	100	2	100
c.5.	Road Stabilization Material out of Stream	4	4	100	4	100
d.	INACTIVE ROADS					
d.1.	Culverts and Ditches Cleaned	5	5	100	5	100
d.2.	Road Closed	5	5	100	5	100
e.	ABANDON ROADS					
e.1.	Outslope, Waterbar, Seed	1	1	100	1	100
e.2.	Road Closed	1	1	100	1	100
e.3.	Remove or Maintain Drainage	1	1	100	1	100
f.	Permanently Abandoned Roads					
f.1.	Structures Removed and Gradient Restored	3	3	100	3	100
f.2.	De-compact Roads	3	3	100	3	100
f.3.	Pull Back Fill Slopes in SPZ	1	1	100	1	100
f.4.	Stabilize Fills	3	3	100	3	100
f.5.	Cross Ditch or Outslope to Eliminate Ditches	3	3	100	3	100
f.6.	Seed, Mulch, Armor Bare Earth	3	3	100	3	100
040.05	WINTER OPERATIONS					
a.	Adequate Cross Drainage	--	--	--	--	--
b.	Road Maintenance	--	--	--	--	--
	SUMMARY	**188**	**186**	**98.9 %**	**188**	**100 %**

There were 188 BMP observations conducted last year with overall implementation and effectiveness rates of 98.9 and 100 percent, respectively. Sediment was observed delivered temporarily to streams one time during the 188 BMP observations. Many BMPs continue to have a 100 percent implementation and effectiveness rate. The following BMP observations warrant additional discussion:

TIMBER HARVEST

030.07.c: Skidding in the Stream Protection Zone. Four BMP observations occurred in 2005 with one noncompliance, resulting in a 75 percent implementation rate. This occurrence transpired twice within the Weitas Creek Campground Sale. The first occurrence was along the North Fork Clearwater River upstream of the bridge where skidding was noted within 16 to 75 feet of the river for a distance of 270 feet. Sediment is expected to be delivered to the North Fork Clearwater River where skidding was closest to the river. The second incident occured along Weitas Creek where skidding was noted within 38 to 75 feet of the river for a distance of 105 feet. Sediment is not expected to be delivered to Weitas Creek. The logging of the Weitas Creek Campground was the second incident of BMP non-compliance in a campground logging in the last two years. The Forest seems to be having a problem implementing proper logging practices in campgrounds.

We recommend hydrologist, fisheries biologist and line officers be involved from planning to implementation of any campground logging in the future to assure proper implementation of BMPs and PACFISH/INFISH RMOs. We also recommend observation of Weitas Creek Campground to see if sediment is being delivered to the North Fork Clearwater River as a result of the logging.

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 the result of too many roads and insufficient funding to maintain them.

040.03.h: Wet Weather Delays. In 2005, one BMP observations and noncompliance of a Plum Creek Corporation contractor hauling rock over a cost share road occurred. This incident occurred on the Moose Lake Road 5967. In this case, dump trucks were hauling gravel over the road during wet weather in late October and rutting the surface. Although no material had yet entered the streams, the risk of such is substantial. It also appeared that insufficient gravel is planned for the road, especially on the steep sections.

ACCOMPLISHMENTS/FINDINGS 2006

The following individuals were involved in the 2006 BMP audits: Pat Murphy, Forest fisheries biologist; Dick Jones, Forest hydrologist; and Robert Sanchez, hydrologist.

Table 12 summarizes the 2006 Forest Practices Act Internal Audit and includes the following information, by column:

1. FPA# (the rule number in Rules Pertaining to the Idaho Forest Practices Act (Title 38, Chapter 13, Idaho Code – April 1, 2000).
2. Description of the FPA rule.
3. Number of BMPs that were observed Forestwide.
4. Number of BMP observations that were in compliance with the FPA rules (Implementation).
5. Percent of BMP compliance.
6. Number of occurrences where sediment or other pollutants were not delivered to a stream or draw (effectiveness).
7. Percent of BMP effectiveness.

Table 6. 2006 Forest Practices Act Audit Summary

	Description	# of Inspections	Implemented	% Implemented	Effective	% Effective
030	TIMBER HARVEST	////////	////////	////////	////////	////////
030.03	SOIL PROTECTION	////////	////////	////////	////////	////////
a.	Skidding Erosion	2	2	100	2	100
b.	30% Limitation	2	2	100	2	100
c.1.	Number of Skid Trails	2	2	100	2	100
c.2.	Tractor Size Appropriate	2	2	100	2	100
d.	Cable Yarding	1	1	100	1	100
030.04	LOCATION LANDINGS/SKIDS	////////	////////	////////	////////	////////
a.	Locate Landings and Skid Trails out of SPZ	2	2	100	2	100
b.	Size of Landings	3	3	100	3	100
c.	Landing Fill Stabilization	3	3	100	3	100
030.05	DRAINAGE SYSTEM	////////	////////	////////	////////	////////
a.	Drainage Skid Trails	2	2	100	2	100
b.	Drainage Landings	3	3	100	3	100
030.06	TREATMENT OF WASTE MATERIALS	////////	////////	////////	////////	////////
a.	Slash out of Class I Streams	1	1	100	1	100
b.	Slash out of Class II Streams	2	2	100	2	100
c.1.	Soil out of SPZ	2	2	100	2	100
c.2.	Oil, Fuel out of SPZ	3	3	100	3	100
030.07	STREAM PROTECTION	////////	////////	////////	////////	////////
a.	Lakes - Riparian Management Px	--	--	--	--	--
b.	Skidding, Stream Crossing SPZ	1	1	100	1	100
c.	Skidding in SPZ	2	1	50	1	50
d.	Cable Stream Crossing	--	--	--	--	--
e.1.	Hardwoods, Shrubs, Grasses, Rocks - Shade	3	3	100	3	100
e.2.	Class 1 - 75% Current Shade	1	1	100	1	100
e.3.	Logging of SPZ	1	1	100	1	100
e.4-8.	Large Organic Debris	1	1	100	1	100
030.08	MAINTENANCE OF RELATED VALUES	////////	////////	////////	////////	////////
c.	Wet Areas	2	2	100	2	100
040	ROAD CONSTRUCTION AND MAINTENANCE	////////	////////	////////	////////	////////
040.02	SPECIFICATIONS AND PLANS	////////	////////	////////	////////	////////

	Description	# of Inspections	Implemented	% Implemented	Effective	% Effective
a.	Minimize Road Construction in SPZ	--	--	--	--	--
b.1.	Roads No Wider Than Necessary	--	--	--	--	--
b.2.	Minimize Cuts and Fills	--	--	--	--	--
c.	Plan for Natural Road Drainage	--	--	--	--	--
d.	Plan for Ditches and Culverts	--	--	--	--	--
e.	Installation of New Culverts	////////	////////	////////	////////	////////
e.1.	Fish Passage	--	--	--	--	--
e.2.	50 year Culvert Design	--	--	--	--	--
f	Minimum Stream Crossings	--	--	--	--	--
g.	Avoid Reuse of Roads in SPZ	--	--	--	--	--
040.03	ROAD CONSTRUCTION	////////	////////	////////	////////	////////
a.	Construction Followed Plan	--	--	--	--	--
b.	Debris Cleared From Drainage ways	--	--	--	--	--
c.	Stabilize Exposed Areas	--	--	--	--	--
d.	Compact and Minimize Soft Material in Fills	--	--	--	--	--
e.	Remove Berms on Outsloped Roads	--	--	--	--	--
f.	Quarry Drainage	--	--	--	--	--
g.	Minimize Erosion of Embankments at Culverts	--	--	--	--	--
h.	Wet Weather Delays	--	--	--	--	--
i.	Stabilize Cutslopes	--	--	--	--	--
j.	60% Slope Full Bench	--	--	--	--	--
040.04	ROAD MAINTENANCE	////////	////////	////////	////////	////////
a.	Sidecast Out of Streams	2	2	100	2	100
b.	Stabilize Slumps and Slides	2	2	100	2	100
c.	ACTIVE ROADS	////////	////////	////////	////////	////////
c.1.	Culvert and Ditch Function	1	1	100	1	100
c.2.	Crown and Waterbar	1	1	100	1	100
c.3.	Minimize Road Surface Erosion	1	1	100	1	100
c.4.	Postpone Hauling During Wet Periods	--	--	--	--	--
c.5.	Road Stabilization Material out of Stream	1	1	100	1	100
d.	INACTIVE ROADS	////////	////////	////////	////////	////////
d.1.	Culverts and Ditches Cleaned	2	2	100	2	100
d.2.	Road Closed	2	2	100	2	100
e.	ABANDON ROADS	////////	////////	////////	////////	////////

	Description	# of Inspections	Implemented	% Implemented	Effective	% Effective
e.1.	Outslope, Waterbar, Seed	--	--	--	--	--
e.2.	Road Closed	--	--	--	--	--
e.3.	Remove or Maintain Drainage	--	--	--	--	--
f.	Permanently Abandoned Roads	////////	////////	////////	////////	////////
f.1.	Structures Removed and Gradient Restored	--	--	--	--	--
f.2.	De-compact Roads	--	--	--	--	--
f.3.	Pull Back Fill Slopes in SPZ	--	--	--	--	--
f.4.	Stabilize Fills	--	--	--	--	--
f.5.	Cross Ditch or Outslope to Eliminate Ditches	--	--	--	--	--
f.6.	Seed, Mulch, Armor Bare Earth	--	--	--	--	--
040.05	WINTER OPERATIONS	////////	////////	////////	////////	////////
a.	Adequate Cross Drainage	--	--	--	--	--
b.	Road Maintenance	--	--	--	--	--
	SUMMARY	53	52	98.1 %	52	98.1 %

There were 53 BMP observations conducted last year with overall implementation and effectiveness rates of 98.1 and 98.1 percent, respectively. Sediment was observed delivered temporarily to streams one time during the 188 BMP observations. Many BMPs continue to have a 100 percent implementation and effectiveness rate. The following BMP observations warrant additional discussion:

TIMBER HARVEST

030.07.c: Skidding in the Stream Protection Zone. *"Operation of ground based equipment should not be allowed within the Stream Protection Zone except at approaches to stream crossings."*

Two BMP observations occurred in 2006 with one noncompliance, resulting in a 50 percent implementation rate. This occurrence transpired twice within the Weitas Creek Campground Sale. The original BPM was conducted in 2005, which warranted another visit in 2006 to see if there was any evidence of sediment entering the stream. The first occurrence was along the North Fork Clearwater River upstream of the bridge where skidding was noted within 16 to 75 feet of the river for a distance of 270 feet. Sediment is expected to be delivered to the North Fork Clearwater River where skidding was closest to the river. In a September 2006 check, no evidence of sediment delivery was apparent; however ATV's were driving to the waters edge using the apparent skid trail.

The second incident occurred along Weitas Creek where skidding was noted within 38 to 75 feet of the river for a distance of 105 feet. Sediment is not expected to be delivered to Weitas Creek.

We recommend hydrologist, fisheries biologist and line officers be involved from planning to implementation of any campground logging in the future to assure proper implementation of BMPs and PACFISH/INFISH RMOs. We also recommend observation of Weitas Creek Campground to see if sediment is being delivered to the North Fork Clearwater River as a result of the logging.

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 focuses 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 on a variety of projects across the Forest in FY04-FY06 and will be reported in a later report.

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 and have been updated to draw information out of the FACTS and FS-VEG data bases, the inventory program has shifted to maintenance and updating. The inventory compilation programs are periodically rerun, and new project stand exams are added, especially for stands that have experienced changes due to harvest, wildfire and insect outbreaks. The photo interpretation data is selectively updated for stands that have notably changed.

In FY05, the Forest offered a variety of products including sawlogs, cedar products, firewood, Christmas trees, boughs, herbs, roots, posts and poles. These products were sold through five timber sales, 1500 firewood permits, 643 Christmas tree permits, and 11 miscellaneous collection permits.

In FY06, the Forest offered a variety ofproducts, including sawlogs, cedar products, firewood, Christmas trees, boughs, herbs, roots, posts and poles. These products were sold through two timber sales, 1500 firewood permits, 606 Christmas tree permits, and 12 miscellaneous collection permits.

The annual volumes offered, sold, harvested, and under contract since FY02 are shown in Table 1 below.

Table 1. Annual Timber Volume Offered, Sold, Cut, and Under Contract (MMBF)

	FY02	FY03	FY04	FY05	FY06
Offer	5.8	30.8	30.0	27.4	1.6
Sold	5.8	29.8	30.0	28.7	10.8
Cut	15.9	25.2	25.4	21.7	19.3
Contract	49.3	36.6	30.8	31.2	31.3

The total acres of timber sold by harvest method during the past five years are shown in Table 2 below.

Table 2. Total Acres of Timber Sold on the Forest by Harvest Method

	FY02	FY03	FY04	FY05	FY06
Clearcut and Clearcut with Reserves	192	472	423	153	0
Shelterwood and Seed Tree	94	472	252	502	0
Final Removal	0	16	168	0	0
Selection	0	0	0	0	0
Intermediate Harvest	158	271	26	79	113

Table 3 shows the volume of timber sold for the roaded and unroaded components of the Forest.

Table 3. Roaded and Unroaded Timber Sold

Year	Roaded Sawtimber	Roaded NIC*	Roaded Total	Unroaded Sawtimber	Unroaded NIC*	Unroaded Total	Forest Total
02	5.8	0	**5.8**	0	0	**0**	**5.8**
03	28.6	1.2	**29.8**	0	0	**0**	**29.8**
04	26.9	3.1	**30.0**	0	0	**0**	**30.0**
05	26.2	2.5	**28.7**	0	0	**0**	**28.7**
06	8.1	2.7	**10.8**	0	0	**0**	**10.8**

*NIC = non-interchangeable component

Table 4 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.

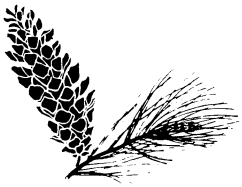
Table 4. Comparison of Forest Plan Projections with Annual Acreage of Timber Sales, 1988-2006

Management Area	Forest Plan Acres	Forest Plan Volume Mmbf	Timber Sale Average Acres	Timber Sale Average Volume Mmbf
Timber Production	**3,497**	**81.2**	**2,261**	**36.1**
Road/Trail Corridors	**125**	**.8**	**28**	**0.5**
Big-Game Summer Range	**3,099**	**62.5**	**28**	**0.4**
Big-Game Winter Range	**1,007**	**23.6**	**332**	**5.7**
Riparian Areas	**3,516**	**5.2**	**48**	**0.9**
Middle Fork Clearwater Scenic Corridor	**0**	**0**	**15**	**0.4**

The difference between planned ASQ volume and the average annual volume sold shown in Table 4 is due in large part, to not harvesting in the unroaded portion of the Forest.

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 2000 and 2001 were compiled and the required percentages calculated. The data presented in Table 5 are based on the status of regeneration at the end of 2005 and 2006. 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.

FY 2005 — Table 5. 2000 Regeneration Harvests Adequately Restocked in Five Years

	Clearcut	Seedcut	Final	Selection	TOTAL
Number of Stands	13	34	13	2	**62**
Number of Acres	179	459	209	8	**855**
Stand Success %	92%	100%	100%	100%	**98%**
Acres Success %	90%	100%	100%	100%	**98%**

Of the 62 stands that received regeneration harvesting in 1999, one clearcut was not adequately stocked after five years. This unit is scheduled for replanting in 2005.

FY 2006 — Table 5. 2001 Regeneration Harvests Adequately Restocked in Five Years

	Clearcut	Seedcut	Final	Selection	TOTAL
Number of Stands	15	11	7	0	**33**
Number of Acres	248	319	186	0	**753**
Stand Success %	80%	91%	100%	100%	**88%**
Acres Success %	73%	94%	100%	100%	**89%**

All of the 19 stands that received regeneration harvesting in 2000 were adequately stocked after 5 years. Of the 33 stands that received regeneration harvesting in 2001, 3 clearcuts and 1 seedcut were not adequately stocked after 5 years. Two of the clearcuts and the seedcut will be planted in 2007. The final clearcut is scheduled for planting in 2008.

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 with 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.

Table 6 shows the acres reported in the stand database for FY05 and FY06.

Table 6. FY05 Even-aged Regeneration Harvests by Harvest Type and Size Category

	Clearcut & Clearcut with Reserves		Seedtree & Shelterwood		Final Removal	
District	#Stands <40 Acres	# Stands >40 Acres	#Stands <40 Acres	# Stands >40 Acres	# Stands <40 Acres	# Stands >40 Acres
Pierce	3	2	5	0	0	0
Palouse	1	0	7	1	12	0
North Fork	6	0	0	0	0	0
Lochsa	0	0	0	0	0	0
Powell	0	0	0	0	0	0
TOTAL	10	2	12	1	0	0
Average Size	15 Acres	46 Acres	20 Acres	43 Acres	0 Acres	0 Acres

Table 6. FY06 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	2	0	7	0	0	0
Palouse	0	0	2	0	0	0
North Fork	0	0	0	0	0	0
Lochsa	0	0	0	0	0	0
Powell	3	0	0	0	0	0
TOTAL	5	0	9	0	0	0
Average Size	14 Acres	0 Acres	8 Acres	0 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.

ACCOMPLISHMENTS/FINDINGS

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 significantly underestimated.

Regular aerial detectin surveys were conducted on the Forest in FY05. Mapping of current tree mortality and damage occurred on all ranger districts exclusive of the Selway-Bitterroot Wilderness.

Douglas-fir beetle activity declined slightly from 2004. Approximately 3,805 acres of DF beetle mortality were mapped with about 7,000 trees killed.

Grand fir tree mortality caused by the fir engraver bark beetle decreased significantly throughout the Clearwater region in FY 05. Only 673 effected acres were mapped with 902 dead trees.

The mountain pine beetle infestation continued to increase on the Forest in 2005, especially in the upper North Fork of the Clearwater River drainage. Approximately 11,000 acres were mapped containing more than 26,000 recently killed trees.

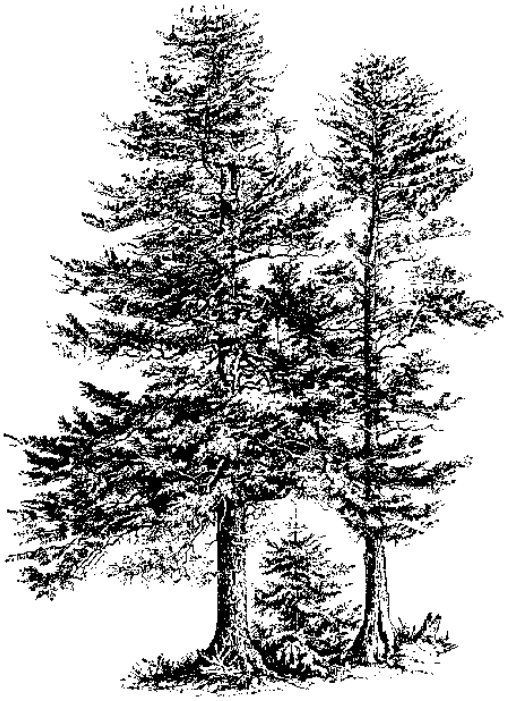
The areas infested with balsam wooly adelgid in FY05 decreased in size across the Forest from 16,000 acres in 2004 to 7,500 acres in 2005. Tree mortality remains widespread throughout western portion of the Forest in low-lying creek bottom situations and at higher elevations across the eastern part of the Forest.

The western balsam bark beetle outbreaks in subalpine fir have decreased since last year. The cumulative area infested is about 2,242 acres including some 3,227 recently killed trees.

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 gradually intensifies.

Mortality in mature western white pine caused by white pine blister rust and mountain pine beetle continues to be observed across the Forest. In FY05 approximately 2,007 acres of white pine mortality were mapped and some 173 recently killed trees were counted.

In FY06 aerial detection surveys were limited due to smoke from active forest fires. Only the Palouse District and parts of the Lochsa and North Fork Districts were flown. There were no significant increases or new major outbreaks of insect or disease activity in the areas of the Forest that were flown. A full flight of the Forest is scheduled for FY07.



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.

The table below shows annual accomplishments by maintenance level for the Forest's summer trail system.

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 1. Miles of Trail Maintenance Accomplished*

	2001		2002		2004		2005		2006	
	Motorized	No Motor	Motorized	No Motor	Motorized	No Motor	Motorized	No Motor	Motorized	No Motor
Level I	**625**		**733**		**1025.08**		**851**		**651**	
	254	371	342	391	591.67	433.41	468	383	345	306
Level II	**32**		**53**		**45.10**		**58**		**42**	
	26	6	22	31	20.8	24.3	27	31	17	25
Level III	**20**		**21**		**82.87**		**24**		**38**	
	10	10	9	9	51.76	51.76	9	15	20	18
Total Maintained	**677**		**807**		**1153.05**		**933**		**731**	
	290	387	373	434	664.23	488.82	504	429	382	349

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

Table 2. Trail Maintenance

Trail Maintenance Labor Type	2001	2002	2003	2004	2005	2006
Force Account Maintenance	10	113	405.35	343	220	170
Volunteer Maintenance	130	140	325.68	230	394	240
Contract Maintenance	485	554	422.02	319	319	321

TRAIL RECONSTRUCTION

Table 3. 2005 Trail Reconstruction Program

Projects Completed	Trail No.	Miles
Canyon Creek	107	7.4
Goose Creek	414	1.5
Deception OHV	Multi	6.5
Pete King Creek	105	4.0
Mocus Point Bridge	469	0
Cliff Creek	226	4.8
Total Trail Reconstruction		**24.2**

The Canyon Creek Trail reconstruction project was completed in 2005 by an Idaho Department of Corrections inmate crew. Goose Creek Trail and Mocus Point Bridge reconstruction work was completed by Forest Service crews. A state trail cat and small excavator contract were used to complete Deception OHV, and Pete King Creek Trail reconstruction was completed by contract. About 75% of necessary reconstruction work on the Cliff Creek Trail was completed by Forest Service crews until winter weather ended work for the season. Remaining work on Cliff Creek will occur in 2006.

Table 4. 2006 Trail Reconstruction Program

Projects Completed	Trail No.	Miles
Cliff Creek	226	1.0
Pedro Ridge	917	4.9
Apgar Creek	111	4.0
Palouse OHV System I	Multi	7.1
Camp 60/Sheep Mountain OHV	Multi	3.0
Wind Lakes	24	4.0
Total Trail Reconstruction		**24.0**

Reconstruction work was completed on the Cliff Creek Trail by Forest Service crews. A contract was awarded in September for Pedro Ridge reconstruction, but work did not begin due to poor weather. The project work will occur in 2007. Apgar Creek Trail reconstruction was completed by an Idaho Department of Corrections inmate crew, and a state trail cat and Forest Service crew were used to accomplish the work on the Palouse OHV system. Clearing work on Camp 60/Sheep Mountain OHV was started in 2006 by an inmate crew, and work was started on Wind Lakes Trail reconstruction by a Forest Service crew. Work on both of these projects will be completed in 2007.

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 FY05 and 06. 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.

Several Forest Service projects occurring in the Wild and Scenic River corridor were also evaluated including trailhead reconstruction and interpretive sign installation. 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. New property owners did not directly benefit from the compensation for acquisition of the scenic easements and likely paid an increased value for their properties because of the protections the easements provide. It is sometimes difficult to gain voluntary compliance.

In FY06 the Clearwater National Forest filed suit against two easement landowners for non-compliance with their scenic easements. These cases are pending judicial review.

River Administration

Five outfitters continue to operate on the Lochsa River under special use permit. Four outfitters operate on the Middle Fork Clearwater River under special use permit. The Clearwater National Forests cooperated with the Bureau of Land Management (Cottonwood Field Office) in sharing a river ranger for the Lochsa patrol season.

Outfitted fishing on the Lochsa, Middle Fork and North Fork Clearwater Rivers is an ongoing challenge. The Forest completed an Outfitted Fishing Needs Analysis in FY05.

Issues, such as highway safety and congestion continue to raise hard questions for management. The Forest Service and ITD continue to meet semi-annually to coordinate projects. The agencies are developing an MOU to formalize the working relationship.

A diesel spill occurred on US Highway 12 at mile post 132 in January 2005 which required removal of contaminated material from beneath the roadway and temporary closure of the west-bound lane. No diesel reached the river with this incident.

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, analyze trends, 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 located in the Selway-Bitterroot Wilderness (SBW) ***"State of the Wilderness Report"*** (SOW). The full SOW reports can be obtained from the Clearwater National Forest web site.

MONITORING USE IMPACTS

The Selway Bitterroot Wilderness spans the border of north central Idaho and western Montana and is one of the wildernesses established with the 1964 Wilderness Act. Its' 1.3 million acres lie within four National Forests.

Based on Levels of Acceptable Change (LAC) monitoring and field inventory, the following identifies areas 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.

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 and conduct complete campsite inventories. They also visit and naturalize a number of sites in addition to those officially inventoried. During 2005, rangers monitored 67 campsites, and in 2006, 93 campsites were monitored.

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

Crags Lakes

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). Use appeared to be low for the season and some sites had a chance for recovery.

Colt Lake Basin

This area has historically shown two sites with a light rating within the roving square mile, and appears to be receiving use.

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

White Sand Lake

The past few years field data has shown a slight improvement over the past field monitoring. There are currently three sites, two moderate and one light. Both moderate sites have remained static for some time. The light rated site improved from the inventory when it was rated as moderate. An additional site that was inventoried as light in 1995 no longer exists, and will be listed as a potential site.

Army Mule/Warm Springs Junction

The past few years' field data has shown an upward trend in this area. Two sites improved their ratings by one level (one is now heavy and one moderate), and the other two sites are not being used. This allowed them to return to natural conditions; they no longer exist.

California Lake

Over the past few years field data has shown this area as being out of standard with one moderate, and two light sites 2000. This area is indicating an upward trend.

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.

Seven Lakes

Forest Service employees and volunteers began restoration work within the Seven Lakes area during the summer of 1992. Additional work has continued during succeeding years to bring the area nearer to the desired future condition identified for opportunity class three. The area will continue to be monitored to measure results and identify trends. Future management of the area will be based on effectiveness of restoration and use trends.

The original campsite designation at 7 Lakes was reviewed in 2004 with Dave Spildie from the Aldo Leopold Wilderness Research Institute (ALWRI). Dave concluded that the Seven Lakes Restoration plan provided a unique opportunity to research the effectiveness of a confinement strategy to reduce pack stock impacts. The Forest order remains in effect until it is revoked or rescinded.

Big Sand Lake

Over the past few years field data has shown this area having too many sites per square mile with high and moderate ratings for Opportunity Class III. The area has three sites consisting of two moderates and one high impact level. There are two heavy sites at each end of the lake and one moderate on the North shore. On the East shore near the inlet of Big Sand Creek a camp approximately 10,000 square feet had severe horse impacts to trees and the surrounding riparian area. Whisky bottles, beer cans and toilet paper littered the site. The area was also over grazed and various areas needed rehabilitation.

Cedar and Moose Junction

This area consists of two sites, one high and one low. Opportunity Class III does not allow a high and low use site within the same square mile. In 1994, these sites were classified as light and extreme respectively; in 1998 they rated as heavy and light respectively; in 2000 they rated as heavy and light respectively. In 2002 there was 1 heavy site only. The low site was gone.

Junction Trail 211/644

Over the past few years field data has shown there were two heavy sites in this area, and the area was out of standard.

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

Fish Lake

2000 field data indicates five heavy sites and one moderate site not including the administrative site. 2002 field data shows four heavy sites, two moderates and one light. This is a net gain of one site, but a reduction in one heavy site to moderate.

Volunteers obtained airstrip use data for 2002, 2003 and 2004. Volunteers will be used in 2005 to obtain airstrip use data.

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/or patrol at the hot springs most years since 1993 discussing low impact camping practices to visitors and general site clean up.

Wilderness Encounters Data From Wilderness Rangers 2006

The following table summarizes the number of groups and individuals that wilderness rangers encountered during the 2006 field season (data was not available for 2005 season).

	Total Number of	
	Groups	People
Day Hikers	26	68
Backpackers	29	140
Equestrian	24	75
Outfitters	13	40
Contractors	1	8
Admin	4	7
Pilots/other	5	37
Total	**102**	**375**

CONSERVATION EDUCATION

Education programs are one tool that the Forests use to foster appreciation for the Selway-Bitterroot Wilderness, 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 visitors' impacts and address problems such as littering, damage to trees, overgrazing, poor sanitation practices and other actions that damage the wilderness resource.

In 2005, 18 formal education programs were conducted, reaching 928 individuals including FS employees, children and forest visitors.

In 2006, 26 formal education programs were conducted, reaching 760 individuals including FS employees, children and forest visitors.

SBW VOLUNTEERS 2004

Volunteers contribute a substantial amount of time, energy and talent to the Selway Bitterroot Wilderness Program and accomplish a variety of work for all three Forests. The table provides a synopsis of the volunteer efforts in the SBW on the Clearwater Forest during 2006 (2005 data was not tabulated).

Clearwater NF - 2006	
# Volunteers	**19**
# Volunteer Hours	**1,485**

ADMINISTRATIVE SITES

Administration of the SBW for the purposes for which it was established, entails 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 2005-2006.

1. Horse Camp: (W) Used through out the summer for wilderness rangers and trail crew.
2. Fish Lake: (W) Used throughout the summer for wilderness rangers, trail crew and volunteers.
3. Diablo Lookout: (W) Intact structure, not usually staffed.
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 in '05 and '06.
8. Beaver Ridge Lookout: (A) Staffed in '05 and '06.
9. Lochsa Historic Ranger Station: (A) Staffed by volunteers in the summer.
10. Elk Summit Guard Station: (A) Staffed by a volunteer for the summer. Trail crew use.
11. Colt Creek Cabin: (A) Not staffed, cabin burned to the ground in '06.

RESEARCH

The Wilderness Act specifically refers to the value of wilderness to science. Because wilderness areas encompass an array of habitat types and provide homes for a wide range of organisms in a relatively undisturbed setting, these areas offer rich opportunities for research. In the SBW, research needs are prioritized annually. Projects must be approved by the Forest Supervisor and must be conducted so as to preserve the natural conditions of the wilderness with the imprint of human work substantially unnoticed. Research must be carried out in a manner consistent with opportunity class requirements and avoid impacting users' pursuits of isolation in opportunity classes 1, 2 and 3.

The following research is currently underway in the SBW:

- 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: 1999-2006. Monitoring provides year-round temperature data on creeks within the SBW 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 went through 2005. Big Sand Creek had data collected in 1998, 1999, 2003 and 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 Fish and 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.
- Idaho Fish and Game also tagged Bull Trout the summer of 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 Dani Schiff at IDFG in Lewiston as the primary contact at 208-799-5010.

LAW ENFORCEMENT

Reports in the wilderness area		
Number of law enforcement personnel (wilderness rangers and law enforcement officer)	3	4
Number of incident reports written	39	17
Number of warningviolation notices written	0	0

AIRSTRIP MONITORING

The SBW contains 3 existing public airstrips: Fish Lake, Moose Creek and Shearer.

Fish Lake Airstrip Monitoring data recorded by station guards	2002	2003	2004	2005	2006
# days monitored	52	31	26	49	72
# landings recorded	81	42	44	51	144
# days monitored w/ no landings	15	10	6	22	16
% landings where visitors stayed ≤ 1 hour	62%	38%	64%	39%	41%
% landings where visitors stayed between 1-5 hours	12%	5%	20%	10%	12.5%
% landings where visitors stayed >5 hours	26%	57%	16%	51%	46.5%

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.

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 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.

Note: Base-line use has not yet been determined for this airstrip.

AUTHORIZATION FOR MOTORIZED/MECHANICAL USES

Two motorized/mechanical uses were authorized in 2006.

NOXIOUS WEEDS OCCURRENCE/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. 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 Hwy 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. All Clearwater employees are encouraged to record/report weed sightings when working in the Wilderness.

In 2006, scoping was initiated for an EIS to analyze weed occurrence and potential treatment alternatives in the Selway Bitterroot Wilderness. This decision is expected in 2008.

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 priority use permits, as well as occasional temporary use permits with the number depending on the season. Some temporary permitees return every year, others every few years, and others never return.

WILDERNESS TRAIL MAINTENANCE

2006 Wilderness Trail Maintenance by Forest and Opportunity Class

Opportunity Class	**1**			**2**			**3**			**4**			**Total Miles/Forest**
Maintenance Level	**I**	**II**	**III**	**I**	**II**	**III**	**I**	**II**	**III**	**I**	**II**	**III**	
Miles Maintained (Clearwater NF)	0	0	0	16.3	0	0	174.9	10.5	3	21	7	0	232.7
Total Miles			**9.1***			**31.6**			**261.2**			**23.4**	**325.3**

NOTE: Discrepancies in total miles recorded may vary slightly from year to year as a result of updated measurements from trail condition surveys.

For 2006, trails occurring along the outer SBW boundary of the Clearwater NF and adjacent to Opportunity Class 1 (OC1) compartments have been recorded as miles of trail in OC1. These miles may or may not fall officially within the OC1 compartment.

Wilderness Trails Maintained in 2004

Boulder #211 @ 22.1 miles, Warm Springs #49 @ 9 miles, Surprise Creek #219 @ 7.0 miles, Eagle Mountain #206 @ 30 miles, Big Sand #4 @ 12.0 miles, Colt Killed Creek #50 @ 11 miles, Long Lake #205 @ 7.5 miles, Split Creek #133 @ 6.8 miles, Indian Meadows #208 @ 2.7 miles, Lochsa Peak #220 @ 10.5, Greenside Butte #222 @ 5 miles, Gold Hill # 247 @ 7 miles, Rock Creek # 2210 @ 5.0 miles, Big Sand Creek #1 @ 6.1 miles, Pouliot # 30 @ 4.5 miles, Friday Pass #45 @ 3.0 miles, Siah Lake # 59 @ 9.1 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 @ 6.1 miles, Maple Lake # 939 @ 7.6 miles, Cliff Creek #226 @ 4.5 miles, McConnell Mtn. #213 @ 6 miles, Pedro Ridge #917 @ 4.5 miles, Sponge Creek #209 @ 3 miles, Spruce Lake Creek #63 @ 4 miles, Garnet #43 @ 3.7 miles, and White Sand Lake #51 @ 2.2 miles.

Note: Includes 4 miles in Opportunity Class 1 (Spruce Lake Creek #63).

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 planting. Use road closures, decommissioning, and modification of timber sale design, layout, and scheduling to maintain or enhance wildlife habitat.

Review, coordinate, and consult with the US Fish & Wildlife Service on projects that involve adverse 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. The primary cause for the declines of old growth was intensive timber harvesting and the exclusion of large-scale fire over the past 70 years to maintain early seral stands.

On a Forest-wide scale, old growth habitat for the Clearwater National Forest is analyzed using Forest Inventory and Analysis (FIA) data. A complete description of these data and the methodology used is available in the following reports: *Detailed Estimates of Old Growth, Clearwater National Forest* by Renate Bush et al. (November 29, 2006) This document and additional information on old growth habitat management is available on the internet at http://fia.fs.fed.us or http://www.fs.fed.us/r1/clearwater/terra_org/terra.htm.

Percent Old Growth in the Clearwater National Forest

Table 1 provides a summary of the estimates of percent old growth on forest lands for the Clearwater National Forest according to Green (Northern Region) and others in their 2005 definition of old growth.

Clearwater National Forest estimates of percent old growth, standard error, and 90 percent confidence intervals

Forest	Estimated Percent Old Growth	90% Confidence Interval - Lower Bound	90% Confidence Interval - Upper Bound	Total Number PSUs	Number Forested PSUs
Clearwater	9.4%	7.3%	11.8%	305	300

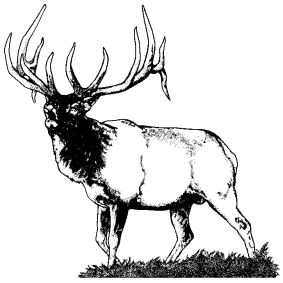
During project analysis individual stands within the project area are field checked and evaluated as to whether or not they meet the criteria from Appendix H of the Forest Plan and the Old Growth Forest Types for the Northern Region by Green et al.

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 FY05 through FY06 approximately 10,000 acres of big game habitat was improved with prescribed fire. An additional 2,300 acres of secondary fuels treatments (thinning, harvest, etc) were completed and assisted in restoring fire-adapted systems and aided in rejuvenating forage for big game species. Natural fire benefits contributed an additional 15,000 acres of restored habitat. Additional accomplishment information can be found in the ***Fire*** and ***Timber*** sections.

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

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

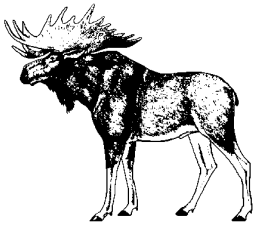
MANAGEMENT INDICATOR SPECIES

Forest Service regulations provided that "Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area" . The Forest Service's focus for meeting the requirement of NFMA and its implementing regulations for MIS is on assessing and monitoring habitat to provide for diversity of species. The following species were selected in the Forest Plan as management indicator species: elk, moose, white-tailed deer, pileated woodpecker, goshawk, pine marten, and all Threatened and Endangered species.

Elk: Elk summer habitat is evaluated using the latest Interagency Guidelines for Managing Elk Habitat in North Central Idaho. Population data are from the Idaho Department of Fish and Game (IDF&G) big game

surveys. Elk summer habitat conditions continue to improve. Road closure and obliteration projects along with prescribed burns and wildfires continues to improve, restore, and enhance areas of habitat across the forest. The elk population on the Clearwater National Forest is estimated at 7,200. Sufficient habitat exists to increase elk populations. Winter conditions during FY05-06 were generally mild. The elk population trend remains stable.

Moose: There are no specific habitat management guidelines for moose habitat. Implementing elk habitat guidelines should have a positive effect on maintaining moose habitats. The Powell Ranger District continues to support habitat for approximately 75% of the moose population on the Forest. Population data are from the Idaho Department of Fish and Game (IDF&G) big game surveys. Moose habitat conditions continue to improve. Road obliteration projects along with prescribed burns and wildfires continues to improve and enhance areas of habitat across the forest. The moose population on the Clearwater National Forest is estimated at 1,500. Sufficient habitat exists to increase populations. Winter conditions during FY05-06 were generally mild. The population trend appears stable to increasing.



Deer: There are no specific habitat management guidelines for deer habitat. Implementing elk habitat guidelines should have a positive effect on maintaining deer habitats. Population data are from the Idaho Department of Fish and Game (IDF&G) big game surveys. Deer habitat conditions continue to improve. Road obliteration projects along with prescribed burns and wildfires continues to improve and enhance areas of habitat across the forest. The deer population on the Clearwater National Forest is estimated at 6,000. Sufficient habitat exists to increase populations. Winter conditions during FY05-06 were generally mild. 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.

Pileated Woodpecker: A recent habitat assessment for the pileated woodpecker indicates adequate habitat exists and is well distributed on the Forest and across the Northern Region. Based on this assessment, the Clearwater National Forest is estimated to have approximately 337,000 acres of suitable nesting habitat to support pileated woodpeckers. This habitat is well-distributed across the forest at lower to mid elevations. Partners in Flight Landbird Conservation Plan estimates the population for pileated woodpeckers across their range to be at 930,000 with an accuracy/precision rating of 4A. Idaho Fish and Game estimates the population of pileated woodpeckers on the forest to be in the mid to upper range of 1000-10,000 individuals.

At the Regional scale, habitat modeling estimated that there is enough suitable nesting habitat to support about 2,362 pairs of pileated woodpeckers, and enough winter foraging habitat to sustain about 19,430 pairs of birds (Samson, 2006). Median dispersal distance for pileated woodpeckers is estimated to be about 150 miles, which indicates that pileated woodpeckers across the entire Region belong to a single, well connected population. The Forests neighboring the Clearwater to the south and east show pileated woodpecker habitat in excess of the quantity modeled to maintain a minimum viable population on their Forests alone (Lolo -165%, Clearwater -346% and Nez Perce -459%). The large amount of apparently suitable habitat well distributed across the Region combined with the interconnectedness of the population indicates that short-term viability of pileated woodpeckers across the Region is not an issue (Samson, 2006).

These findings are also consistent with the broader view offered by the Natural Heritage and Partners in Flight Programs. The international network of Natural Heritage Programs employs a standardized ranking system to denote global (G range-wide) and state (S) status. Species are assigned numeric ranks ranging from 1 (critically imperiled) to 5 (demonstrably secure), reflecting the relative degree to which they are "at-risk." The pileated woodpecker is listed as G5 and S4 in Idaho. G5 indicates that throughout its range, it is considered common, widespread, and abundant, although it may be rare in parts of its range. It is not vulnerable in most of its range. S4 indicates that in Idaho, it is apparently secure. It is not identified by PIF or Idaho Comprehensive Wildlife Conservation Strategy (CWCS) as a priority species in need of conservation measures at this time.

Goshawk: Recent habitat assessments for the Northern goshawk indicate adequate habitat exists and is well distributed on the Forest and across the Northern Region. Based on habitat and goshawk detection estimates, breeding goshawks and their habitat appear abundant and well distributed across R1 (Kowalski 2006, Samson 2006a). Based on these assessments, the Clearwater National Forest is estimated to have approximately 600,000 acres of suitable nesting habitat (Samson, 2006). Partners in Flight Landbird Conservation Plan estimates the population for goshawks across their range to be at 490,000 with an accuracy/precision rating of 3A. Idaho Fish and Game estimates the population of goshawks on the forest to be in the low to mid range of 100-1000 individuals.

Using the best available information during a species status review, the U.S. Fish and Wildlife Service concluded that:

- There was no evidence of a declining population trend for goshawks in the western United States (west of the 100th meridian).
- There is no evidence that goshawk habitat is limiting the population, or that significant curtailment of the species' habitat or range is occurring.
- The goshawk continues to be well-distributed throughout its historical range.
- There are no significant areas of extirpation.
- While the goshawk uses stands of mature and older forests it is not dependent on old-growth, and uses a variety of forest habitats in meeting its life history requirements.
- Listing as endangered or threatened is not warranted.

According to NatureServe (accessed 12/19/2006) the northern goshawk has a conservation status rank of G5. This indicates the species is globally secure – common, widespread and abundant. The state conservation status rank is S4 indicating that in Idaho, the goshawk is apparently secure. It is not identified by PIF or Idaho Comprehensive Wildlife Conservation Strategy (CWCS) as a priority species in need of conservation measures at this time.

Pine Marten: A recent habitat assessment for the American marten indicates adequate habitat exists and is well distributed on the Forest and across the Northern Region. Based on this assessment, the Clearwater National Forest is estimated to have approximately 800,000 acres of suitable habitat to support the American marten (Samson, 2006). This habitat is well-distributed across the Clearwater NF at higher elevations. Idaho Fish and Game estimates the population of American marten on the forest to be in the low to mid range of 1000-10,000 individuals.

These findings are also consistent with the broader view offered by the Natural Heritage Program. The international network of Natural Heritage Programs employs a standardized ranking system to denote global (G range-wide) and state (S) status. Species are assigned numeric ranks ranging from 1 (critically imperiled) to 5 (demonstrably secure), reflecting the relative degree to which they are "at-risk." The marten is listed as G5 and S5 in Idaho. G5 indicates that throughout its range, it is considered common, widespread, and abundant, although it may be rare in parts of its range. It is not vulnerable in most of its range. S5 indicates that in Idaho, it is secure. Approximately 25 marten are legally trapped on the Clearwater each year.

References:

- Samson, F. B. 2005 (amended March 6, 2006). Conservation assessment of the northern goshawk, blacked-backed woodpecker, flammulated owl, and pileated woodpecker in the Northern Region, USDA Forest Service., Northern Region, Missoula, Montana, USA.
- Sauder, J. Personal Communication, June 29, 2007.
- Hennekey, R. Personal Communication, July 18, 2007.

Gray Wolf (Experimental/non-essential): Wolves have been reintroduced into North Central Idaho in 1995. Recent data indicates the wolf population in Idaho is growing with an estimated population of 673 statewide. At least 72 known packs or potential pairs, 185 pups, and areas of suspected wolf activity have been investigated, resulting in the documentation of 41 or more breeding pairs of the Central Idaho Experimental Population Area. In the Clearwater Region there are 21 documented packs. The process for delisting the wolf is currently ongoing. Additional information can be found at: http://www.r6.fws.gov/wolf.

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. The bald eagle 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 and completed in FY 06. The study is a cooperative project involving various state and federal agencies. Published results from the study are available from the Intermountain Research Lab in Missoula.

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 3 appeals on two projects during FY05 and 6 appeals on four projects in FY06. Information on each appeal and the outcome of the appeal is shown in the following table.

Project Name FY05	Appellant	Status	Major Appeal Issues
Wind Lakes Trail	Back Country Horsemen	Decision Withdrawn	Effect on Stock Users
Wind Lakes Trail	Friends of the Clearwater et al	Decision Withdrawn	Wilderness Management
Lolo Creek Developed Recreation Project	Friends of the Clearwater et al	Appeal Withdrawn	Heritage Resources

Project Name FY06	Appellant	Status	Major Appeal Issues
Upper Palouse ATV Project	NW Access Alliance	Decision Affirmed	Range of Alternatives Transportation Analysis
Upper Palouse ATV Project	Idaho Dept. Parks & Recreation	Decision Affirmed	Range of Alternatives Transportation Analysis
Upper Palouse ATV Project	Friends of the Clearwater et al	Appeal Dismissed	
Wind Lakes Trail	Friends of the Clearwater et al	Decision Affirmed	Wilderness Management
Cherry Dinner	Friends of the Clearwater et al	Decision Withdrawn	Water Quality, Range of Alternatives, TES/MIS Species, Old Growth Cumulative Effects
Trap Salvage	Friends of the Clearwater et al	Decision Affirmed	Roadless, MIS

LITIGATION

The Forest was involved in two ongoing lawsuits during FY05-06. Information on each lawsuit and the current status is shown in the following table.

Topic of Lawsuit, Plaintiffs and Defendants	Status	Major Issues
North Lochsa Face Ecosystem Restoration Project Nez Perce Tribe v. National Oceanic and Atmospheric Administration, US Fish and Wildlife Service, Forest Service, et al.	Complaint dated January 16, 2004, filed with the Court. The Court issued a decision on motion for summary judgment on September 21, 2005. In May, 2006, the Nez Perce Tribe and USFS agreed to participate in court-mediated settlement discussion. Those discussions continued through the end of FY06.	Violation of the Endangered Species Act by concluding the project is not likely to jeopardize Snake River steelhead and bull trout. Violation of the National Environmental Policy Act by failing to analyze an adequate range of alternatives, not being responsive to comments and not adequately analyzing the effects of the project.
Brick Trout and White/White Timber Sales The Ecology Center and Friends of the Clearwater v. Kimbell, et al.	Complaint dated April 22, 2004, filed with the Court. Motion for Preliminary Injunction granted on April 28, 2005. Parties filed a joint motion to dismiss the case, pending withdrawal of both decisions by the USFS, on September 16, 2005. Case was dismissed on September 19, 2005 and both decisions were subsequently withdrawn in October 2005.	Violation of the National Environmental Policy Act by failing to analyze the effects of both projects in one environmental impact statement. Violation of the National Forest Management Act by failing to conduct population trend monitoring, violating the Forest Plan and relying on planning documents that have not been adequately prepared.

SECTION 4 – IMPLEMENTED CHANGES

ECOSYSTEM MANAGEMENT

The Forest continued with the implementation of Ecosystem Management concepts and principles when designing projects.

The Forest continues to make progress in completing Ecosystem Analysis at the Watershed Scale (EAWS). The Elk Creek/Long Meadows Creek EAWS was completed in FY 2006 (December 2005).

FOREST PLAN REVISION

Revision of the Forest Plan continues in FY 05 and FY06. The Clearwater/Nez Perce National Forest zone revision team is headquartered in Kamiah, Idaho. Work completed by the team in FY 05 and 06 included completing the analysis of public comments on the proposed action, analysis of alternatives, and preparation of a draft Forest Plan. The draft Forest Plan was reviewed by staff in both Northern Region office in Missoula, Montana and the Washington Office in preparation for public release of the draft Forest Plan late in 2006 or early 2007.

FOREST PLAN AMENDMENTS

No Forest Plan amendments were implemented during FY05 or FY06.

SECTION 5- PLANNED ACTIONS

INTRODUCTION

This section identifies actions slated for 2007 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 FY07

(1) Ecosystem Management Documents: Clearwater National Forest Ecosystem Management Documents - There are no EAWS scheduled to be completed in 2007. Forest resource specialists are assisting in development of an Environmental Management System (EMS) for the Northern Region. Several Forests in Region One were successfully audited in FY06 and the Clearwater is scheduled to be audited late in FY07.

(2) Steps in the Revision of the Forest Plan for the Clearwater National Forest: Steps in Revision of the Forest Plan: The Draft Revised Forest Plan is scheduled to be released for public review and comment in late 2006 or early 2007.

(3) Amendments That May be Proposed to the Current Forest Plan: Throughout 2005, few project-specific amendments are expected as analysis continues or is initiated on projects. Most needed changes identified will be forwarded to the Forest Plan Revision team to be accomplished with that effort.

(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 2007.
Fisheries	♦ Monitoring in the Lochsa River watershed area is scheduled to continue in 2005. ♦ Habitat monitoring in the Orofino Creek drainage was rescheduled for 2005. ♦ Population monitoring is planned to continue in the lower Lochsa River area during 2005. ♦ Culvert replacement in Waw'aalamnime Creek scheduled for 2006.
Lands	♦ The agreement to initiate the Boise Foothills/Northern Idaho Land Exchange was executed by all parties in April 2005. Special legislation is needed to give the agency the necessary authority to process and consummate the exchange as currently proposed. In March 2006, S.1131, titled the "Idaho Land Enhancement Act," passed the Senate Energy/Resources committee. ♦ Acquisition of sections of Lewis and Clark Trail easements across private lands began in 2006 to acquire nearly 40,000 acres of checkerboard ownership currently owned by TWJ Holdings, L.L.C., and formerly owned and managed by Plum Creek Timberlands, L.P.
Recreation	♦ Snowmobile activity in the Selway-Bitterroot Wilderness area and Great Burn proposed wilderness area will be monitored from the air in FY05.
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 2004, 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 FY05.
Wildlife	♦ Begin implementation of various Middle Black projects in 2005.

SECTION 6 – LIST OF CONTRIBUTORS & CONSULTANTS

Name	Telephone	Resource Area
Heather Berg	926-4274	Scenic Easement Coordinator
Vern Bretz	476-8322	Minerals
Anne Connor	476-8235	Road Decommissioning Coordinator
Don Curnutt	476-8238	Technical Services Program Manager
Dan Davis	476-8353	Wildlife Biologist, Range Specialist
Doug Gober	476-8223	District Ranger, North Fork Ranger District
Carol Hennessey	926-4274	Recreation Program Coordinator
Bruce Ellis	476-4350	Archaeologist
Roberta Morin	476-8354	Realty Specialist
Diana Jones	476-8239	Landscape Architect
Robert Sanchez	476-8316	Hydrologist
Mark Klinke	476-8300	Forest Culturist
? Cindy Lane	926-4274	District Ranger, Lochsa Ranger District
Ed Lozar	476-8286	Planning, GIS
Jim Mital	476-8348	Forest Ecologist
? Paul Moroz	476-8338	Ecosystem Management Program Manager
Pat Murphy	476-8213	Fisheries Biologist
Kimberly Nelson	476-8200	Public Affairs Officer
Chad Benson	942-3113	District Ranger, Powell Ranger District
Jennefer Parker	476-8359	Report Manager, Planning
Tom Reilly	476-8272	Forest Supervisor
Kathy Thompson	476-8367	Writer/ Editor
Kara Chadwick	875-1131	District Ranger, Palouse Ranger District
Katie Knotek	942-0302	Wilderness Ranger
Jen Hensiek	875-1734	Range
Pat Cooley	476-8291	Timber Management
Bill Wilkinson	476-8276	Fire/Fuels Coordinator
Bev Yelczyn	476-8264	Silviculturist

SECTION 7 – FOREST SUPERVISOR APPROVAL

APPROVAL

I have reviewed this annual Forest Plan Monitoring and Evaluation Report for FY05-06. 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.

/s/ Thomas K. Reilly *09/28/07*

THOMAS K. REILLY Date