

ELEVENTH ANNUAL

MONITORING AND EVALUATION REPORT

Gifford Pinchot National Forest
Fiscal Year 2001



May 10, 2002

Dear Forest User,

This is our eleventh consecutive annual Forest Monitoring Report. The primary purpose of this report is to share our success in implementing the goals and objectives of our 1990 Forest Plan as amended by the 1994 Northwest Forest Plan.

Results-at-a-Glance, beginning on page 2 of this report, provides a brief summary of the 30 items monitored in FY 2001. The full reports follow, beginning on page 5.

Beginning on page 69 is a report of the sixth year of an interagency effort to involve the public through our Province Advisory Committee in monitoring our implementation of the standards and guidelines of the Northwest Forest Plan.

If you are reading the printed version of this report, it might interest you to know that reports dating back to 1995 are posted on our Internet site at <http://www.fs.fed.us/gpnf/mgtdir/index.html>.

If you have ideas on activities or conditions you believe we should be monitoring, or you would like to participate in monitoring activities, please contact John Roland, Forest Monitoring Coordinator, at (360) 891-5099 or jroland@fs.fed.us.

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2001 Monitoring and Evaluation Report

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Monitoring and Evaluation Report

Gifford Pinchot National Forest

Fiscal Year 2001

A. Introduction

This document reports Forest activities and accomplishments of Fiscal Year and compares them to the Amended Forest Plan direction, and projected outputs and effects. Monitoring and evaluation are important elements in the implementation of the Forest Plan. They are key to making the Plan a dynamic and responsive tool for managing a complex set of natural resources and values in a climate of social and economic change. This document reflects the tenth year of implementing the Gifford Pinchot National Forest Plan which was approved on June 1, 1990.

The Plan was amended by the Northwest Forest Plan Record of Decision to incorporate new standards and guidelines to ensure protection of late-successional and aquatic ecosystems in April 1994.

Monitoring and Evaluation

There are three types of monitoring:

- **Implementation Monitoring:** determines if goals, objectives, standards and guidelines are implemented as described in the Plan. The question being asked is, "Did we do what we said we would?"
- **Effectiveness Monitoring:** determines if management practices as designed and implemented are effective in meeting the Plan goals and desired future conditions. The concern here is, "Did the management practice accomplish what we intended?"
- **Validation Monitoring:** determines if data, assumptions, and coefficients are accurate. Here, the important question is, "Is there a better way to meet the Plan goals and objectives?"

Our monitoring effort emphasizes implementation monitoring, although several items contain elements of both implementation and effectiveness monitoring.

Evaluation is the analysis and interpretation of monitoring results. Essentially, the question being asked in evaluation is, "Are changes needed?" These changes may involve amending or revising the Plan or changing the way activities are implemented.

The following outline briefly describes each section of this report:

- A. Introduction - This brief overview of what monitoring is about.
- B. Monitoring Results - At a Glance - summarizes monitoring results described in detail in Section C.
- C. Monitoring Item Results displays the individual results, evaluations and recommended follow-up actions for all items monitored in .
- D. Accomplishments show trends in program accomplishments over FYs 1997-2001 and compares accomplishments to our assigned targets (page 65).
- E. Expenditures - Compares expenditures over the last 10 years and the composition of FY 2001 expenditures (page 67).
- F. Forest Plan Amendments - Lists all Forest Plan amendments, and briefly describes the content of each, and when it was approved (page 68).
- G. Northwest Forest Plan Monitoring - Included is the report from our sixth year of implementation monitoring conducted on the Gifford Pinchot as part of an owl region-wide monitoring program (page 69).

Glossary of Terms - Definitions of the technical terms used in this document (page 74).

B. Monitoring Results - At A Glance

The following table briefly summarizes monitoring results by resource area. Detailed information for each monitoring item can be found on the page referenced in Section C, beginning on page 5.

Monitoring items preceded with an asterisk in the table below are all or part effectiveness monitoring, others are primarily implementation monitoring. Refer to the Glossary for meanings of technical terms used in this report.

Monitoring Results - At A Glance	
RECREATION	☺ * Wild/Scenic Rivers (page 5) - Activities in compliance, character of potential Wild and Scenic River corridors was preserved.
	☺ * Semi-Primitive Recreation (page 6) – The single project implemented in the semi-primitive ROS class met standards.
	☺ * Scenic Quality (page 6) – The single project implemented in a scenic viewsheds met standards and guidelines. Viewsheds monitored showed no change from 1990 conditions.
	☹ * Wilderness Use and Condition (page 7) – Wilderness use is up only slightly from 2000 levels. In heavily used areas, resource conditions continue to be degraded.
	☺ * Trail Condition , (page 8) – The four trails monitored met management level standards. More money is needed for trail reconstruction.
	☹ * Recreation Use and Facility Condition (page 10) – Developed recreation facilities continue to show need for reconstruction or heavy maintenance. Numerous dispersed camping sites, accessible by vehicle, are continuing to show evidence of overuse.
HERITAGE RESOURCES	☺ * Heritage Resource Protection (page 11) – There were seven heritage resource sites associated with projects implemented in Fiscal Year 2001. Protective measures were effective for all but one site.
WILDLIFE	☺ Raptor Habitat (page 12). A unit was dropped from the La Roux timber sale to protect a goshawk nest.
	☺ Legacy Features (page 13) Retention tree and snag requirements were met on all projects. Plan intent for down wood requirements was met where applicable.
	ⓘ Survey and Manage (page 15) During FY 2001, 45 flora sites, 173 mollusk sites and 1 amphibian site were identified.
GRAZING	☺ * Grazing Practices (page 17) Cattle and sheep grazing practices conform to standards and guidelines.
*All or part effectiveness monitoring.	

- ☺ Standard and guideline met, or no activities to monitor.
- ☹ Mixed results or mitigating circumstances.
- ☹ Need for improvement.
- ⓘ Information item, not a standard and guideline.

Monitoring Results - At A Glance (Continued)

BOTANICAL   	Noxious Weeds (page 18) 1,887 acres were monitored and noxious weeds were treated on 490 acres.
	*Research Natural Areas (page 19) – RNA standards and guidelines were met in Smith Butte proposed RNA, however a noxious weed infestation and disturbance by cattle were observed.
	*Botanical Special Interest Areas – (page 20) Because of vacancies in three of the four botanist positions on the Forest, botanical special interest area monitoring was not completed in 2001.
TIMBER     	Adequate Reforestation (page 20) – Three years after planting, 97 percent of the 1,264 acres monitored were adequately stocked. 545 acres were planted in FY 2001.
	Timber Harvest Methods (page 21) - Harvest activity was approximately 25 percent of the amended Plan projection.
	Regeneration Harvest Units Size (page 22) – Units of the Gnat Timber Sale were monitored and found to meet standards for size, separation, and appearance.
	Volume Sold (page 22) - In 2001 the Forest awarded 2 million board feet. The goal was 55 million board feet.
	Silvicultural Prescriptions (page 23) – Three of four prescriptions fully met objectives, one partially met objectives.
SOIL AND WATER    	Soil Productivity (page 25) – The two harvest units monitored met the standard for protection of soil productivity.
	Best Management Practices (page 26) – Three of the four units monitored had departures from BMPs that apply to timber management.
	Stream Temperature (page 28) – Temperature monitoring was conducted at 99 sites within 12 watersheds on the Forest.
	Water Quality Restoration Plans (page 43) Two water quality restoration plans were completed in 2001.
FISHERIES    	Fish/Riparian S&G Implementation (page 45) Standards and guidelines were met in the five projects monitored.
	*Effectiveness of Riparian S&Gs (page 47) – Riparian standards appear to be effective in meeting objectives for shading, channel stability and sediment transport.
	*PETs Fish Species (page 49) – 116 Wind River steelhead is the highest count since 1994. Lewis River bull trout population was estimated at 542. No bull trout were found in 15 other streams surveyed.
	*In-Channel habitat Improvement Structures (page 58) – All 101 structures monitored were found to meet design objectives.

Monitoring Results - At A Glance (Continued)

<p>ROADS ☺</p>	<p>Road Management (page 58) - The Forest is at 88 percent of the projected goal for road closure. 296 miles of road have been decommissioned since 1994.</p>
<p>COMMUNITIES ⓘ</p>	<p>Community Effects - Payments to Counties (page 62) - The U.S. Treasury returned \$15.8 million dollars to the six counties with lands within the Forest administrative boundary. The Forest administered \$545 thousand in community assistance grants.</p>
<p>MINING ⓘ</p>	<p>Mining Operating Plans (page 64) – The Forest administered 150 Notices of Intent and 3 Plans of Operation in 2001. No cases of noncompliance were identified or reported</p>
<p><i>*All or part effectiveness monitoring.</i></p>	

C. Monitoring Item Results

Wild and Scenic Rivers

Introduction: On the Gifford Pinchot National Forest there are no Congressionally designated Wild, Scenic or Recreational Rivers; however, the Forest Plan recommends the Lewis River, Cispus River, and the Muddy Fork and Clear Fork of the Cowlitz River be designated as Wild and Scenic Rivers. As a result of the 1997 Final Legislative EIS, the Upper White Salmon River is also recommended for Wild and Scenic River designation. In addition, twelve other rivers are recommended for further study.

The values for which these corridors were either recommended or deemed eligible for recommendation are being protected until Congress takes action on the Forest's recommendation or further studies are completed. The Forest monitors activities in each of these corridors to ensure that the outstandingly remarkable river values are being protected consistent with the Wild and Scenic Rivers Act.

Results: All projects within potential Wild and Scenic River corridors were monitored. The results are displayed in Table 1.

Table 1. - Monitoring in Potential Wild and Scenic River Corridors

Corridor	Project	Standards Met
East Fork Lewis River	Riparian habitat restoration - thinning	Yes
East Fork Lewis River	Fish Structures	Yes
Cispus River	Cispus HTR	Yes
Upper White Salmon	Trail Maintenance (Buck Cr. Tr. #54)	Yes

The character of the wild and scenic river corridors was preserved.

Evaluation: All projects completed in recommended Wild and Scenic River corridors, shown in Table 1, comply with the Plan standards and guidelines. The character of the wild and scenic corridors was preserved. No activities have occurred that would adversely affect the outstandingly remarkable values, the free-flowing nature, or classification of any eligible or study river.

Recommended Action to be Taken: No corrective action required -- monitoring to continue.

Semi-Primitive Recreation ²

Introduction: The Forest Plan provides a framework for managing different classes of outdoor recreation settings, activities and opportunities. This framework is a continuum comprised of seven classes: Primitive, Semi-primitive Non-motorized, Semi-primitive Motorized, Roaded Modified, Roaded Natural, Rural and Urban. This monitoring item focuses on maintaining the character of the two semi-primitive classes. The emphasis in these areas is to maintain a predominantly natural or naturally appearing environment. Motorized recreation use is not permitted in the semi-primitive non-motorized category.

Results: In addition to ongoing routine trail maintenance, there was one project planned in an area identified as a semi-primitive recreation area in the Forest Plan. The Jug Lake Trail relocation project EA was signed.

Evaluation: The Jug Lake Trail relocation project is consistent with the ROS class and thus complies with the Plan standards and guidelines. The semi-primitive character of the area will be maintained.

Recommended Action to be Taken: No corrective action required -- monitoring to continue.

Scenic Quality ³

Introduction: The Forest Plan delineated 37 viewshed corridors across the Forest. Lands within view of 21 of these viewshed corridors have management objectives requiring maintaining or improving scenic values. In these viewsheds, management activities are to be compatible with scenic quality objectives.

Results: There was one project within a scenic viewshed corridor: the East Timber Sale KV Mitigation. Activities such as thinning and dispersal of material were designed to mitigate effects to scenic values. The standards and guidelines for scenic quality were met with this project.

Landscape-scale viewshed condition monitoring was conducted in 2001. Viewsheds are normally monitored every 5 years to determine if changes in the condition have occurred. The following viewsheds showed no change either positive or negative from the baseline inventory of condition in 1990. They are roads: 25, 83, 90, 88, and 80. The visual effects of past clearcutting continue to be evident, resulting in a slightly to heavily altered appearance.

Recommended Action to be Taken: No corrective action required -- monitoring to continue.

The project implemented in the semi-primitive ROS class complies with standards and guidelines.

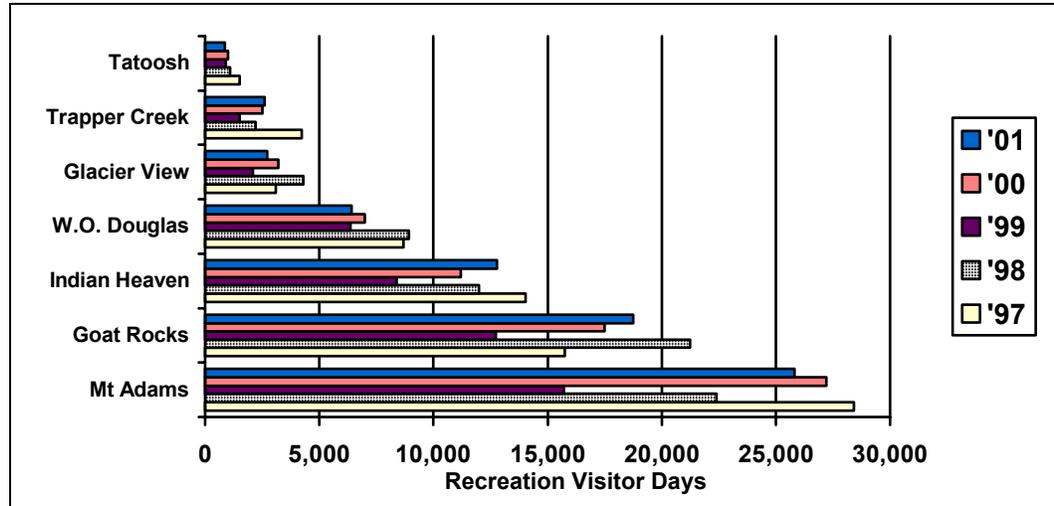
Viewsheds monitored showed no change from 1990 conditions.

Wilderness Use and Condition 4 ☺

The Forest currently includes about 180,000 acres in seven wildernesses.

Introduction: The Forest currently has about 180,000 acres in seven wildernesses. Each wilderness is zoned according to the nature of recreation opportunity. The range of these opportunities is called the Wilderness Recreation Opportunity Spectrum. Each category has a set of standards describing the desired recreation experience. This monitoring determines if standards for the experience in each category have been met. It measures wilderness use and impacts of recreation use on wilderness character.

Figure 1. - Wilderness Use 1997 - 2001



Results:

- A. **Wilderness Use** - Figure 1 and Table 2 compare the 1997 through 2001 wilderness use. Visitor use increased less than one percent for wilderness use across all seven wildernesses between 2000 and 2001.

Wilderness visitor use increased only slightly between 2000 and 2001.

There have been reports of numerous incursions by snowmobiles on the north and south sides of Mt. Adams within the Wilderness. All wilderness is off limits to motorized and mechanized recreation use.

Table 2. - Wilderness Use

Wilderness	Recreation Visitor Days					2000-2001 % Change
	1997	1998	1999	2000	2001	
Mt. Adams	28,410	22,400	19,615	27,200	25,810	-5%
Goat Rocks *	15,750	21,250	12,730	17,500	18,760	7%
Indian Heaven	14,030	12,000	8,968	11,200	12,770	14%
William O. Douglas*	8,700	8,920	6,370	7,000	6,420	-8%
Glacier View	3,100	4,300	2,100	3,200	2,730	-15%
Trapper Creek	4,230	2,200	2,188	2,500	2,600	4%
Tatoosh	1,500	1,100	910	1,000	860	-14%
TOTAL	75,720	72,170	52,881	69,600	69,950	1%

* Gifford Pinchot National Forest portion only.

In Indian Heaven Wilderness, impacts to lakes were reduced from 1998 conditions.

B. Limits of Acceptable Change (LAC). Limits of Acceptable Change is a measure of impacts associated with recreation use such as trampled area, vegetation loss at campsites, and mineral soil exposed. LAC monitoring was completed this year in the Indian Heaven and Trapper Creek Wildernesses.

In Indian Heaven Wilderness, 153 sites were monitored around destination lakes. Impacts for most sites exceeded Forest Plan standards, but showed some improvement over the 1998 condition. Sites around the following lakes exceeded standards and remain problematic: Blue Lake, Thomas Lake, Placid Lake, Deer Lake, Bear Lake, Wapiki Lake, and Wood Lake. At Blue Lake, Thomas Lake, Sahalee Lake, Tyee Lake and Tombstone Lake, campsites were designated for overnight camping. To reduce physical impacts, overnight campers were requested to camp only at designated sites. People continued to camp at some of the obvious sites that were not designated. Compliance should increase next year as this policy becomes established.

In Trapper Creek Wilderness, seven sites were inventoried. Their condition, while not degrading, continues to exceed Forest Plan standards for acceptable change.

Recommended Actions to be Taken: In the wildernesses, resource conditions that are degrading rather than improving are a clear indication of the needs for corrective action. Measures, such as rehabilitation, education, and attempts to confine damages to areas already impacted have worked to some degree to reduce impacts; however, it has become clear that these are not always effective, and that further actions are necessary to protect wilderness resources. In 1999, the Forest, with the input by wilderness users and other interested parties, decided to limit use at approximately current levels and began implementing measures designed to provide resource protection. These efforts should continue. In 2002, the Forest will be looking at the best location to begin implementing limits on use to further reduce impacts. Additional overnight campsites should be designated in sensitive areas prone to impact along with increased education and enforcement.

Monitoring results from the 2001 National Recreation Use Survey will be helpful in managing wilderness use.

Monitoring results from the 2001 National Recreation Use Survey will provide additional information about users and use patterns that will be helpful in managing wilderness use.

In the Mt. Adams Wilderness, corrective actions should include increased winter recreation education and enforcement focused on snowmobile users. The winter recreation plan for the south side of Mt. Adams, should include ways to address the issue of Wilderness incursion.

Trail Inventory and Condition 6

On the Forest there are 1,475 miles of trails, including 305 miles within Wilderness.

Introduction: On the Forest there are 1,475 miles of trails, including 305 miles within Wilderness. These trails are managed to maintain a diverse array of travel opportunities. Difficulty, mode of travel, and distance are factors affecting the mix of travel opportunities. Each Forest trail is assigned a trail management level, with associated standards and guidelines for management of adjacent lands. These management levels offer a range of protection from roading and timber harvest impacts. We also monitor the amount of trail construction, maintenance, use, and management.

Results:

A. Trail Construction and Maintenance --

Table 3 compares the amount of trails constructed or reconstructed in 2001 with the amount projected in the Forest Plan.

Table 3. - Trail Construction and Maintenance

Trail Activity	Miles from Forest Plan	2001 - Miles Accomplished	Percent of Plan Level
Construction or Reconstruction	34 ^{1/}	6.7	20
Maintenance	1490	819	55
^{1/} Trail mileage average based on projects listed in Appendix A of the Forest Plan.			

819 miles of trails were maintained to standard.

Approximately 819 miles (55 percent) of the 1,490 miles of the existing summer and winter use trails in the Forest Trail System were maintained to full Meaningful Measures Standards (see Glossary).

B. Trail Setting - The following table shows trails that were reviewed either in the planning phase (through the review of planning documents) or on the ground.

Table 4. - Trail Setting

Trail Reviewed Name and No.	Planned Mgt. Level	Meets Management Level in Plan
Sand Lake. #60	I	Y
Nannie Ridge #98	I	Y
Lewis River #31	I	Y
Lakes #211	I	Y

All trails monitored met standards.

All trails reviewed meet management  standards.

Trail Use - We responded to public comments concerning use conflicts on several trails across the Forest. Conflicts were reported on Muddy Meadows Tr. #13 and Killen Cr. #113 in the Mount Adams Wilderness from an unauthorized horseback orienteering race. Other horse users at Keenes Horse Camp and hikers also complained. Race organizers were contacted by Forest Service personnel.

Climbers and skiers continued to complain about snowmobiles on the climbing route above timberline on Mount St. Helens. Several public meetings were held and a non-motorized corridor was proposed but no action has been taken at this time.

Only 20% of the planned trail construction was accomplished due to budget limitations.

Evaluation: Twenty percent of the planned target for trail construction/reconstruction was accomplished, down from forty percent last year. The budget for this work is considerably less than needed to reconstruct a deteriorating trail system and create new opportunities. In addition, more intensive survey and manage protocols for sensitive species require additional funding and time for doing the work. Since the miles of trail constructed/reconstructed is a multi-year average, monitoring should continue. Trail mileage maintained increased slightly from last year (**Table 3**). User conflicts were reported on fewer than 10 percent of the system trails and thus do not trigger planning action.

Recommended Action to be Taken: In 2002, revenues from NW Forest Pass user-fees will continue to provide additional funding to maintain trailheads and the trails they serve. The expected result is a increase in the number of trail miles maintained, and improved ability to meet trail operation and maintenance standards. Leveraging funds, such as supporting volunteer trail maintenance efforts, will continue to be a major emphasis of the Forest trail system maintenance strategy.

Mount St. Helens conflicts can be addressed by implementing and enforcing the corridor concept. Improved signing and more frequent patrols will reduce conflicts on other trails. Trail use issues will be addressed in the Forest Plan Revision.

Developed and Dispersed Recreation Use and Facility Condition 7

Introduction: The Forest has about 120 developed recreation sites, not including visitor centers, with a combined capacity of 16,650 persons-at-one-time (PAOT). We have experienced increasing demand for recreation opportunities from the fast growing populations of the Portland metropolitan area and the international notoriety of Mount St. Helens and the Columbia Gorge. Accompanying the growth in demand has been a decline in recreation budgets. The Forest has pursued some innovative measures to close the gap between demand for services and the recreation budget through partnerships, volunteers, user fees and use of campground concessionaires. In 2000, the Northwest Forest Pass was introduced and provided a means to collect additional revenue from trail, interpretive site and rustic campground users at selected sites. The revenues from this user fee will help to meet operation and maintenance standards for these sites.

The Forest has about 120 developed recreation sites, not including visitor centers.

All but two of the Forest fee campgrounds are operated by concessionaires. This also included some day-use sites in 2001. This helps ensure that these sites are managed to standard since sites are operated and maintained according to the concessionaires' operating plans approved by the Forest Service. In non-concessionaire operated fee campgrounds and some rustic campgrounds that are under the Northwest Forest Pass, revenues generated from camping fees goes toward operation and maintenance of these sites. However, camping outside of campgrounds (dispersed camping) continues to be popular and is increasing. There are currently few restrictions on where visitors may camp. Since the preference is to be near water, this is where the majority of use of this type occurs. As a result, fragile riparian areas can be impacted.

The majority of all developed sites are in need of repair or upgrading.

Results: In 2001, Bear Meadow Toilet was constructed and Beaver Campground water system was replaced. However, the majority of all developed sites are still in need of repair or upgrading to meet new standards such as those for handicap accessibility.

Monitoring of recreation use outside of campgrounds indicates numerous dispersed camping sites, accessible by vehicle, are continuing to show evidence of overuse. In addition, we believe the number of such sites may be increasing due to increased demand resulting from the closure of adjacent private timberlands to recreation use and higher fees for Forest campgrounds. Concerns include inadequate sanitation, resource damage, litter, tree removal, illegal trash dumping; user conflicts, and user-defined sites located too close to streams, lakes, and scenic highways.

Numerous dispersed camping sites show evidence of over use.

Corrective measures are being taken. A number of actions were initiated, including blocking vehicle access to sensitive riparian areas, restoring impacted sites and designating approved dispersed campsites.

Evaluation: Developed recreation facilities continue to show the need for

reconstruction or heavy maintenance. Deferring routine maintenance of these facilities has resulted in a devaluation of the capital investment and increased maintenance costs. Condition surveys of developed recreation sites indicate that the majority do not meet accessibility or sanitation standards. Monitoring of dispersed recreation camping sites indicates that many of these sites do not meet standards and are impacting riparian areas.

Recommended Actions to be Taken: The Forest will continue to evaluate the ability to meet existing and future developed recreation needs, while providing facilities that meet operation, maintenance, and accessibility standards. Some revenues from the Northwest Forest Pass program will be focused on capital improvements.

To address dispersed impacts, closure of areas adjacent to some roads to overnight use should be considered. Fish stocking should be reduced or eliminated to reduce use along several lakes and streams. Dispersed recreation management should be addressed in conjunction with other planning efforts such as transportation planning and watershed and habitat restoration.

A toilet replacement project in FY 2002 will replace 27 toilets at recreation sites across the Forest, and will contribute to bringing these sites up to standard.

Heritage ¹¹ 

Introduction: Heritage Resources identified in the project survey and inventory process are evaluated to determine their significance. The level of significance is measured by the criteria of the National Register of Historic Places. Projects are usually designed to protect significant sites through avoidance. In rare cases, effects are mitigated through archaeological data recovery methods, including scientific excavation and analysis. In the case of historic structures, mitigation may take the form of detailed architectural documentation.

Typical heritage site protection strategies involve the maintenance of non-activity buffer zones. Monitoring ensures that prescribed protective measures were properly implemented in the field. Monitoring also provides an opportunity to evaluate the effectiveness of various protective strategies.

Results: There were 7 heritage resource sites associated with projects implemented during Fiscal Year 2001. The projects included the following:

Table 5. - Heritage Resource Sites Monitored

Project	Location
Dry Creek Restoration	Mt. Adams District
Rush Creek Restoration	Mount St. Helens District
Copper Creek Bridge Replacement	Mount St. Helens District
Adams Fork Campground Toilets	Cowlitz Valley District
Berry Patch Turnaround	Cowlitz Valley District

Six of the heritage resource sites identified in these projects were found to be significant. These include three prehistoric archaeological sites, a historic railroad trestle associated with the Wind River Lumber Company Historic District, and two sites with culturally modified trees (peeled cedars). The site of the historic Berry Patch Guard Station was found not to be significant.

Avoidance measures were prescribed for all of the significant sites. In the case of most sites, protective buffers range from 10 to 60 meters. One exception involves the remains

6 of 7 heritage sites reviewed in 22001 were found to be significant.

of a historic railroad trestle associated with the Wind River Lumber Company Historic District. Stream channel restoration activities required the removal of approach fill associated with the trestle pilings. Detailed documentation of the trestle feature was completed as a mitigation measure.



Figure 2. - Remains of a historic railroad trestle. The trestle was used between 1919 and 1924 by the Wind River Lumber Company.

Protective measures were successful at 6 of the 7 sites.

Evaluation: Protective measures were successful in all but one case. Prehistoric archaeological site 45SA227 was damaged by heavy equipment operation associated with the Dry Creek Restoration Project. Soil displacement resulted from tracked machinery crossing a protected area of the site. The incident occurred when contractor's equipment broke down in the stream and could not be removed without access across the site. An archaeologist conducted on-site monitoring during equipment removal.

Recommended Actions: Field monitoring of site 45SA227 indicates that damage to the site was minimal, and no additional site investigation is necessary.

Habitat for Osprey, Swainson's Hawk, Goshawk, Ferruginous Hawk and Great Blue Heron ^{35b} 😊

Introduction: The Forest Plan (page 2-75) provides standards and guidelines aimed at minimizing the disruption of habitat during critical nesting periods. Direction is also provided to minimize disturbance of key winter habitat. Species protected include: Bald Eagle, Peregrine Falcon, Golden Eagle, Osprey, Swainson's Hawk, Goshawk, and Great-Blue Heron.

Results: Two monitored projects had the potential to affect these species. One goshawk nest was originally located in 1998 in the vicinity of Unit 9 of the La Roux Timber Sale, on the Mt. Adams District. This nest site was monitored from 1999 through 2001. In March 2001 the District Ranger approved dropping Unit 9 from the La Roux timber sale. In addition, a great blue heron rookery is located in the Gotchen Planning Area. The Gotchen EIS will address protection measures for this rookery.

Two projects were found to have the potential to affect these species.

Recommended Action to be Taken: No action required; continue monitoring projects for disruption of habitat during critical nesting period.

Legacy Features ⁴⁰ 

Residual green trees and dead wood function as a bridge between past and future forests.

Introduction: Residual green trees and dead wood in harvested areas function as a bridge between past and future forests. Green trees serve several important functions: they are available for snag recruitment, contribute to multistoried canopies, provide shade and suitable habitat for many organisms and serve as refugia and centers of dispersal.

Dead and partially dead trees or snags are important to certain wildlife species. To provide suitable habitat, a snag needs to be at least 17 inches in diameter and 40 feet high. They serve as breeding areas, shelter, and a host to insects which provide food for birds. Species dependent on snags include the pileated woodpecker and several other woodpecker species, red-breasted sapsucker, red-breasted nuthatch, and northern flicker.

Ecological studies are expanding our understanding of the role of down woody material in forest ecosystems. Down logs are important because of their role in mineral cycling, nutrient mobilization, and moisture retention. In addition, down logs provide structure and habitat suitable to many wildlife species.

Results:

A total of five units from four different timber sale projects were monitored for legacy features. The Cowlitz Valley R.D. monitored Unit 5 of the Siler Owens Timber Sale (28 acres), and Unit 7 of the Doe Timber Sale (53 acres); the Mount St Helens Monument monitored Units 6 and 14 of the Skeeter Timber Sale (71 acres total); and the Mount Adams R.D. monitored Unit 17 of the Whip Timber Sale (48 acres).

Retention Trees

Retention tree requirements were met or exceeded.

The Forest Plan prescribes that 15 percent of each harvest unit be retained in standing trees, with 70 percent in patches and 30 percent scattered through the unit. The retention tree requirements were exceeded on Siler Owens Unit 5, and were met on Whip Unit 17 and Skeeter Unit 14. This requirement was not applicable on Unit 7 of the Doe Timber Sale and on Skeeter Unit 6 because they are thinning units.

Down Wood

The Northwest Forest Plan directs that woody debris be protected during logging and that 240 linear feet per acre of decay class I and II logs be left after regeneration harvest.

The intent of the objective was met for down wood.

In Doe unit 7 and Siler Owens Unit 5, down wood will be created with K-V funding and objectives will be met. Down wood objectives will be met on Whip Unit 17. Skeeter Unit 14 contains a high level of down woody material. However, much of it does not meet the definition of Class 1 and 2 because the bark is lacking, it is not 20 inches in diameter, or is not at least 20 feet in length. It was estimated that approximately 30 percent of the ground is covered by wood 3 inches in diameter or larger. Felling green trees was not deemed necessary by the wildlife biologist and it would add additional fuel loading. It is anticipated that some of the reserve trees will blow down over the next few years, add to the downed wood count and help meet the down wood standard and guideline.



Figure 3. Down wood in Skeeter Unit 14.

Snags

Snags will be created from surplus retention trees.

For Doe, Whip, Siler Owens and Skeeter Unit 14 we were unable to meet snag requirements with retained existing snags, however sufficient KV funds will be collected to create snags from surplus retention trees. Forest plan snag retention requirements are not applicable in Skeeter Unit 6, but were an objective specified in the EA for Doe to maximize the value of the stand for spotted owl habitat.

Table 6. - Projects Monitored for Retention Legacy Features

Timber Sale Projects	Standards Met? (Yes or No)		
	Retention Trees	Snag	Down Woods Debris
Doe Thin	N/A	Y ¹	Y ¹
Siler Owens	Y	Y ¹	Y ¹
Whip	Y	Y ¹	Y
Skeeter 6 Thin	NA	NA	Y
Skeeter 14	Y	Y ¹	Y ²

Standards for retention trees and snags were met.

Evaluation Standards for retention trees and snags were met on all projects where applicable. The district biologist believes the hard class III logs on Skeeter Unit 14 are providing the ecological function intended of the Class 1 and 2 logs and that the intent of the standard was met.

Survey and Manage ⁴⁴ 

Surveys are required for about 400 rare and/or isolated plant and animal species.

Introduction: The Northwest Forest Plan (1994) provides for surveys for over 300 rare and /or isolated plant and animal species. These species are grouped in six categories based on relative rarity, ability to reasonably locate occupied sites and level of information know about the species (see **Table 7**). Currently surveys before ground-disturbing activities are required for the following botanical and fungi species: *Bridgeoporus nobilissimus* (fungi) *Schistostega pennata* and *Tetraphis genciulata* (bryophytes); *Hypogymnia duplicata*, *Loabaria linita*, and *Pseudocyphellaria rainierensis* (lichens); *Botrychium montanum*, *Coptis asplenifolia*, *C. trifolia*, *Corydalis aquae-gelidae*, *Cypripedium fasciculatum*, *C. montanum*, *Eucephalus vialis*, *Galium kamtschaticum*, *Platantera orbiculata* var. *orbiculata* (vascular plants). Starting in fiscal year 2003 pre-disturbance surveys for the following lichen species will be required: *Bryoria tortuosa*, *Leptogium burnetiae* var. *hirsutum*, *L. rivale*, *Niebla cephalota*, *Platismatia lacunosa*, *Ramalina thrausta*, and *Teolschistes flavicans*.

Strategic Surveys:

A Regionally coordinated effort was initiated in FY 2000 to sample federal habitat in a statistically valid manner across the range of the Northwest Forest Plan for Survey and Manage species. The Umpqua and Gifford Pinchot National Forests were selected as pilot Forests and data were collected on Continuous Vegetation Survey (CVS) plots. These plots included reserved as well as non-reserved land allocations. The goal of the strategic surveys is to better document

Strategic surveys were completed in 2001.

¹ Snag and down wood requirements will be created with KV funding and objectives will be met.

² The intent of the standard was met when hard class III logs are counted.

and understand the species rarity and determine their distribution and habitat. In FY 2000 26 out of 100 plots were completed. The remaining plots were completed in FY2001 (except for spring fungi surveys) under a Regional contract and this data is currently being analyzed.

Table 7. - Survey Categories

Relative Rarity	Pre-Disturbance Surveys: Practical	Pre-Disturbance Surveys: Not Practical	Status Undetermined
Rare	Category A: 57 species Manage All Known Sites Pre-Disturbance Surveys Strategic Surveys	Category B: 222 species Manage All Known Sites Strategic Surveys	Category E: 22 species Manage All Known Sites Strategic Surveys
Uncommon	Category C: 10 species Manage High-Priority Sites Pre-Disturbance Surveys Strategic Surveys	Category D: 14 species Manage High-Priority Sites Strategic Surveys	Category F: 21 species Strategic Surveys

Results - Flora:

A total of 45 new sites for Survey and Manage flora were documented on the Gifford Pinchot National Forest in FY 2001 during pre-disturbance surveys. Mt. Adams reported 10 new sites; Cowlitz Valley, 31 and Mount St. Helens, 4. See Table 8 for a list of the species found. Numbers of new sites are down dramatically from FY 2000 primarily because the reduction in project planning resulted in less survey activity.

Table 8. - FY 2001 Survey and Manage results for flora ¹				Number of Sites*			
Surveys before ground-disturbing activity required	Species	Category	Life Form	MTA	CV	MSH	Total
N	<i>Buxbaumia viridis</i>	D	Bryophyte		21		21
N	<i>Rhizomnium nudum</i>	B	Bryophyte	5	1	4	10
Y	<i>Schistostega pennata</i>	A	Bryophyte	1			1
Y	<i>Tetraphis geniculata</i>	A	Bryophyte	4			4
N	<i>Hypogymnia oceanica</i>	F	Lichen		5		5
N	<i>Lobaria hallii</i>	A	Lichen		1		1
Y	<i>Pseudocyphellaria rainierensis</i>	A	Lichen		1		1
Y in FY 2003	<i>Ramalina thrausta</i>	A	Lichen		2		2
Total per District				10	31	4	45

¹ Results as of December 31st 2001. Records may change once specimen identification/verification is completed.

Results - Fauna

1 amphibian site and 173 mollusk sites were located.

Surveys for great gray owls, Larch Mountain salamander (*Plethodon larselli*) and Van Dyke's salamander (*Plethodon vandykei*), and for several mollusk species were conducted on the Forest in FY 2001.

Table 9 displays the number of acres of completed surveys for each group, and the number of new sites by species for both complete and incomplete surveys.

Table 9. - FY 2001 Survey and Manage Results for Fauna

	CV acres surveyed	CV new sites	MSH acres surveyed	MSH new sites	MTA acres surveyed	MTA new sites	Total Acres and Sites
Great Gray Owl	0	0	0	0	0	0	0
Amphibians	630		1,341		3,500		5,471
<i>Plethodon larselli</i>		1		0		0	1
<i>Plethodon vandykei</i>		0		0		0	0
Mollusks	60		1,065		6,300		7,425
<i>Cryptomastix devia</i>		28		1		3	32
<i>Hemphillia glandulosa</i>		0		6		12	18
<i>Hemphillia malonei</i>		0		96		26	122
<i>Prophysaon coeruleum</i>		1		0		0	1

In addition to these completed surveys, surveys on other projects were begun but not completed in FY 2001. For example, the Cowlitz Valley District completed at least one amphibian survey visit on an additional 1,982 acres and one mollusk survey visit on an additional 1,566 acres.

Recommended Action To Be Taken:

Continued specialized training for individuals conducting these surveys.



Introduction - Grazing: The grazing of cattle, horses, and sheep are among the historical uses on national forest system lands. Records from 1890 indicate over 100,000 sheep and 1500 cattle grazed on the Forest. On an average year 716 cattle and 1150 sheep are grazed on approximately 200,000 acres of the Gifford Pinchot National Forest.

The allotment management plans for these allotments are current and periodic evaluations of the allotment sites are performed. Cattle allotment management plans are reviewed and reissued every ten years; the sheep allotment management plan is reviewed and reissued every five years. Every year, for each allotment, an annual operating plan is developed by the permittees and the Forest Service. Through our evaluations, we ensure that the Forest Plan standards are met. Forest Plan consistency is ensured through inspections of the sites prior to dispersal of livestock, and monitoring of the livestock to ensure proper utilization of resources, distribution of livestock, and maintenance of ecosystem health. Range improvements such as maintenance of fences, cattle guards, and water lines have been performed cooperatively by the Forest Service and the permittees.

Our monitoring utilizes photo plots of vegetation that aid in determining the condition and trends within certain sites over time. Two photo points were monitored prior to and post-grazing in 2001. When grazing in or near riparian zones we ensure that the objectives for the Aquatic Conservation Strategy are fulfilled, including but not limited to water quality, stability of streams and ponds, riparian vegetation and fish and wildlife habitat. In the past, approved post-grazing levels of vegetation were established by Regional and Forest personnel; our current post-grazing vegetation levels fall within their guidelines.

Grazing could be allowed in some research natural areas (RNA), botanical special areas (BSIA), and administrative sites. However, the Gifford Pinchot NF has chosen not permit grazing in RNAs, BSIA's, and most administrative sites.

Results: There are three active allotments on the Gifford Pinchot National Forest. These allotments are all on transitional rangeland. They are located on portions of the Mt. Adams District and Mount St. Helens District in the areas of Twin Buttes, Mt. Adams and Ice Caves. Livestock use for the 2001 season totaled 1,732 head months for the Forest, which for the third year is approximately 40 percent below the allowed and permitted head months.

Evaluation: During 2001 all grazing allotments were in compliance with the amended Gifford Pinchot Forest Plan standards and guidelines.

Recommended Action To Be Taken: No corrective action required - monitoring and current management practices are to be continued. Continue to emphasize prevention and coordinate monitoring activities with the permittees, US Fish and Wildlife Service, and botany, wildlife, fish, and hydrology specialists to maintain and improve current resource conditions.

All grazing allotments were in compliance with standards and guidelines.

Noxious Weeds ⁴⁵

Introduction

Noxious weeds are a problem because they can be toxic to wildlife, domestic livestock, and humans and they displace desirable plant communities. Toxicity to flora and fauna is the primary concern because they are rarely ingested by people. Ecosystem changes produced by noxious weeds can be dramatic and have highly adverse impacts to plant and animal environments. These types of changes impact all resources.

Results: Approximately, 1,887 acres were field reviewed across the Mt. Adams and Mt. St. Helens districts. Tansy ragwort, scotch broom, and five knapweed species were identified, which were conservatively estimated to represent infestations of 490 acres. The allotment sites are within the Mt. Adams Ranger District, the former Wind River Nursery, and Mount St. Helens Ranger District.

Recommended Action To Be Taken: Continue with the prevention measures, inventory of infestations, and aggressive treatment.

Noxious weeds were monitored on 1,887 acres and treated on 490.

Research Natural Areas (RNA)

The Forest Plan forbids any activity within an RNA that would adversely affect the natural values for which it was established.

Introduction: The Forest Plan forbids any activity within an RNA that would adversely affect the natural values for which the RNA was established. Prohibited activities include livestock grazing; timber and miscellaneous forest products harvest; recreation development and use; road construction; temporary facility installation; unlawful mining or mining of common variety materials; establishment of exotic plant, animal, or insect species; and establishment of non-endemic levels of insects, pathogens, or disease.

The seven areas designated as RNAs through the planning process are listed in the Table 10. These areas provide representative examples of biologically important ecosystems and are managed to conserve their biological diversity. They serve as undisturbed controls for comparison with managed areas and are valuable for studying natural processes. Research Natural Areas are permanently protected federally designated reserves where long-term studies that contribute to our knowledge of the ecosystem is encouraged. The standards and guidelines for Research Natural Areas focus on maintaining their natural state for research and education. RNA standards and guidelines also apply to three proposed RNAs until they are evaluated for RNA designation. Monitoring serves to evaluate whether the natural conditions of the Research Natural Area have been modified, and prescribes corrective actions if necessary.

Table 10. - Research Natural Area Monitoring

Research Natural Area	Last Monitored	Standards & Guidelines Met?
Butter Creek	1991	yes
Goat Marsh	2000	yes
Sisters Rock	1999	yes
Steamboat Mountain	1999	yes
Cedar Flats	2000	yes
Thornton T. Munger	1999	yes
Monte Cristo	2000	yes
Proposed Smith Butte	2001	yes

Results: In FY 2001 one proposed RNA, Smith Butte, was monitored. RNA standards and guidelines are met in the Smith Butte proposed RNA. However, noxious weeds were discovered on the north side of the area and there is evidence of disturbance by cattle occurring near the base of the butte.

Recommended Action To Be Taken: Noxious weed should be pulled to prevent their spread throughout the proposed RNA. Consider fencing to keep cows out of the area.

Botanical Special Interest Areas ^{35d}

Thirty botanical areas have been designated on the Gifford Pinchot.

Introduction: Thirty botanical special interest areas (botanical areas) have been designated on the Gifford Pinchot National Forest. These areas often contain plant species or communities that are significant because of the occurrence of threatened, endangered, or sensitive plant species; are floristically unique; or have noteworthy specimens, such as record-sized tree specimens. They range in size from one to over 2,000 acres, though most are 20 acres or less. Some of these areas are popular destinations and warrant monitoring to ensure that recreational impacts do not compromise the integrity of the sites. Other botanical areas serve as baselines for monitoring trends of sensitive species. Botanical areas are selected for monitoring each year, based on level of risk to resources and vulnerability to change.

Results: Because of vacancies in three of the four botanist positions on the Forest, botanical special interest area monitoring was not completed in 2001.

Recommended Action To Be Taken:

Resume monitoring in 2002.

Adequate Reforestation ⁵⁰

Reforestation is monitored to assure that harvested areas are promptly restocked..

Plantation Acres Surveyed	Adequately Stocked	% Adequate Stocking
1,264	1,231	97%

Standards and guidelines for plantation stocking were met in 2001.

Standards and guidelines regarding plantation stocking surveys (number of trees per acre) were met for 2001 on the each of the three ranger districts. The standards and guidelines for reforestation vary by site, depending on site specific conditions such as elevation, exposure, soil and other factors. The general stocking level can vary from a minimal level of 125 trees per acre to a maximum desirable level of 400 trees per acre. Harvested areas reforested by artificial means are surveyed after the third growing season, and up to the fifth growing season for naturally reforested stands. Artificially or naturally regenerated stands are certified adequately restocked three to five years after final harvest. Adequately restocked means meeting the minimal quantity of trees per acre which were prescribed in the silvicultural prescription.

535 acres were replanted.

Forestwide, 535 acres of recently harvested areas were hand planted in 2001. Within the next 5 years, these areas will be reviewed to assure adequate stocking levels were achieved. Varying site conditions may require additional planting in the future if adequate stocking levels fall below the minimum stocking standard requirements for the species and management objectives planted on the site. In addition to reforestation, ten acres were planted for slope stabilization as part of restoration activities.

Table 11 identifies harvesting methods conducted on the Forest in 2001. Harvest activity was just over 25 percent of the Plan projection, down from 51 percent last year.

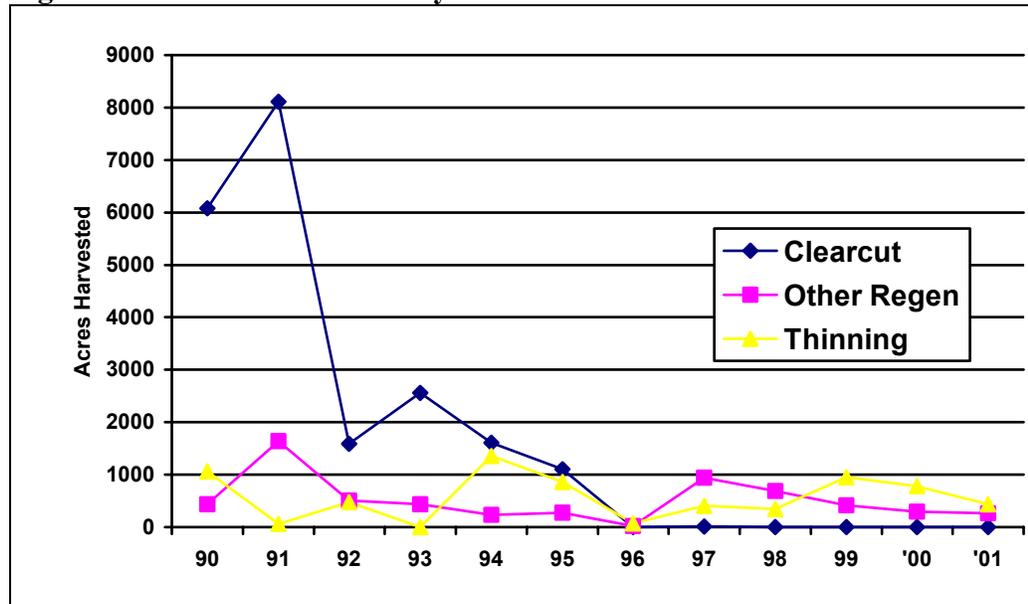
Table 11. - Timber Harvest Methods

Silvicultural Practice	2001 Acres	NW Forest Plan Projection	Percent of Projection
Clearcut Harvest	0	0	-
Regeneration Harvest	262	1,454	18
Commercial Thinning	433	1,264	34
Salvage	0	N/A	-
Totals	695	2,718 acres	25

Past harvest methods are depicted below in Figure 4, which displays the harvest methods used on the forest from 1990 – 2001. This clearly displays the dramatic reduction in clearcut harvest early in the 1990s.

Figure 4 shows that the last clearcuts on the Forest were harvested in 1995. Since 1995, the first year Northwest Forest Plan was in effect, an average of 1,132 acres were harvested per year, which is less than half the Plan projection.

Figure 4. - Historical Harvest by Method



Regeneration Harvest Units Size ⁵² 

The Forest monitors harvest unit size, adjacency and natural appearance. Units monitored are selected from the pool of regeneration units authorized by new decision signed during the year. During 2001, the Gnat Timber Sale was monitored and reviewed for unit size separation and natural appearance. Seven units of the Gnat timber sale were evaluated totaling 127 acres. All were found to meet the standards for size, separation, and natural appearance.

Recommended Action To Be Taken:

No corrective action needed, continue monitoring.

Volume Advertised to be Sold ⁵⁴ 

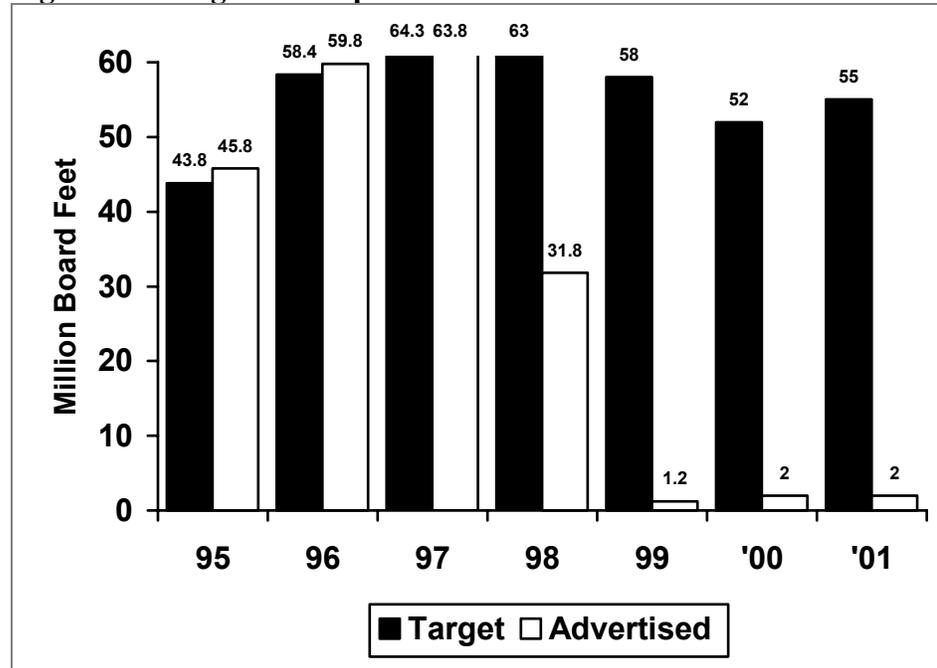
The 2001 sale goal was 55,000 MBF (108,000 CCF) of new sales. The Forest did not accomplish the 2001 sale goal, primarily because of litigation related to Survey and Manage and riparian area protection. The Forest also planned to offer 16,000 MBF or 31,000 CCF in sales prepared in Fiscal Year 2000. Sales prepared in FY 2000 were also withheld.

Actual volume awarded from sales in 2001 was 2,273 MBF or 4,539 CCF of new sales.

Table 12. Volume sold in FY 2001.

Volume Sold MMBF	Volume sold MCCF	Projected Volume MMBF	Projected Volume MMCF	% of Projection	Remaining MMBF Under Contract
2	4	52	99	4%	

Figure 5. - Target Accomplishment



Silvicultural Prescriptions ⁵⁶ 

Introduction: Silvicultural prescriptions are an integral part of the implementation of the Forest Plan. They describe an event or sequence of events that are needed to affect or influence the establishment, composition, or growth of forest vegetation including trees, shrubs, grasses, and forbs. Whenever the desired future condition of the forest depends on the manipulation of forest vegetation a silviculture prescription is prepared that describes the means for achieving the desired conditions. The purpose of this section is to monitor prescriptions to see that they meet the objectives.

Results:

Projects were monitored in Matrix, Late Succession Reserves and Adaptive Management Area allocations.

A precommercial thinning was monitored in the Matrix at the Mount St. Helens District with a stocking and structure objective for retaining 240 trees per acre while achieving species diversity, height and diameter objectives. These objectives were achieved.

In the Cispus Adaptive Management Area, two silviculture treatments were monitored. First, was a modified thinning with an objective of providing gaps by using group selection over 15 percent of the harvest area. The remaining area was thinned using individual tree selection. The objective with this treatment was to retain riparian habitat, canopy closure, and gap spacing where group selection was applied. Legacy features for retention after treatment of down woody and snag retention were also monitored. Monitoring concluded that these objectives were achieved including maintaining the minimal required legacy features.

The second treatment in the AMA was a regeneration treatment retaining at least 15-20 percent canopy cover. Dispersed and aggregate retention trees were monitored along with down wood and snags. These features met the minimal requirements and the aggregates retained exceeded 1.7 acres.

One treatment was monitored within a late-succession reserve. The objective of the treatment was to retain 161 trees per acre while improving future late-successional species habitat. The treatment was performed and 161 trees per acre were retained which provided the desired species, height, and diameter diversity.

Within the Matrix, one regeneration harvest was monitored at the Mount Adams Ranger District with an objective of retaining 50 percent of the canopy structure to meet the EA objective of providing nesting and foraging habitat. While retained canopy cover met the 50 percent objective (implementation monitoring), the wildlife biologist present did not believe the stand would function as nesting habitat (effectiveness monitoring). The retained stand was deficient in layering and retained snags to meet nesting habitat criteria.

All treatments achieved the prescription specifications after harvest (implementation monitoring). We hope to revisit these stands as they develop over time to verify that the prescriptions, in fact, meet the objectives described in the NEPA documents (effectiveness monitoring). This subsequent monitoring may lead to modifications in our methods of prescribing silvicultural practices to better achieve our stand management objectives.

Recommended Action To Be Taken: No corrective action needed, continue monitoring. Forest Silviculturist to revise this monitoring protocol in 2002.

Prescriptions
monitored met
silvicultural
objectives.

Introduction: Maintenance of soil productivity is essential to sustaining ecosystems and is mandated by every act of Congress directing national forest management. Region 6 Forest Service Manual (2550.3-1, R6 Supplemental # 50) and The Gifford Pinchot National Forest Plan require a minimum of 80 percent of an activity area to have unimpaired soil productivity. Since roads average 5 percent of any timber sale unit area, no greater than 15% within the timber sale unit can have impaired soil productivity.

Units sampled are stratified by disturbance type and a subset of each class is evaluated for the degree and extent of soil productivity impairing conditions including compaction, displacement erosion and severe burning. The Whip Timber Sale, Unit 17 and the Skeeter Timber Sale Unit 14 were assessed for compliance with the standard. Also evaluated was the effectiveness of scarification with loader grapples.

Each damage class area was randomly sampled by inserting a tile spade in numerous places to test resistance and observe soil hardness and platiness. The degree of compaction was compared to adjacent, undisturbed soil.

Results: The Skeeter Timber Sale Unit 14 met the standards and guidelines for long-term soil productivity even though the loader was operated off skid trails during piling operations due to the premature obliteration of the half-mile temporary road. The limited passes, soil type and conditions in these off skid trail areas resulted in no compaction.

The two units monitored met the standard for protection of soil productivity.

An estimated 5 percent of Whip Timber Sale Unit 17 has detrimental soil damage, mostly in areas where the loader operated off main skid trails and compacted soil. The scarified skid trails and landing were considered partially compacted since the grapple only partially loosened soil. This harvest unit is within the standard.

Inconsistent interpretation and specification of the treatments “subsoiling”, “ripping” and “scarification” result in ground conditions that differ from aquatic specialists expectations.

Recommendations:

Subsoiling and scarification will be specifically defined in all future environmental analyses and associated contract specifications will be formulated to achieve the treatments. Where necessary, existing environmental analysis language pertaining to these treatments and/or associated contract specifications will be appropriately modified to achieve desired ground conditions. Aquatic specialist recommend the loader grapple method be avoided for subsoiling treatment. .

Avoid the use of loader grapples for sub-soiling .

Best Management Practices (BMPs) ⁶¹ 😊

Introduction: Best Management Practices are the primary mechanism to ensure water quality standards are met during project implementation. Best Management Practices (BMPs) are selected and tailored for site-specific conditions to provide project level protection of water quality. The Clean Water Act and the National Forest Management Act directs us to protect streams, streambanks, shorelines, lakes, wetlands and other bodies of water from detrimental changes in water temperature, blockages of water courses, and deposits of excessive sediment, where activities have the potential to seriously and adversely affect water conditions or fish habitat.

Results: Four timber sale units within three timber sales were monitored for compliance with Best Management Practices (BMPs), Siler Owens Timber Sale Unit 5, Whip Timber Sale Unit 17 and Skeeter Timber Sale Units 6 and 14. The Siler Owens Timber Sale Unit complied with all the BMPs. The Whip Timber Sale Unit 17 did not comply with two of the 23 BMPs and Skeeter Timber Sale Units 6 and 14 did not comply with six of the 23 BMPs that apply to timber management and road management. The lack of compliance with the BMPs were considered minor departures with the exception of one.

Inconsistent interpretation and specification of the treatments “subsoiling”, “ripping” and “scarification” result in ground conditions that differ from aquatic specialists expectations and minor departures from certain Best Management Practices.

Overall Recommendation: Subsoiling and scarification will be specifically defined in all future Environmental Analysis and associated contract specifications will be formulated to achieve the treatment definitions. Where necessary, existing Environmental Analysis language pertaining to these treatments and/or associated contract specifications will be appropriately modified to achieve desired ground conditions.

Whip Timber Sale Unit 17

Surface erosion in limited areas is apparent on skid trails and temporary roads within Unit 17 of the Whip Timber Sale Unit. This results in a minor departure from BMPs T-14 Revegetation of Areas Disturbed by Harvest Activities and T-16 Erosion Control on Skid Trails. The contract specifies that the skid trails and unrocked roads will be scarified to a depth of 18 inches to provide a seedbed for grass seed, fertilizer and mulch. The skid trails and unrocked roads were not scarified.

Recommendation: Sale Administrator must thoroughly review all units for completion of all activities prior to sale closure.

Skeeter Timber Sale Units 6 and 14

Limited sediment was transported to ditches and an ephemeral channel prior to the implementation of adequate erosion control measures on a landing of the Skeeter Timber Sale Unit 6. This lack of erosion control implementation also occurred on Unit 14 although no erosion occurred. Unit 6 was completed in November during a rainy period. Landings were not scarified to 18 inch depth,

One of four units monitored complied with all BMPs. All but one departure was considered minor.

seeded or fertilized as specified in the contract until after one rainy season. This results in a major departure from the BMP T-13 *Erosion Prevention and Control Measures During Timber Sale Operations* and minor departures from the BMP T-5 *Limiting the Operating Period of Timber Sale Activities* and T-15 *Log Landing Erosion Prevention and Control*.

Equipment was allowed to operate parallel to the half mile temporary road during slash pile operations on Skeeter Timber Sale Unit 14 since the temporary road had been obliterated. Soils within this area were not compacted due to the soil type and condition, and the limited passes made by equipment in this area. This results in a minor departure from the BMP T-11 *Tractor Skid Trail Location and Design*.

Scarification on skid trails and temporary roads within Skeeter Timber Sale Unit 6 was only effective on the areas treated. Some areas of the skid trails and temporary roads were not scarified. This results in a minor departure from the BMP T-16 *Erosion Control on Skid Trails* and R-23 *Obliteration of Temporary Roads and Landings*.

Recommendations: Obliterate or scarify temporary roads after machine piling is complete. Scarify the entire area of a temporary road when scarification is specified. Scarify landings and seed and mulch using native seed and weed-free mulch prior to the fall rainy season. If timber sale activities occur outside the recommended time period, watershed specialists should be consulted to ensure adequacy of erosion control measures during the rainy period when disturbed ground is easily eroded.

Stream Temperature Monitoring

The Clean Water Act and the Northwest Forest Plan directs the Forest to maintain the physical, chemical and biological integrity of our aquatic resources. The Forest Plan mandates that the the Forest manages its streams to fully support all designated beneficial uses of water. Cool water temperatures are important in providing quality fish habitat and therefore maintaining beneficial uses.

The state temperature standard is stated as follows:

Temperatures shall not exceed 16.0°C due to human activities. When natural conditions exceed 16.0°C, no temperature increases will be allowed which raise the receiving water temperature by more than 0.3°C.

The specific stream temperature monitoring objectives are to track trends in water temperature at the watershed scale and identify reaches adversely affecting temperatures. All stream sites that consistently exceed 16°C are monitored annually.

During the summer of 2001, extra additional sites were monitored to investigate location of thermal sources to streams within the East Fork Lewis River and Lower Cispus River Watersheds. Information from these sites will be incorporated into the Water Quality Restoration Plans.

Currently, only ten listed water bodies are listed for temperature are on lands managed by the Gifford Pinchot National Forest (Table 13Table 1), although many other waterbodies exceed the current state standard.

Table 13. State Listed Water Bodies

Watershed	Stream	Location
Upper Cispus River	Cispus River	Headwaters to above confluence with North Fork Cispus
	North Fork Cispus River	Headwaters to confluence with Cispus River
	East Canyon Creek	Outlet of Takhlakh Lake to confluence with Cispus River
Lower Cispus River	Cispus River	Below confluence with North Fork Cispus River to confluence with Cowlitz River
	Iron Creek	Headwaters to confluence with Cispus River
Middle Cowlitz River	Willame Creek	Headwaters to confluence with Cowlitz River
	Silver Creek	Headwaters to confluence with Cowlitz River
Upper Nisqually River	Catt Creek	Headwaters to confluence with Big Creek
Wind River	Bear Creek	Headwaters to confluence with Wind River
	Eightmile Creek	Headwaters to confluence with Panther Creek

Upper and Lower Cispus River Watersheds

- Lower Cispus River Watershed was intensively monitored during the summer of 2001. About half the locations monitored exceeded 16°C (Table 14).
- Walupt Creek, East Canyon Creek and the lowest reach of the Cispus River in the Upper Cispus River Watershed exceeded 16°C during the 2001 summer. of 2001 (Table 14Table 2).
- Lower Cispus River Watershed was intensively monitored during the summer of 2001. About half the locations monitored exceeded 16°C.

Table 14. Upper and Lower Cispus Watersheds Stream Temperatures from July 1 through September 15, 2001.

Streams In Downstream Order	Monitoring Location	Maximum Temperature (°C)	Number Of Days Above 16.0°C	Maximum 7-Day Average Temp. (°C)
Walupt Creek	Above lake	21.7	39	21.0
Walupt Creek	Near confluence w/ Cispus R	20.8	34	20.8
East Canyon Cr	Near confluence w/ Cispus R.	16.8	20	16.6
Cispus River	Just above Pinto Creek Just	18.1	39	17.9
N.F. Cispus River	Near confluence w/ Cispus R	15.4	0	15.2
Yellowjacket Cr	Just above Badger Creek	13.3	0	13.3
Badger Creek	Just above Yellowjacket Creek	12.4	0	11.9
Yellowjacket Cr	Just above Pinto Creek	15.7	0	15.5
Pumice Creek	Just above Pinto Creek	16.3	7	16.2
Pinto Creek	Just above Yellowjacket Creek	16.2	1	15.2
Yellowjacket Cr	Just above Mc Coy Creek	16.0	1	15.7
McCoy Creek	Just above Yellowjacket Creek	15.2	0	14.7
Yellowjacket Cr	Just above Canyon Creek	17.2	8	16.6
Yellowjacket Cr	Near confluence w/ Cispus R.	19.3	40	18.8
Greenhorn Creek	Just Above Soldier Creek	15.2	0	14.7
Soldier Creek	Just above Greenhorn Creek	12.6	0	12.3
Greenhorn Creek	Just Above 1918 Creek	16.8	4	16.1
Jefferson Creek	Just above Greenhorn Creek	15.0	0	14.5
1918 Creek	Just above Greenhorn Creek	19.6	36	19.0
Trapper Creek	Just above Greenhorn Creek	13.7	0	13.4
Greenhorn Creek	0.5 mile above Cispus River	18.5	30	17.9
Greenhorn Creek	Near confluence w/ Cispus R.	19.4	40	18.8
Iron Creek	Just above Big Creek	13.5	0	13.2
Big Creek	Just above Iron Creek	13.8	0	13.5
Iron Creek	Just above Slide Creek	14.5	0	14.2
Iron Creek	Just above Benham Creek	15.2	0	15.1
Fourmile Creek	Just above Iron Creek	10.4	0	10.0
Benham Creek	Just above Iron Creek	12.9	0	12.4
Iron Creek	Just above Canyon Creek	16.2	4	16.0
Iron Creek	Near confluence w/ Cispus R.	17.8	28	17.6
Quartz Creek	1 mile above Cispus River	16.3	3	15.9

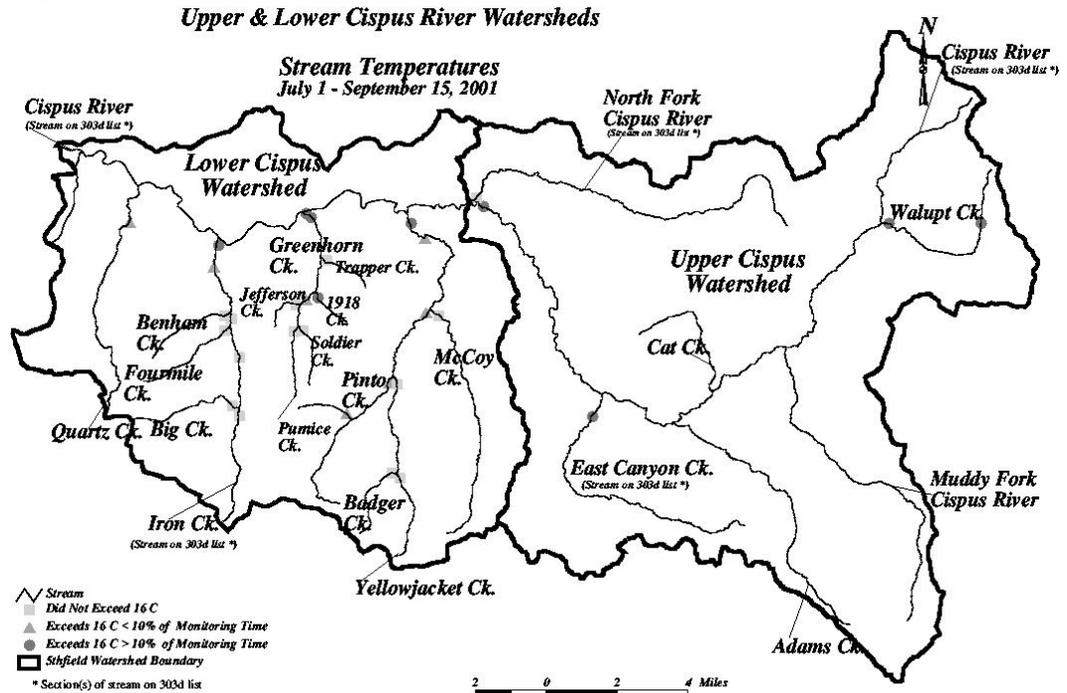
Bold – Monitoring station exceeded 16°C.

- The historic monitoring locations located on the Cispus River just above the North Fork Cispus and on Yellowjacket Creek near the confluence with the Cispus River had the highest maximum water temperature recorded during 2001 (Table 15).

Table 15. Historical Summary of Streams Exceeding the State Temperature Standards in multiple years within the Upper and Lower Cispus River Watersheds.

Stream Name	Monitoring Location	Years Monitored	Number Of Years Temperature Exceeded 16.0°C	Maximum Temperature (°C) During Monitoring Period (Year)
Chambers Creek	Near confluence w/ Cispus Rivir	1994, 2000	1	16.4 (1994)
East Canyon Creek	Above Dark Creek	1994, 1995	2	18.1 (1995)
East Canyon Creek	Near confluence w/ Cispus River	1994-1997 1999-2001	4	18.1 (1995)
Cispus River	Above North Fork Cispus River	1994, 2000, 2001	2	18.1 (2001)
North Fork Cispus	Near confluence w/ Cispus River	1991-1995 1997-2001	4	16.3 (1992)
Yellowjacket Creek	Near confluence w/ Cispus River	1996, 1999-2001	3	19.3 (2001)
Iron Creek	Near confluence w/ Cispus River	1996, 1999-2001	4	18.1 (1996)
Cispus River	1 mile below confluence w/ Iron Creek	1991-1992 1996-2000	5	20.6 (1997)

Figure 6



Middle Cowlitz River Watershed

- Multiple locations along Silver Creek and one location on Willame Creek exceeded 16°C during 2001 (Table 16).

Table 16. Middle Cowlitz River Watershed Stream Temperatures from July 1 through September 15, 2001.

Streams In Downstream Order	Monitoring Location	Maximum Temperature (°C)	Number Of Days Above 16.0°C	Maximum 7-Day Average Temperature (°C)
North Fork Willame Creek	Above confluence w/ Willame Cr.	14.6	0	14.3
Lillian Creek	Above confluence w/ Willame Cr.	14.2	0	13.9
South Fork Willame Creek	Above confluence w/ Willame Cr.	14.3	0	14.1
Willame Creek	½ mile above Cowlitz River	16.2	3	15.9
Silver Creek	Just above Lake Creek	16.3	5	16.0
Silver Creek	Just above East Fork Silver Cr.	17.1	14	16.8
East Fork Silver Creek	Above cofluence with Silver Cr.	14.6	0	14.4
Silver Creek	1 1/2 mile above Cowlitz River	16.8	10	16.5
Silver Creek	1 mile above Cowlitz River	17.2	15	16.6

Bold – Monitoring Station with Temperatures above 16°C

- Maximum temperatures at two one sites along Silver Creek wasere higher during 2001 than other years monitored (Table 17).

Table 17. Historical Summary of Streams Exceeding the State Temperature Standards in multiple years within the Middle Cowlitz River Watershed.

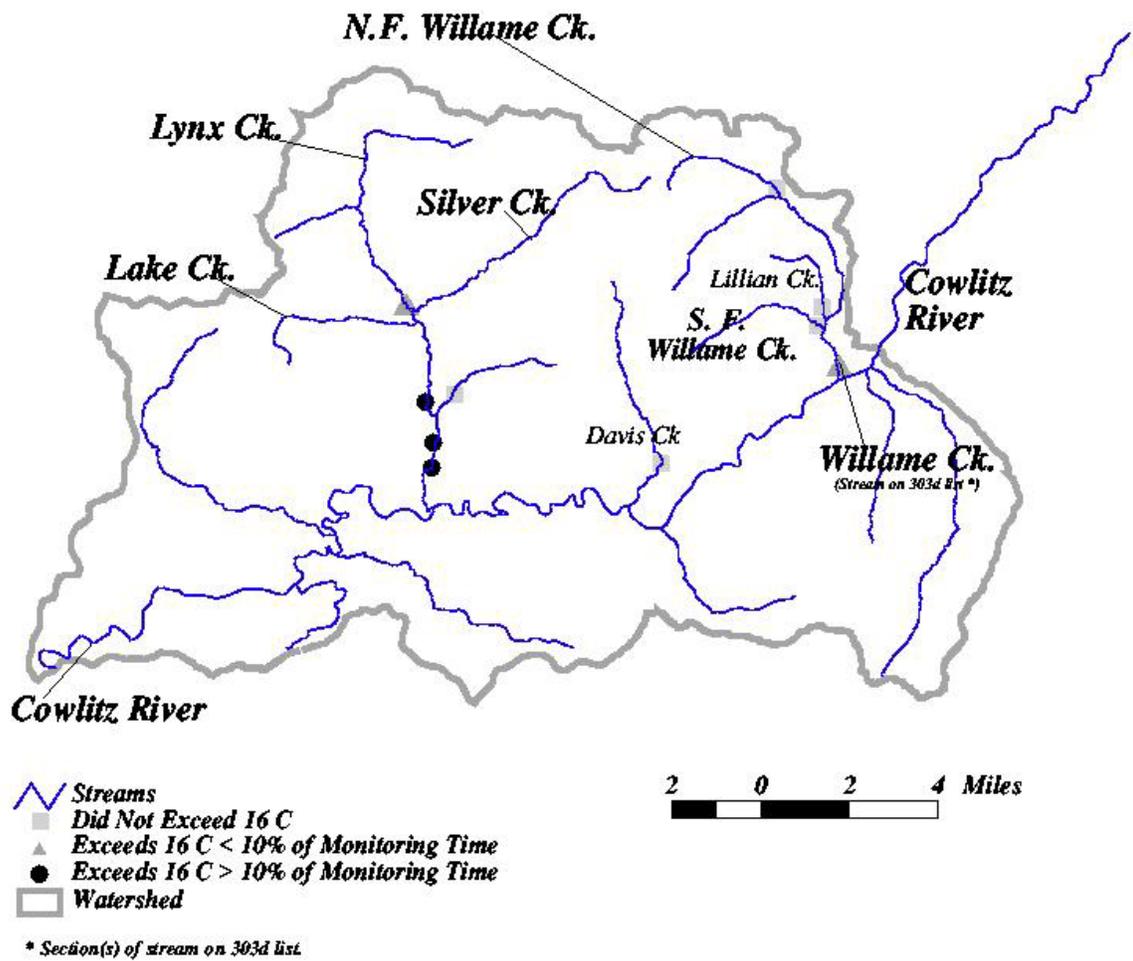
Stream Name	Monitoring Location	Years Monitored	Number Of Years Temperature Temp. Exceeded 16.0°C.	Maximum Temperature (°Cc) During Monitoring Period (Year)
North Fork Willame	Just above confluence w/ Willame Creek	1996, 1998-2001	2	16.3 (1996)
Willame Creek	1/2 mile above confluence w/ Cowlitz R.	1998-2000	2	19.8 (1998)
Silver Creek	2 miles above confluence w/ Lake Creek	1999, 2001	2	16.8 (2001)
Silver Creek	1.2 miles above confluence w/ Cowlitz River	1992, 1995-2001	6	19.2 (1996)

Figure 7

Middle Cowlitz River Watershed

Stream Temperatures

July 1 - September 15, 2001



Map 7-11

Upper Lewis River and Muddy River Watersheds

- Maximum temperatures in the Upper Lewis River and Muddy River Watersheds were generally higher and exceeded 16°C more frequently during 2001 (low base flows) than in 2000 (typical base flows) (Table 18).

Table 18. Upper Lewis River and Muddy River Watershed Stream Temperatures from June 15 through September 15, 2001.

Streams In Downstream Order	Monitoring Location	Maximum Temperature (°C)	Number Of Days Above 16.0 °C	Maximum 7- Day Average Temperature (°C)
Lewis River	Above Quartz Creek	15.7	0	15.2
Quartz Creek	Above Platinum Creek*	17.6	16	17.0
Quartz Creek	Below Platinum Creek	17.5	12	16.9
Lewis River	Above Big Creek	18.5	31	17.8
Big Creek Tributary	Above Skookum Meadows	14.1	0	13.5
Big Creek	Big Creek Gaging Station	15.5	0	15.0
Muddy River	Above Clear Creek confluence	20.1	64	20.1
Clearwater Creek	8 miles above Muddy River	18.4	39	18.1
Clear Creek	Near confluence with Muddy R.	17.9	35	17.7
Muddy River	Below Clear Creek Confluence	21.5	66	21.1

Bold – Monitoring Station with Temperatures above 16°C

*Note: 18 days during September were omitted due to anomalous measurements (possibly stowaway out of the water).

- Only Quartz Creek above the confluence with Platinum Creek set a new record maximum temperatures during 2001 (Table 19).

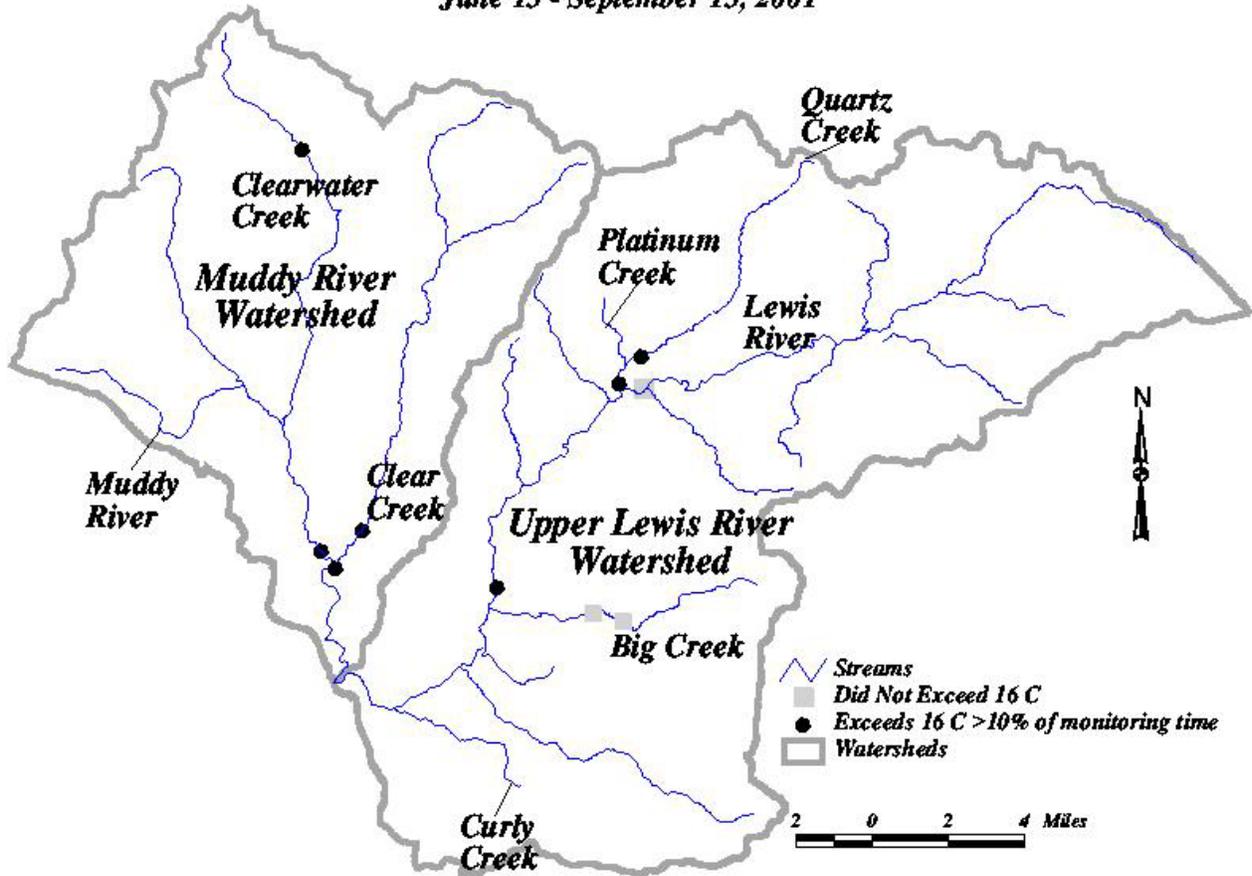
Table 19. Historical Summary of Streams Exceeding the State Temperature Standards in multiple years within the Upper Lewis River and Muddy River Watersheds.

Stream Name	Monitoring Location	Years Monitored	Number Of Years Temp. Exceeded 16.0°C	Maximum Temperature (°C) During Monitoring Period (Year)
Quartz Creek	Above Platinum Creek	1999-2001	2	17.6 (, 2001)
Quartz Creek	Below Platinum Creek	1977-1979, 1982, 1984, 1988, 1997-2001	8	19.0 (1997)
Lewis River	Above Curly Creek	1975-1988, 1991, 1996-2000	10	22.7 (1997)
Muddy River	Above Clear Creek	1991, 1996-2001	7	24.4 (1991)
Clearwater Creek	8 miles above confluence w/ Muddy River	1998-1999, 2001	3	18.8 (1998)
Clearwater Creek	Above confluence w/ Muddy River	1996-1998	3	21.2 (1998)
Clear Creek	Near confluence w/ Muddy River	1991, 1997-2001	5	22.9 (1991)

Figure 8

Upper Lewis River and Muddy River Watersheds

Stream Temperatures
June 15 - September 15, 2001



Merwin Reservoir – Lewis River and East Fork Lewis River Watersheds

- Canyon Creek did not exceed 16°C at either monitoring location during 2001 (Table 20).
- The number of days exceeding 16°C decreased in the East Fork Lewis River during 2001.

Table 20. Merwin Reservoir – Lewis River, and East Fork Lewis River Watersheds Stream Temperature from June 15 through September 15, 2001

Streams In Downstream Order	Monitoring Location	Maximum Temperature (°C)	Number Of Days Above 16.0°C	Maximum 7- Day Average Temperature (°C)
Canyon Creek	Above Jake's Creek	12.6	0	12.3
Canyon Creek	Above Big Rock Creek	15.2	0	14.8
East Fork Lewis River	Above Green Fork	17.0	7	16.5
Green Fork	One mile above East Fork	15.0	0	14.4
Green Fork	0.5 mile above East Fork	15.3	0	14.9
East Fork Lewis River	Below Green Fork	16.2	3	15.8
East Fork Lewis River	Below Little Creek	16.2	3	15.8
East Fork Lewis River	Above Slide Creek	17.1	7	16.5
Slide Creek	0.25 mile above East Fork	16.2	2	15.6
East Fork Lewis River	Below Slide Creek	18.1	17	17.6
East Fork Lewis River	Below Sunset Falls Campground	18.5	29	18.0
Copper Creek	Above Bolin Creek	15.8	0	15.4
East Fork Lewis River	Above Niccolls Creek	19.2	35	18.8

Bold – Monitoring Station with Temperatures above 16° C

- Green Fork and Copper Creek did not exceed 16°C during 2001. These systems have a history of exceeding the maximum temperature standard of 16°C (Table 21).

Figure 9

**East Fork Lewis River, Yale Reservoir - Lewis River
and
Merwin Reservoir - Lewis River
Watersheds**

**Stream Temperatures
June 15 - September 15, 2001**

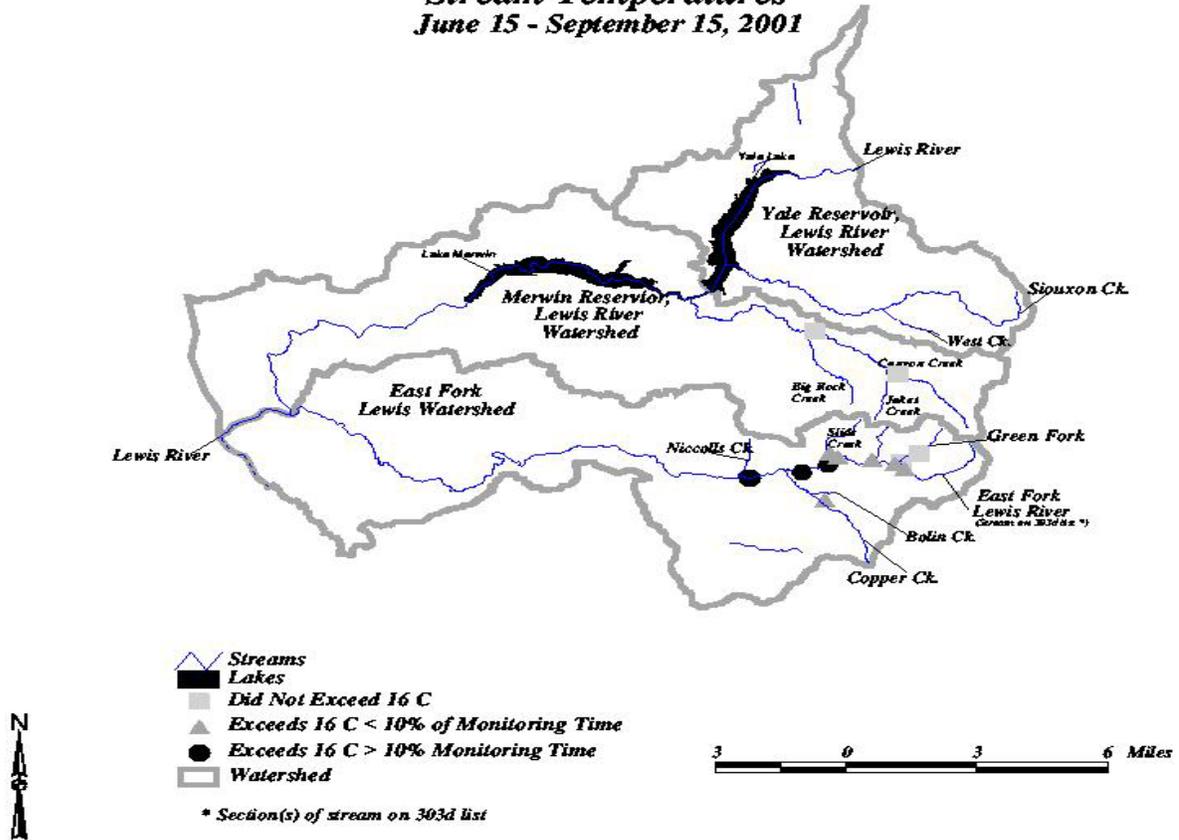


Table 21. Historical Summary of Streams Exceeding the State Temperature Standards in multiple years within the Merwin Reservoir, Yale Reservoir and East Fork Lewis River Watersheds.

Stream Name	Monitoring Location	Years Monitored	Number Of Years Temperature Exceeded 16.0° C	Maximum Temperature (°C) During Monitoring Period (Year)
Siouxon Creek	Below West Creek	1996-2000	5	22.0 (1997)
Canyon Creek	Above Big Rock Creek	1997-1998, 2001	2	16.9 (1998)
East Fork Lewis River	Above Green Fork	1999-2001	2	17.5 (2000)
Green Fork	Near confluence w/ East Fork Lewis River	1996-2000	2	22.0 (1997)
Copper Creek	Above Bolin Creek	1977-1981, 1996-2001	7	20.8 (1997)
East Fork Lewis River	Above Niccolls Creek	1997, 1999-2001	4	20.1 (2000)

Little White Salmon River and White Salmon River Watersheds

- Three of six monitoring stations in the Little White Salmon River watershed exceeded state water quality standards for temperature during 2001 (Table 22).
- Maximum temperatures for the watershed were recorded in the Little White Salmon River above Moss Creek, where the standard was exceeded for 68 days.
- Cascade Creek (in the White Salmon River watershed) reached a new high temperature of 20.8°C, after having previously established a high of just 14.4°C in the past two years of monitoring (Table 23)

Table 22. Little White Salmon River and White Salmon River Watershed Stream Temperatures from June 6 through September 20, 2001.

Streams In Downstream Order	Monitoring Location	Maximum Temperature (°C)	Number Of Days Above 16.0°C	Maximum 7- Day Average Temperature (°C)
Lost Creek	Above Dry Creek	14.2	0	13.6
Lost Creek	Above Big Lava Bed	19.4	40	18.5
Little White Salmon River	2 miles above Lusk Creek	15.7	0	15.4
Little White Salmon River	Just above Lusk Creek	16.8	11	16.5
Little White Salmon River	Above Berry Creek	(no data)	--	--
Little White Salmon River	Above Moss Creek	19.7	68	19.4
White Salmon River	Above White Salmon River	20.8	67	20.2

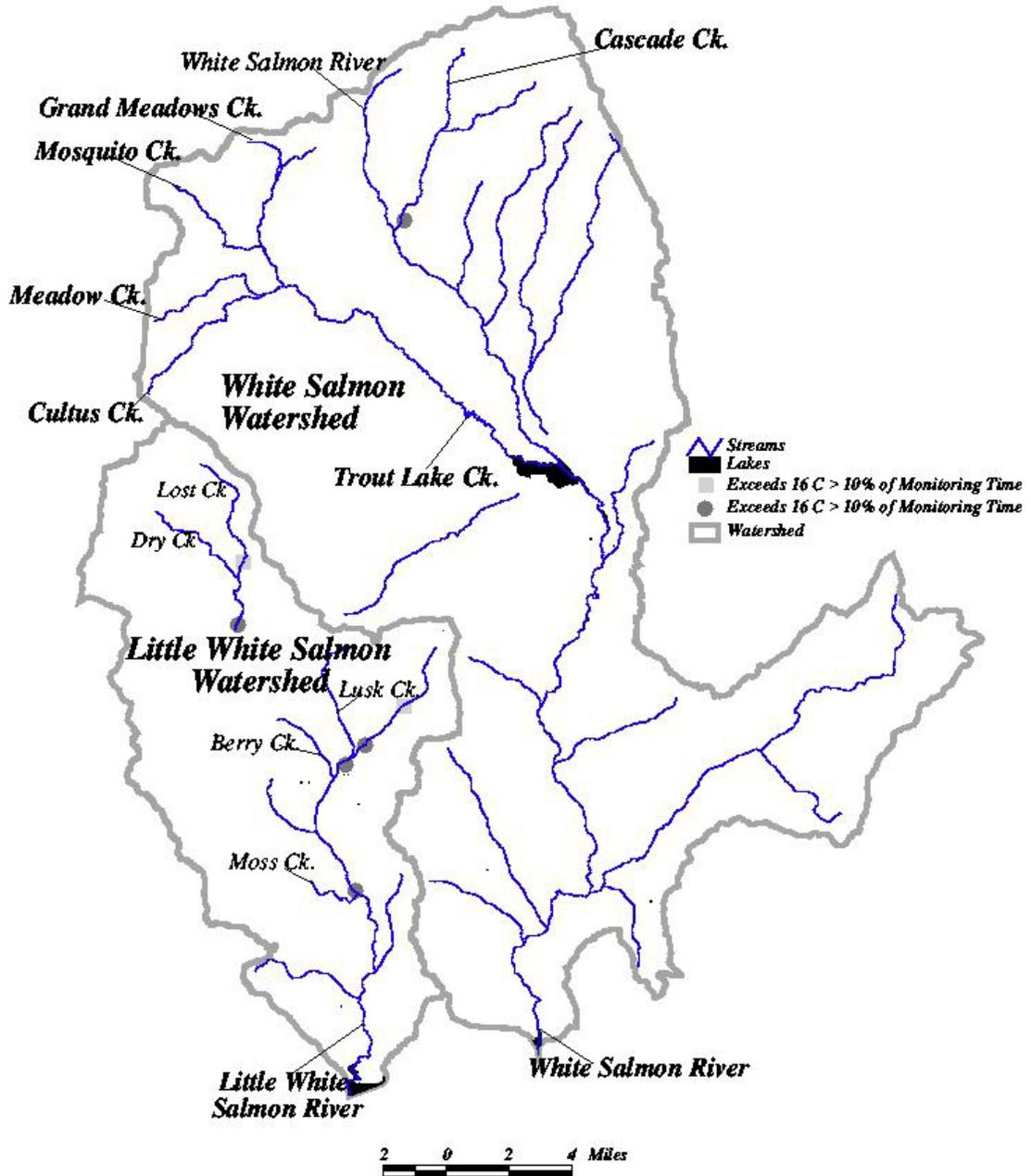
Bold – Monitoring Station with Temperatures above 16°C.

Table 23. Historical Summary of Streams Exceeding the State Temperature Standards in multiple years within the Merwin Reservoir, Yale Reservoir and East Fork Lewis River Watersheds.

Stream Name	Monitoring Location	Years monitored	Number Of Years Temperature Exceeded 16.0°C	Maximum Temperature (°C) During Monitoring Period (Year)
Siouxon Creek	Below West Creek	1996-2000	5	22.0 (1997)
Canyon Creek	Above Big Rock Creek	1997-1998, 2001	2	16.9 (1998)
East Fork Lewis River	Above Green Fork	1999-2001	2	17.5 (2000)
Green Fork	Near confluence w/ East Fork Lewis River	1996-2000	2	22.0 (1997)
Copper Creek	Above Bolin Creek	1977-1981, 1996-2001	7	20.8 (1997)
East Fork Lewis River	Above Niccolls Creek	1997, 1999-2001	4	20.1 (2000)

Figure 10
White Salmon and Little White Salmon Watersheds

Stream Temperatures
June 6 - September 20, 2001



Map 10-1

Wind River Watershed

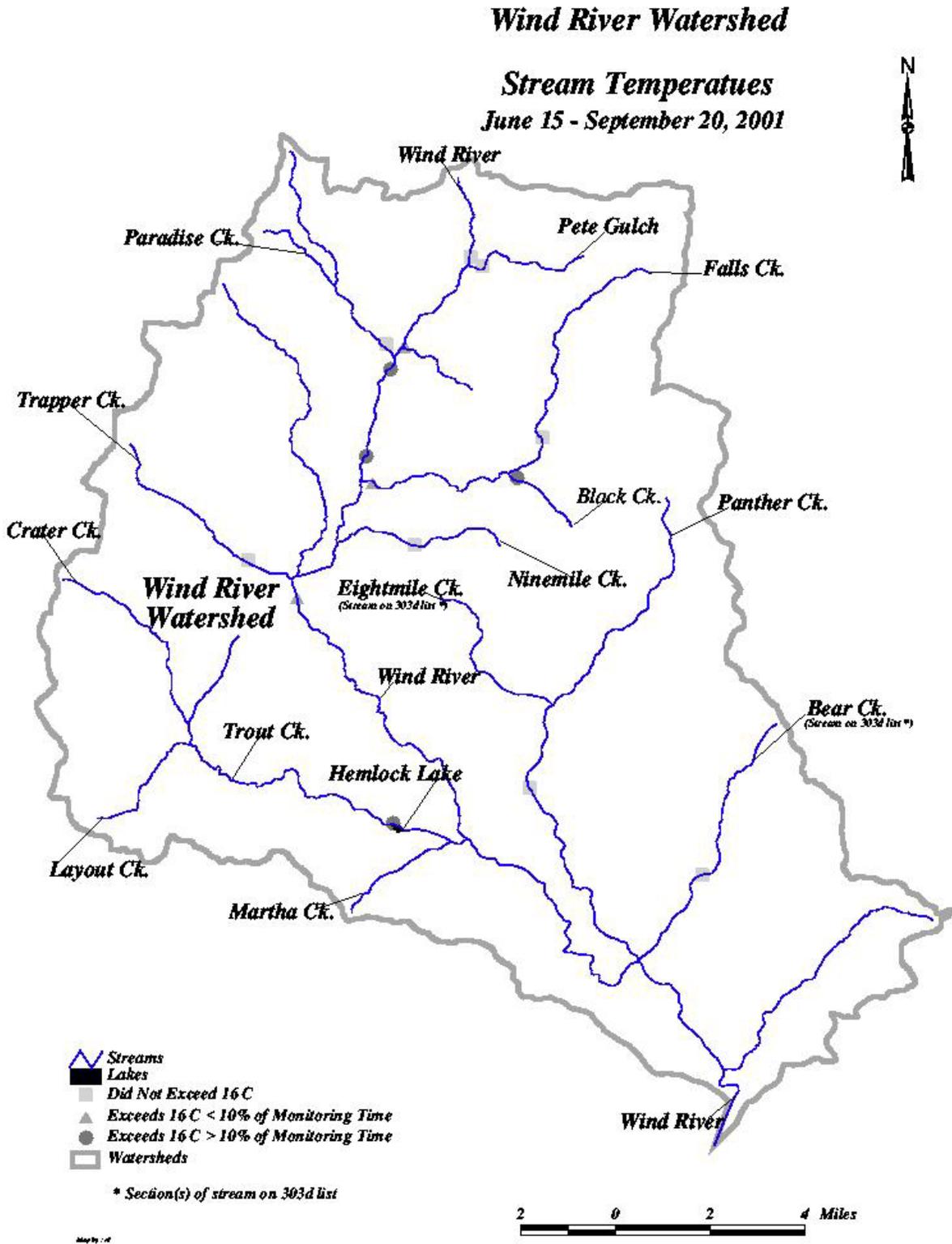
- Five of twelve monitoring stations exceeded 16°C for water temperature (Table 24).
- Temperature loggers malfunctioned at the Trout Creek and Wind River baseline stations.
- Highest recorded temperatures within the Wind River Watershed occurred in Black Creek during the summer of 2001.

Table 24. Historical Summary of Streams Exceeding the State Temperature Standards in multiple years within the Little White Salmon River and White Salmon River Watersheds.

Streams In Downstream Order	Monitoring Location	Maximum Temperature (°C)	Number Of Days Above 16.0° C	Maximum 7- Day Average Temperature (°C)
Wind River	Above Pete's Gulch Creek	14.6	0	14.1
Pete's Gulch	Near confluence w/Wind R	15.9	0	15.3
Wind River	Above Paradise Creek	16.6	6	16.1
Paradise Creek	Near confluence w/ Wind R	14.9	0	14.6
Wind River	Below Paradise Creek	17.1	10	16.8
Wind River	Above Falls Creek	17.3	18	16.8
Falls Creek	Above Black Creek	12.6	0	12.0
Black Creek	Near confluence w/ Falls Cr	20.8	47	19.8
Falls Creek	Near confluence w/ Wind R	17.1	4	16.2
Nine-Mile Creek	2 miles above Wind River	(no data)	--	--
Trapper Creek	2 miles above Wind River	14.9	0	14.7
Wind River	½ mile below Trapper Creek	(no data)	--	--
Trout Creek	Above Hemlock Lake	(no data)	--	--
Panther Creek	1 mile below Eight-Mile Creek	12.6	0	12.3
Bear Creek	2 ½ miles above Wind River	15.6	0	15.2

Bold – Monitoring Station with Temperatures above 16°C

Figure 11



- Resultant temperatures in Falls Creek exceeded past maximums established during four years of monitoring (Table 25)
- New record maximum temperatures were also established at the Wind River above Falls Creek, Black Creek, and the Wind River below Paradise Creek during this year.

Table 25. Historical Summary of Streams Exceeding the State Temperature Standards in multiple years within the Wind River Watershed.

Stream Name	Monitoring Location	Years Monitored	Number Of Years Temperature Exceeded 16.0°c	Maximum Temperature (°c) During Monitoring Period (Year)
Wind River	Above Paradise Creek	1995-1997 1999-2001	6	17.5 (1995)
Wind River	Below Paradise Creek	1999-2001	2	17.1(2000,2001)
Wind River	Above Falls Creek	1999-2001	3	17.3 ((2001)
Black Creek	Above Falls Creek	1999-2001	3	20.8 (2001)
Falls Creek	Near confluence with Wind River	1998-2001	2	17.1 (2001)
Trapper Creek	2 miles above confluence with Wind River	1977-1984 1986-1997 1999-2001	4	18.0(1981,1986)
Wind River	½ mile below confluence with Trapper Creek	1978-2000	18	23.0 (1980)
Layout Creek	Near Confluence with Trout Creek	1993-1994	2	25.5 (1994)
Trout Creek	½ mile below Layout Creek	1993-1994 1996	3	19.5 (1994)
Trout Creek	Just above Hemlock Lake	1977-1993 1995-2000	22	25.0(1990,1992)
Bear Creek	2 1/2 miles above Wind River	1977-2001	16	18.0 (1983, 1986,1987)

Upper Nisqually River Watershed

- Stream temperatures did not exceed 16°C during 2001 in two streams (Catt and Hiawatha Creeks) within the Upper Nisqually Watershed (Table 26).
-
- Catt Creek is a State listed waterbody for temperature because of two days of temperature above 16°C in 1996.
- Stream temperatures at six locations within the Upper Nisqually River Watershed did not exceed during both 2000 and 2001.

Table 26. Nisqually Watershed Stream Temperatures from July 1 through September 15, 2001

Streams In Downstream Order	Monitoring Location	Maximum Temperature (°C)	Number Of Days Above 16.0°C	Maximum 7- Day Average Temperature (°C)
Hiawatha Creek	Above Little Nisqually Creek	15.7	0	14.8
Catt Creek	At road 8440054	15.8	0	15.4

Tilton River Watershed

- Stream temperatures did not exceed 16°C during 2001 in Tumble Creek of the Tilton River Watershed.

Water Quality Restoration Plans ⓘ

The development and implementation of Water Quality Restoration Plans provides the specific actions by which the Forest Service meets Total Maximum Daily Load requirements for 303(d) listed water bodies on lands under Forest Service jurisdiction. The Gifford Pinchot National Forest will follow the protocols specified in *A Forest Service and Bureau of Land Management Protocol for Addressing Clean Water Act Section 303(d) Listed Waters* (USDA, 1999) when developing Water Quality Restoration Plans.

The Gifford Pinchot National Forest completed two Water Quality Restoration Plans for the Wind River and Upper Cispus River Watersheds.

Wind River

The Wind River Water Quality Restoration Plan focuses on three major human caused alteration of natural processes contributing to high stream temperatures within national forest system lands of the Wind River Watershed. These sources are: reduced stream shade, degraded channel condition (widened and made shallow) as a result of past riparian timber harvest, and large woody debris removal, and water withdrawals.

Existing and potential shade conditions were estimated for each subwatershed. Trout Creek and Middle Wind River subwatersheds with stream shade of 59 and 63 percent respectively, are the highest priority for shade restoration treatments.

In-stream channel projects to improve channel stability are planned and some are completed in subwatersheds with streams where widening consistently occurs after floods and where low flow width to depth ratios are greater than 12.

More information is needed to determine the exact effect of the water withdrawals to stream temperatures within Trout Creek and Bear Creek. The sharing and transfer of water rights associated with the Forest Service Nursery conveyance to Skamania County may result in part of the water rights being put into a cConservation Trusttrust. This may result in more water remaining in the creek during low flows, limiting the effect to stream temperature. Water temperature monitoring on private lands below Hemlock Lake will determine effects of other water withdrawals within the Trout Creek Subwatershed.

The water withdrawal for the City of Carson domestic water supply may be affecting the stream temperatures of Bear Creek. Stream temperature monitoring above and below the intake and analysis of channel characteristics between the two points will provide additional information to ascertain if water withdrawals are increasing stream temperature.

The Gifford Pinchot National Forest completed two Water Quality Restoration Plans for the Wind River and Upper Cispus River Watersheds

Upper Cispus River

The Upper Cispus River Water Quality Restoration Plan focuses on two major human caused alterations of natural processes, reduced shade and channel instability, that are contributing to increased stream temperatures within the Upper Cispus River Watershed.

Shade improvement is given highest priority where the difference between existing and potential shade is greater than 24 percent

Shade improvement areas are given highest priority where the difference between the existing and potential shade is greater than 24 percent. Five areas (22 acres) within the East Canyon Creek Subwatershed and along the Cispus River are identified for treatment along with 3 three acres along tributaries to the mainstem Cispus River. No shade treatment areas identified are considered to There are no opportunities to significantly improve stream temperatures within the North Fork Cispus River Subwatershed by improving shade.

Within the Upper Cispus River Watershed, channel instability is partially caused by increased sediment delivery from roads and degraded channel condition as a result of past large woody debris removal. Two in-stream improvement projects identified will enhance channel stability and inhibit excessive widening. One project is a 1-mile project within the North Fork Cispus Subwatershed and that was completed in August 2001. A second project is a 1.5 mile reach on East Canyon Creek and that is scheduled for implementation in August 2002. Erosion control projects along roads (135 acres) are identified within all the subwatersheds to decrease sediment delivery to streams.

These active restoration projects along with the protection of the riparian reserves as described in the Northwest Forest Plan will improve shade on all streams to the site potential condition and allow channel stabilization so that stream temperatures can exist in return to their natural range.

Introduction: The Forest Plan outlines specific standards and guidelines to ensure protection of fish and riparian resources. The emphasis of this monitoring item is to determine whether fish and riparian standards and guidelines are implemented through project planning and implementation. This monitoring item is evaluated at the project-level. Specific questions addressed are:

- What riparian mitigation was planned for the project?
- Was planned mitigation consistent with standards and guidelines?
- Was the project contract written to include provisions to meet standards and guidelines?
- Was the project implemented in compliance with standards and guidelines?

A variety of project types (i.e., timber sale, road construction, recreation development, watershed restoration, etc.) may be evaluated under this monitoring item. Timber sale and stream restoration projects were the focus for this year’s monitoring effort. The Forest’s three ranger districts selected three timber sales (Whip, Skeeter, Siler Owens, and Doe) and one stream rehabilitation project (Mining Reach Riparian and Channel Rehabilitation) for review (Table 27). The same projects are evaluated, under *Effectiveness of Riparian S&Gs*, page 47. Five harvest units were evaluated. Project implementation dates ranged from 1997-2000 and all projects were planned under the 1994 *Northwest Forest Plan*.

Table 27. - Projects Monitored

Ranger District	Project Name	Timber Sale Unit	Planning Vintage	
			1990 ¹	1994 ²
Mt. Adams	Mining Reach Riparian and Channel Rehabilitation	NA		√
Mt. Adams	Whip Timber Sale	17		√
MSH NVM	Skeeter Timber Sale	6, 14		√
CowlitzValley	Siler Owens Timber Sale	5		√
Cowlitz Valley	Doe Timber Sale	7		√
¹ Project planned under 1990 Gifford Pinchot National Forest Plan. ² Project planned under 1994 Northwest Forest Plan.				

Results:

Riparian Mitigation Planned

All of the projects employed mitigation measures to protect riparian resources. Siler Owens timber sale did not have any streams in Unit #5. Mining Reach Riparian and Channel Rehabilitation was planned as a riparian restoration project. Riparian mitigations for the timber sales were developed during the project planning process as part of required environmental analysis. Mitigations included:

- Establishment of riparian buffers along streams and wet areas.

- Designation of streams on sale area maps.
- Directional tree felling away from riparian reserves.
- Felled trees yarded away from streams.
- No landings or temporary roads located within riparian reserves.
- Stream crossings (road reconstruction) would follow management guidelines in the Washington Department of Fish and Wildlife Hydraulic Permit.

Planned Mitigation Consistent with S&Gs?

In all cases, planned riparian mitigation measures were consistent with Forest Plan standards and guidelines. However, there were no specific riparian mitigations listed for Unit 5 in Siler Owens Timber Sale, other than BMPs, because there were no streams in the unit.

Contracts Written to Include Necessary Provisions?

In all cases, the contracts were written to reflect the planned riparian mitigation. They included erosion control requirements, directional felling, and specific yarding requirements.

Were projects implemented in compliance with Standards and Guidelines?

Yes. However, there are no specific Standards and Guidelines for restoration work by which to evaluate the Mining Reach Riparian and Channel Rehabilitation project.

In all cases, planned riparian mitigation measures were consistent with Forest Plan standards and guidelines



Figure 12. Teachers from local schools participated in monitoring riparian reserves through the Teachers in the Woods program.

Evaluation: The harvest units complied with fish and riparian standards and guidelines. Appropriate mitigation measures were identified in the planning process; the measures were subsequently tracked through contracting process and then appropriately implemented on the ground. The Mining Reach Riparian and Channel Rehabilitation contract was written as a rental agreement, consequently, there was no contractual language specifying mitigation measures. In this case tracking mitigation measures was largely the responsibility of the Forest Service Contract Officer Representative.

Effects of the proposed mitigation measures were all positive. All mitigation measures were reported to have met their desired objectives. No observable impacts to fish and riparian resources were documented by the fish biologist, hydrologist, and soil scientist staff members conducting these evaluations.

All mitigation measures were reported to have met their desired objectives

Recommended Actions to be Taken:

Successful planning and implementation is attributed to several factors including the following:

Continue to have fish biologist, hydrologist, and soil scientist personnel participate in locating and classifying streams and wet areas prior to preparation of the timber sale contract (preferably during preparation of the environmental analysis).

Specify riparian mitigations in environmental assessments and contracts for streams and wet areas.

Continue to provide necessary training for timber sale layout and marking personnel to ensure that all streams and wet areas are properly identified and treated in accordance with specified mitigations.

Thorough ground surveys should be extended outside the immediate planning area boundary a distance of two site-potential tree-heights. This precautionary measure helps ensure that all adjacent streams and wet areas are treated appropriately.

Projects implemented with a rental agreement contract should be actively administered by a contracting officer's representative (COR) to ensure the successful implementation of planned mitigation.

Effectiveness of Riparian Standards and Guidelines 62b

Introduction: The intent of this monitoring item is to determine if planned mitigations are effectively meeting Forest Plan management objectives for protection of riparian, fish, and water resources. The same projects investigated under *Fish/Riparian S&G Implementation* (Table 27, page 45) are evaluated here. Three specific questions shall be answered:

1. Is channel stability maintained?
2. Is stream shading maintained?
3. Are sediments originating from management activities reaching the stream course?

Results:

Maintenance of Channel Stability

Channel stability was maintained or improved for all projects evaluated. The minimum

Channel stability was maintained or improved for all projects evaluated

planned riparian treatment was achieved on the ground in all cases. In the case of Siler Owens Timber Sale Unit 5, there were no streams in the unit. Mining Reach Riparian and Channel Rehabilitation project noted several improvements to channel stability including a 58 percent increased channel stability with the installation of large wood bank revetments.

Maintenance of Stream Shading

Stream shading was adequately maintained along all streams examined. One of the long-term restoration objectives for the Mining Reach project estimates it will take 100 years to significantly improve stream shade. Stream shade objectives are not expected to be met until riparian stands fully mature (approximately 100 years). No water temperature data were provided for any of the projects evaluated.

Sediment Transport to Affected Stream Course

Sediment originating at the project was not observed reaching any of the associated stream channels or wet areas for the four sales monitored. Instream restoration work, similar to the Mining Reach Riparian and Channel Rehabilitation project, typically produces a short-term pulse of sediment during implementation that is confined to the local area. Post implementation monitoring results showed bank erosion has been reduced 50 percent. In addition, the 2000 trees that were placed within the bank full and flood prone channel to stabilize bars and collect coarse and fine sediment should help reduce excessive sediment transport.

Sediment originating at the project was not observed reaching any of the associated stream channels.

Evaluation: Riparian standards and guidelines were effective in meeting Forest Plan management objectives for protection of riparian, fish, and water resources. In all cases prescribed mitigations were followed as specified, and appear effective. Instream restoration and riparian silviculture work on the Mining Reach Riparian and Channel Rehabilitation project has set the stage for providing long-term positive benefits on promoting improved channel stability and instream sediment conditions. Enhancing stream shade is a long-term proposition that will not be realized for several decades.

The Forest Plan standards and guidelines are not focused on restoration projects such as the Mining Reach Riparian and Channel Rehabilitation. As a result, the proper evaluation of restoration projects requires a well-defined, quantifiable objective. The Mining Reach project did a good job of defining and documenting objectives (e.g. increase large wood to >120 pieces/mile) which facilitated a post-implementation review.

Other standards that could potentially be used to evaluate the effectiveness of instream restoration include: Policy Implementation Guide (PIG), National Marine Fisheries Service's Environmental baseline, Watershed Analysis, or the Forestwide health assessment.

Recommended Action to be Taken:

Revise format to incorporate non-traditional projects (e.g. restoration projects, recreation sites)

Define some quantifiable numerical standards for restoration monitoring.

Examine alternative sources of standards (e.g. PIG, NMFS environmental baseline matrix, or Forestwide health assessment) for evaluating restoration project effectiveness.

Establish a provincial source of standards that better represent potential conditions on the Forest rather than a general standard such as those in the NMFS environmental baseline matrix.

Proposed, Endangered, Threatened, and Sensitive (PETS)

Fish Species ^{62c} ⓘ

Introduction: The list of PETS fish species occurring on Gifford Pinchot National Forest (GPNF) includes six threatened, proposed, and candidate fish species. These species include:

Status	ESU (Evolutionary Significant Unit) or DPS (Distinct Population Segment)
Threatened	Columbia River bull trout (<i>Salvelinus confluentus</i>)
Threatened	Lower Columbia River and Middle Columbia River steelhead trout (<i>Oncorhynchus mykiss</i>)
Threatened	Lower Columbia River and Puget Sound Chinook (<i>Oncorhynchus tshawytscha</i>)
Threatened	Columbia River chum (<i>Oncorhynchus keta</i>)
Proposed	Southwestern Washington/Columbia River coastal cutthroat (<i>Oncorhynchus clarki</i>)
Candidate	Lower Columbia River/Southwest Washington Coho (<i>Oncorhynchus kisutch</i>)

The U.S. Forest Service (USFS) sensitive species policy requires that species, populations, Evolutionarily Significant Unit (ESU), or Distinct Population Segments (DPS) with viability concerns or tending toward Federal listing be given special management emphasis to ensure their continued existence. Part of this special emphasis is the development of careful monitoring plans through partnerships to assess and document local fish population and habitat conditions following the implementation of ongoing and proposed activities on national forest land. The following is a discussion of different monitoring tools used to assess fish and habitat conditions for two listed species on the Forest.

Steelhead (*Oncorhynchus mykiss*)

The Lower Columbia River Steelhead ESU is federally listed as Threatened by the National Marine Fisheries Service under the Endangered Species Act. The steelhead is an anadromous form of rainbow trout that inhabits several rivers and streams throughout GPNF. Adult steelhead spawn in rivers and streams by laying their eggs in depressions in the gravel called "redds". Fry emerge from the gravel and rear for one to three years in freshwater before migrating to the ocean as smolts where they grow to adults. The number of fish present may serve as an indicator of stream health. However, many factors other than habitat quality influence the population size and structure of anadromous fish such as angling, hydroelectric facilities, ocean conditions, avian and marine mammal predation, and hatchery introductions.

This year's monitoring efforts continue to emphasize adult steelhead counts for the Wind and East Fork Lewis Rivers. In addition, smolt population estimates continue to be an important part of the fisheries program at the Wind River Ranger Station. While data provided here are insufficient to determine population viability, these data do provide useful information on population trends. The majority of the monitoring program in the Forest's fisheries program is accomplished through the development of outside partners,

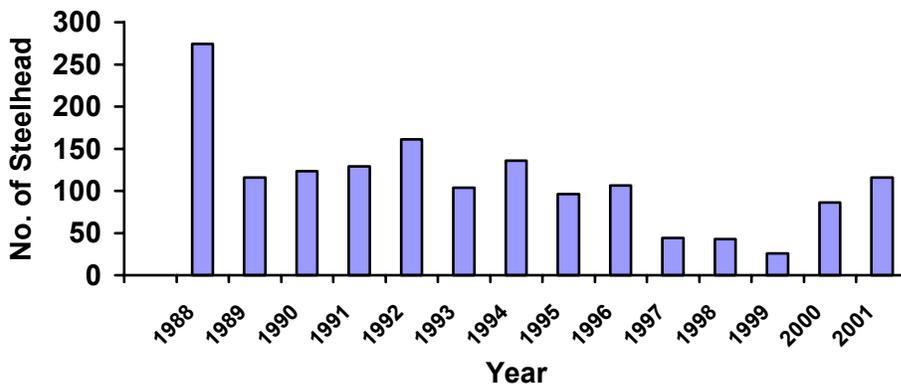
Forest Service sensitive species policy requires that species with viability concerns be given special management emphasis to ensure their continued existence.

such as Washington Dept. Fish and Wildlife (WDFW).

Results:

Wind River Steelhead Snorkel Survey - The objectives of the survey were to obtain a count of steelhead for trend comparison with the past 13 years' results, and to provide mark/observation data for estimating the actual number of steelhead in Wind River. The snorkel survey covered 22 miles of water and provided resource managers with another valuable piece of information on adult steelhead. The total adult steelhead count this year was 116 (Figure 13). This count is the highest since 1994 and compares favorably with last year's count of 86 and the previous five year average of 61.

Figure 13. Wind River adult steelhead snorkel survey counts from 1988 to 2001.



The 2001 Wind River steelhead snorkel survey include a Peterson mark recapture estimate. However, mark and recapture estimates of tagged fish at the Shipherd Falls trap are in progress at the time of this report and are unavailable for a total run.

Although there was an increase in the Wind River steelhead population this year, biologists are very concerned about the long-term viability of this population. The current population is less than one-quarter of State escapement goals (1000 adults). The snorkeling results help the WDFW biologists make critical fishing regulation changes each year and serve as a monitoring tool for restoration efforts.

Biologists are very concerned about the long-term viability of this population.

Wind River State of the Steelhead. The Wind River "State of the Steelhead" project is a vital, ongoing public and interagency effort between Bonneville Power Administration (BPA), USFWS, WDFW and GPNF that allows resource managers to keep current on local watershed health. All creeks discussed in this section belong to the Wind River basin. The project includes the following surveys:

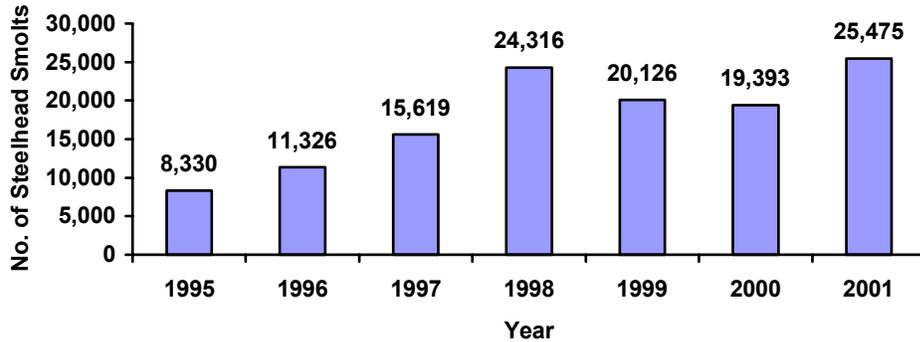
Redd Surveys: The objectives of redd surveys are to evaluate population trends and identify preferred spawning sites relative to habitat and restoration sites. Biologists from WDFW and GPNF have surveyed established index reaches within the Wind River basin since 1987. Surveys were conducted on 24 miles of index spawning reaches on mainstems and tributaries. A total of 66 redds were observed in the Wind River watershed, up from only 13 in 2000.

66 redds were observed in the Wind River watershed.

Smolt Traps: Smolt trap data is used in conjunction with redd surveys, snorkel surveys and adult trap data to evaluate steelhead smolt production, migration timing, fresh and marine water survival by sub-watershed. The USFWS, WDFW and USFS have operated rotary screw traps within the basin since 1995. The resulting data has allowed us to quantify increases in freshwater survival and declines in ocean survival. In addition, the data has allowed us to focus out-year restoration proposals on specific sub-watersheds, such as the upper Wind River.

Population estimates are based on the total number of steelhead smolts captured at the mouth of the Wind River. The reported 2001 estimates are the midpoint of the 95% confidence limits for trap efficiencies. Smolt trap mark and recapture data requires intensive refinement and analysis to produce statistically valid estimates due to the large number of variables influencing the efficiencies of the traps. For the 2001 smolt emigration, an estimated 25,475 smolts exited the Wind River basin

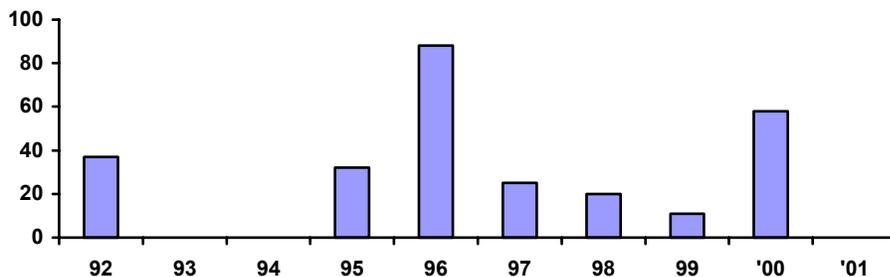
Figure 14. Wind River steelhead smolt population estimates from 1995 to 2001.



Adult Traps: Objectives for adult traps are to segregate hatchery and wild steelhead, verify redd survey observations, and monitor adult population trends in Trout Creek. Adult trap data has allowed us to keep hatchery and wild stocks from interbreeding in the upper portions of the Wind River basin. The information is used to make significant changes in fishing regulations, as well as management of Hemlock Dam’s fish ladder and the dam itself. The Clark Skamania Flyfishers, White Salmon Steelheaders, and WDFW and USFS biologists have been operating the adult trap on Trout Creek’s fish ladder at Hemlock Dam since 1992.

Figure 15 displays the adult steelhead population data for Trout Creek (1992 thru 2001). The trapping season is not complete for 2001/2002 winter so the data provided not available.

Figure 15 Trout Creek Spawners*



*Data for 1993, 1994 an 2001 not available

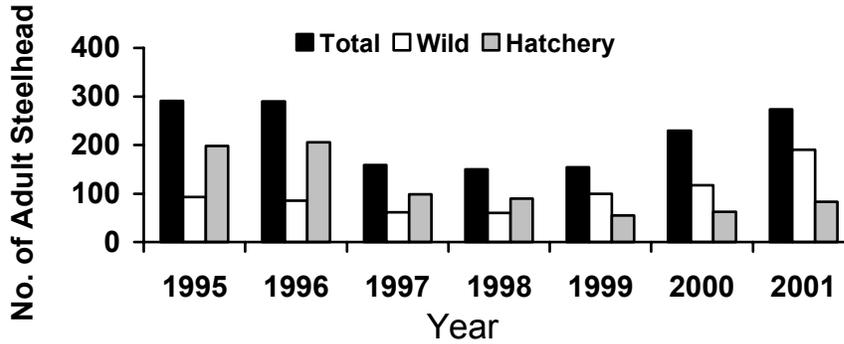
East Fork Lewis Steelhead Snorkel Survey. For the past seven years, WDFW in cooperation with Clark-Skamania Flyfishers, Trout Unlimited, US Fish and Wildlife Service (USFWS), and USFS biologists has organized a snorkel survey along the East Fork Lewis River.

The objective of the survey is to count adult summer-run steelhead. Snorkel counts are

completed in mid-summer on an average of 30 miles of mainstem and tributaries. Steelhead are counted as wild, hatchery, and unknown.

The 2001 observations were 83 hatchery, and 190 wild steelhead. The number of wild steelhead counted for 2001 is the highest since the survey was initiated in 1995 (Figure 16).

Figure 16. East Fork Lewis River steelhead snorkel counts from 1995 to 2001.



The number of wild steelhead counted in 2001 is the highest since the survey was initiated.

Wild steelhead counts for the years 1995 through 2001 are 93, 85, 61, 60, 99, 117, and 190, respectively. The lowest number of wild steelhead observed through snorkel surveys was in 1998. For the past three survey years, more wild steelhead have been observed than hatchery. Hatchery steelhead counts for the years 1995 through 2001 are 198, 205, 98, 90, 55, 112, and 83, respectively. High hatchery counts in 1995-96 are the result of larger hatchery smolt releases. In 2001, wild steelhead observed accounted for 69 percent of the total number of steelhead observed.

The above numbers do not represent the total number of steelhead in East Fork Lewis River. Steelhead will enter the river after the surveys and some fish hiding in whitewater, large wood, boulders, and deep pools are not observed during the surveys. The numbers are used as an index to compare trends between years. They represent a minimum count.

Evaluation: Population Viability and Influencing Factors

Many factors in addition to habitat are known to affect anadromous fish populations. Global weather patterns, specifically the drought years from the late 1980s through 1993, have exacerbated the effect of declining habitat conditions. Sport and commercial fishing have also taken their toll. Continued harvest of depressed stocks further contributes to their decline. The Wind River steelhead population continues to show a declining trend over the 10-year record of surveys. Losses of riparian vegetation, altered streamflow and sediment regimes have reduced the ability of the watershed to reach its full potential in supporting aquatic life. Impacts are manifested by increased water temperatures, reduced pool quality and abundance, reduced large wood in streams, and increased stream width-to-depth ratios (*Wind River Watershed Analysis*, 1996).

At this time ocean survival appears to be the major factor of decline of steelhead within the Wind River basin. Based on smolt trap, snorkel and redd survey data, smolt to adult survival for the past four years has been below 1 percent. Seven to twenty percent was considered good to excellent smolt to adult steelhead survival in Washington rivers such as the Kalama River and Snow Creek (Rawding, personal communication). Freshwater survival has been good to excellent in recent years. Trout Creek adult and smolt trap data

Many factors in addition to habitat are known to affect anadromous fish populations

Freshwater smolt survival has been good to excellent in recent years.

show that egg to smolt survival has ranged from 2.4 percent to an amazing 17.8 percent in the past six years. This survival is attributed to very good fresh water conditions and low densities of juveniles present in the basin. The adult returns and subsequent low numbers of juveniles reduce direct and indirect competition that promotes higher survival. In addition, the relatively good freshwater conditions are evidenced by the number of days water temperature exceeding 16 degrees Celsius (60.8 degrees Fahrenheit) each cohort has had to endure has declined in the last four years by more than 30 percent.

The decline of the Wind River steelhead began during the drought in the late 1980's to early 1990's. During that period the loss of riparian vegetation and altered stream flow and sediment regimes due to timber harvest reduced the ability of the watershed to support aquatic life. Impacts were manifested by increased water temperatures (over 77 degrees Fahrenheit), reduced pool quality and abundance, reduced woody debris in streams, and increased stream width to depth ratios (Wind River Watershed Analysis, 1996). Poor freshwater conditions then followed by poor ocean conditions has put this and other stocks of salmonids within the basin in a perilous state.

The impact of dams, Hemlock Dam on Trout Creek and the Bonneville Dam on the main stem Columbia River, has not been quantified to an acceptable level of confidence. It is thought that 10-15 percent of smolts out-migrating on the Columbia River are direct and indirect casualties of Bonneville Dam (Dan Rawding, Lower Columbia Steelhead Biologist for WA Dept of Fish and Wildlife, personal communication). Global weather patterns, specifically drought years in the late 1980's through the summer of 1993, have amplified the impact of these problems on fish populations (Wind River Watershed Analysis, 1996). Sport and commercial fishing have also taken their toll.

The reluctance of management agencies and beneficiaries of the Columbia River salmon runs to reduce their harvest despite dwindling populations has resulted in a higher percentage of the runs being harvested. Based on smolt to adult survival estimates, approximately 99 percent of all steelhead out-migrating from the Wind River as smolts are lost to dams, harvest, disease and predators.

Recommended Action to be Taken:

- Continue watershed restoration partnership efforts aimed at Wind River steelhead recovery.
- Promote the development of a watershed restoration partnership recovery approach for steelhead in the East Fork Lewis River.
- Implement planned watershed and habitat restoration identified in watershed analysis for East Fork Lewis River.
- Monitor and develop a report on restoration results.
- Continue to develop mark recapture estimates for steelhead adults and smolts on the Wind River.
- Develop a biological monitoring plan (e.g. adult escapement and freshwater survival) for East Fork Lewis River.
- Develop active partnerships and actively pursue salmon recovery initiative funding to continue restoration and monitoring efforts in East Fork Lewis River.

Bull Trout (*Salvelinus confluentus*)

Since they require exceptionally cool, clean water, bull trout are a good indicator of watershed condition.

Introduction: Bull trout in the Lower Columbia River Distinct Population Segment (DSP) are listed as threatened under the Endangered Species Act by USFWS. Since juvenile bull trout require exceptionally cool, clean water, they are considered a good management indicator of watershed condition and aquatic ecosystem health. A verified population exists in the North Fork Lewis River system above Merwin Dam, with the majority of fish occurring above Swift Dam. Preliminary information suggests that the Kalama River and Yellow Jacket Creek may have an existing or historic bull trout population. However, no verifiable evidence exists. The Lewis River population is considered adfluvial while the life history of the other two populations is unknown. Adults spend the majority of their life cycle in Swift Reservoir, ascending its tributaries each year to spawn.

Bull trout population monitoring has been conducted in partnership with the WDFW and PacifiCorp since the early 1990's. In 2001, GPNF contracted to do night bull trout snorkel surveys and conduct water temperature monitoring in specific watersheds in addition to the WDFW and PacifiCorp survey efforts.

North Fork Lewis River. Early monitoring efforts with WDFW focused on determining population size and viability through collection of catch per unit effort data. Beginning in 1994, population estimates were derived using a mark-visual observation method. Adults are captured in the reservoir in the spring, uniquely marked, then released. In the late summer and early fall, repeated snorkel surveys are used on a weekly basis to observe the ratio of marked to unmarked adults active on spawning grounds. Using a Joint Hypergeometric Maximum Likelihood Estimator (JHE), a population estimate is calculated with a 95% confidence limit.

Two conditions are modeled in deriving the JHE. They include the following:

1. A 10 percent reduction in the number of reservoir marked adults appearing on the spawning grounds (based on prior year radio telemetry studies), and
2. A 10 percent tag loss.

PacifiCorp, Trout Unlimited, WDFW, and USFS personnel conducted snorkel counts in Pine and Rush Creeks, where bull trout spawn, to count the number of tagged and untagged bull trout;. The resulting data are used to estimate bull trout population size each year.

The objective of this multi-year partnership is to collect information about bull trout migration timing, distribution, habitat use, and habitat preferences so we can develop site-specific recovery plans for the species. We captured one hundred and twenty-six adult fish at Swift Reservoir headwaters during May 2001 with short-term gill net sets. Out of the one hundred and twenty-six fish caught, only eighty-eight were tagged. Fish were marked with a floy tag (tags that look like a colorful 2" piece of spaghetti) and released back into the reservoir. We also discovered that the 1996 flood changed the spawning time of fish in the North Fork Lewis River – for unknown reasons, spawning now occurs 2 to 3 weeks earlier than before the floods.

Since the 1996 floods bull trout spawning occurs 2 to 3 weeks earlier.

Bull Trout Surveys. Since the listing of bull trout, GPNF, WDFW, and USFWS have been discussing the likelihood of the specie's presence in several drainages on national forest system land. Discussions revolved around known fish distributions and habitat conditions, water temperature, stream surveys, snorkel surveys, creel samples, electro fishing surveys, and anecdotal information. Further review and close examination of various types of historical and current survey records excluded the presence of bull trout in several drainages. In others, poor quality and lack of data could not verify the absence of bull trout or potential bull trout habitat.

A contractor conducted bull trout presence-absence surveys and associated stream temperature monitoring on the GPNF. This information will assist in acquiring more data to determine the likelihood of bull trout presence.

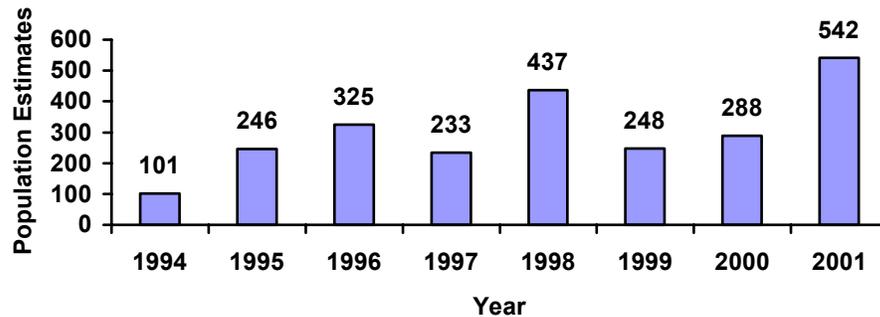
The objective of bull trout surveys completed in 2001 using the *Interim Protocol for Determining Bull Trout Presence*, was to determine presence or absence of juvenile bull trout with some statistical rigor in areas of suitable habitat in the Upper Nisqually River, Upper Cispurs River, Kalama River, Merwin Reservoir Lewis River, Upper Lewis River, and Columbia Gorge East Frontal drainages. Data obtained is expected to help refine the extent of suitable bull trout habitat at a stream reach level, and will confirm presence or absence with a given level of confidence using best available survey methods.

Results:

Population was estimated at 542 in the North Fork Lewis River.

North Fork Lewis River. Eighty-eight bull trout were tagged in Swift Reservoir by WDFW. A total for four snorkel surveys were completed by WDFW and USFS in Pine Creek and another four in Rush Creek, tributaries to North Fork Lewis River. Population estimates were then computed for each week resulting in a combined population estimate of 542 (Figure 17). We are 95% sure that the spawning population size is between 439 and 689 adults.

Figure 17. - Bull trout spawning population estimates for Swift Reservoir.



The 2001 estimated population size for spawning bull trout in Swift Reservoir of 542 compares to the 8-year average of 303. Swift Reservoir population estimates for Pine and Rush Creek snorkels nearly doubled from the year 2000. In 2001, 77 percent of the tagged fish were observed in Rush Creek and 23 percent of the tagged fish were observed Pine Creek, indicating that Rush Creek is the primary stream that bull trout migrate to from Swift Reservoir.

Bull trout Surveys. The Forest used a contractor to conduct bull trout surveys in several streams on the Forest. Criteria used to select streams for bull trout survey were the presence of little or no data on stream condition, fish species, known watersheds, and areas that required consultation where Forest personnel felt bull trout were not present. A total of fifteen streams were selected, four in the Upper Nisqually, one the Upper Cispus, one in the Kalama, one in the Merwin Reservoir/Lewis, three in the Upper Lewis, and one in the Columbia Gorge East Frontal drainages (Table 28).

Table 28. Streams selected for bull trout surveys in 2001 on GPNF.

Upper Nisqually	Upper Cispus	Kalama	Merwin Reservoir Lewis River	Upper Lewis	Columbia Gorge East Frontal
Cooper Creek East Creek Goat Creek Horse Creek	North Fork Cispus River	Upper Kalama River	Big Rock Creek	Big Spring Creek Cussed Hollow Swampy Creek	Dog Creek

No bull trout were found in fifteen other streams surveyed on the Forest.

A report for Upper Nisqually River, Upper Cispus River, Kalama River, Merwin Reservoir/Lewis River, Upper Lewis River, and Columbia Gorge East Frontal areas with results of the survey is available from the Forest Fisheries Biologist. In summary, no bull trout were observed during the surveys conducted in 2001 on GPNF in these drainages (Table 29)

In addition to surveying for bull trout, the contractor surveyed stream temperatures in Kalama River, Big Spring Creek, Swampy/Pass Creek, East Creek, Goat Creek, Copper Creek, Cussed Hollow, North Fork Cispus River, Big Rock Creek, Horse Creek, and Dog Creek. Some streams had temperatures (<10°C) that are better suited for juvenile bull trout. Low water temperatures suitable for bull trout were observed in 3 of the 11 watersheds: the upper Kalama River, Big Spring Creek, and Swampy/Pass Creek. Average water temperatures were consistently below 10°C in these watersheds, however, no bull trout populations were detected. Average stream temperature within East Creek, Goat Creek, Copper Creek, Cussed Hollow, North Fork Cispus River, Big Rock Creek, Horse Creek, and Dog Creek were above 10°C. The highest stream temperature collected for these streams was 14.5°C and the lowest was 10°C. Optimal stream temperatures for bull trout during incubation is 2 - 4°C, rearing 4 - 12°C, and spawning ≤ 9°C.

Evaluation: Population Trend and Influencing Factors

Bull trout population trends on GPNF appear to be in flux. Certain tributaries to Swift Reservoir, such as the Muddy River, contain sub-optimal habitat for bull trout. Despite restrictive angling regulations on Swift Reservoir and its tributaries, illegal take of bull trout still occurs on occasion. Lack of fish passage facilities at Swift Dam isolate the Swift Reservoir population from mixing and re-establishing with the isolated population of a Yale Lake tributary.

Table 29. Summary of bull trout surveys conducted in selected streams in Cowlitz Valley and Upper White Salmon areas on GPNF.

Stream Name	Stream Miles Surveyed	Number of Stations Snorkeled	Fish Species	Average Stream Temp (° C) (Range)	Range of Stream Slope (%)
Upper Nisqually River					
Copper Ck	.6	10	ONMY ONCL SAFO	10.8 (10.0-11.5)	13.3 (5.0-22.0)
East Ck	2	31	ONMY ONCL	12.4 (10.0-14.5)	6.1 (2.5-13.0)
Goat Ck	.4	6	ONCL SAFO	10.5 (10.0-11.0)	17.8 (13.5-22.0)
Horse Ck	2	31	ONMY ONCL	10.5 (7.0-12.5)	3.9 (1.0-10.5)
Upper Cispus River					
North Fork Cispus River	2.4	40	ONMY ONCL SAFO ONKI PRWI	10.8 (9.5-12.5)	3.8 (1.0-14.0)
Kalama River					
Upper Kalama River	2.2	36	ONCL SAFO	5.4 (4.0-8.0)	2.4 (0.5-4.5)
Merwin Reservoir/Lewis River					
Big Rock Creek	2	34	ONCL	11.5 (9.5-13.0)	4.0 (2.0-12.0)
Upper Lewis River					
Big Spring Ck	.5	8	ONCL	6.3 (6.0-6.5)	4.0 (2.0-12.0)
Cussed Hollow	.3	5	ONCL SAFO	13.3 (13.0-14.0)	3.8 (2.5-5.0)
Swampy Ck	.6	10	ONCL SAFO	8.7 (8.0-9.0)	1.7 (1.5-2.0)
Columbia Gorge East Frontal					
Dog Creek	.1	1	ONMY ONKI	14	1.2
ONKI = <i>Oncorhynchus kisutch</i> – coho salmon, ONMY = <i>Oncorhynchus mykiss</i> – steelhead, ONCL = <i>Oncorhynchus clark</i> – cutthroat trout, SAFO = <i>Salvelinus fontinalis</i> – brook trout, PRWI = <i>Prosopium Williamsonsii</i> – mountain white fish					

Recommended Actions to be Taken:

Continue supporting education and law enforcement efforts to curb illegal take of bull trout.

Where supported by a Roads Analysis, close spur roads to vehicular access that are known to be used for illegal harvesting of bull trout.

Install adult traps in partnership with Trout Unlimited and WDFW to obtain actual spawner escapement counts.

Participate in FERC relicensing efforts on the North Fork Lewis River system to address bull trout needs in relationship to existing hydroelectric facilities.

Continue to conduct/presence absence surveys for all bull trout areas believed to contain suitable habitat.

Maintain partnerships with other agencies to coordinate bull trout survey efforts.

Verify WDFW reports on bull trout in Kalama River and Yellow Jacket Creek.

In-Channel Habitat Structures 62d

Introduction: Stream habitat restoration activities have been implemented on the Forest since the early 1980s. Activities generally focus on improving habitat availability and quality. The majority of restoration efforts have focused on improving habitat for anadromous species, primarily steelhead. Monitoring provides important feedback for improving in-channel habitat structure designs and applications for future efforts.

101 structures were evaluated in 2001 on the Wind River.

Structure monitoring in 2001 was conducted on the Wind River Rehabilitation project. These structures were specifically designed to enhance fish habitat and monitoring focused on structures placed in 1999 and 2000. Fish biologists surveyed 101 structure sites on the project, evaluating the function and performance of individual structures. Specific data were collected to provide insight on structure success.

Results:

One hundred and one structure sites were evaluated in 2001 in Wind River. A variety of structures types were reviewed. All but one structure was found to be “in place” and none of the structures needed maintenance.

Evaluation:

The overall project goal was to improve fish habitat for salmonid fishes and restore channel complexity.

Careful project design based on intensive study and analysis of physical and ecological characteristics of the site resulted in 100 percent effectiveness of structures.

100% of the structures monitored were effective in meeting design objectives.

Effectiveness monitoring should be conducted when the structures are functioning as designed. Surveys conducted during low flow make it difficult to recognize all processes influencing the success or failure of individual treatment sites. For example, the bank protection structures are designed to function at high flows and would best be evaluated under design flows.

Road Management 70

The Forest began using a new database to track road closure and decommissioning in 2001. Data presented in this report are not directly comparable to those presented in previous years but are believed to be more accurate.

Introduction:

The Forest has begun conducting Roads Analysis as prescribed by the national Roads Management Policy which became final in January 2001. A requirement of the new policy is that managers assess the benefits and ecological costs of roads in a roads analysis. One of the outcomes of roads analysis is the identification of roads that have risks to the aquatic and terrestrial ecosystem but are needed for the transportation system. Another is the identification of roads that are candidates for closure or

decommissioning, either because they are unneeded or cause unacceptable environmental impacts.

Road closures include permanent and seasonal closures and decommissioning. Permanent closures are year-around closures created by berms, rock barricades, or by allowing vegetative growth to obscure the road.

Some roads are closed seasonally by gates or other barriers that allow us to open the road during non-critical periods. This seasonal closure may be to protect elk calving grounds, winter range for deer and elk, other wildlife resources, or for administrative reasons such as protection of wet subgrades, or providing visitors with non-motorized experiences.

Decommissioning involves permanent removal of the road from the system by removing drainage structures to create more natural drainage patterns, decompacting some roadbeds to restore their capacity to absorb runoff, blocking the entrance to prevent vehicles from reopening the road, and revegetating the roadbed to prevent runoff and to restore productivity. We account for how much overall decommissioning is done on the Forest, and also how much decommissioning and new construction have been done in each of the designated Key Watersheds on the Forest, in order to ensure there is no increase in road miles in any Key Watershed.

The Forest accounts for how much decommissioning and new construction is done in Key Watersheds.

CULVERT INVENTORY

The Gifford Pinchot NF conducted a detailed fish passage inventory at road crossings in Fiscal Year 2001, completing approximately 50 percent of the culverts on fish bearing streams. Priority was for culverts crossing streams with anadromous fish.

Table 30. - Priority Watersheds for Culvert Inventory

Wind River	Upper Cispus River
East Fork Lewis River	Middle Cowlitz River
Muddy River	Upper Cowlitz River
Swift Reservoir-Lewis River	Clear Fork Cowlitz River
Upper Lewis River	Tilton River
Lower Cispus River	

The inventory will categorize the culverts into one of three categories:

- Adequate for fish passage
- May not be adequate for fish passage, additional analysis required
- Not adequate for fish passage.

Culvert improvement/replacement projects will be proposed for culverts described as “Not Adequate For Fish Passage.” Additional analysis of culverts will be completed in subsequent years where needed to determine fish passage status and/or formulate improvement projects.

Road Closure Results:

BIOLOGICAL WINTER RANGE (BWR): Road closures are one means of reducing wildlife disturbance in deer and elk winter range. The Forest Plan established a goal of reducing open road density to 1.7 miles of open road per square mile within the biological winter range. The Gifford Pinchot has surpassed this goal, with a current road density in BWR of only 1.6 miles of open road per square mile.

The Forest has surpassed its Forest Plan goal of reducing BWR road density to 1.7 open miles per square mile.

OVERALL FOREST: The projected road closure target for the entire Gifford Pinchot National Forest, as stated in the Forest Plan, is 1,230 miles of road in seasonal or permanent closure, Forest-wide. There are currently an estimated 1,087 miles of road

closed by effective year-round closures, or seasonally for BWR or other resource needs. This alone puts the Forest at 88 percent of the projected goal. In addition, 296 miles of road have been decommissioned since 1994 (342 miles since 1991).

Table 31. - Roads in Key Watersheds

KEY WATERSHED	1994 Road Miles	Miles Decommissioned in FY 2001	Miles Decommissioned since 1994	Miles Constr. Since 1994	2001 Road Miles	Net Change Road Miles
Clear Fork Cowlitz	110	0	0	0	110	0
E.Fork Lewis	79	0	3	0	76	-3
Lewis River	737	0	40	0	697	-40
Little White Salmon	133	4	13	1	121	-12
N. Fork Cispus	102	0	4	0	98	-4
Packwood Lake	23	0	0	0	23	0
Siouxon Creek	69	0	0	0	69	0
Upper Cispus	70	0	7	0	63	-7
White Salmon	129	4	21	1	109	-20
Wind River	433	0	60	0	373	-60
Totals	1,885	8	148	2	1,739	-146

KEY WATERSHEDS: Error! Reference source not found. Table 31 compares current road mileage in the 10 key watersheds on the Forest with mileage at the time the Northwest Forest Plan was implemented in 1994. The Forest is required to maintain or decrease the road density in each key watershed. As can be seen from Table 31, this objective has been achieved; there are now 7.8 percent fewer miles of roads in key watersheds on the Forest than there were in 1994, and road mileage has not increased in any Key Watershed.

Table 33 lists road projects completed on the Forest during calendar year 2001. These figures will differ from the program accomplishment table, page 65, which are compiled on a fiscal year basis.

Evaluation:

BIOLOGICAL WINTER RANGE (BWR): Road closure effectiveness in BWR has not changed appreciable since 1999, after an increase the previous year. Money for repairs of flood damage from the 1996 and 1997 floods temporarily increased funding levels, but this funding source was not available to the Forest Service in FY 2001.

Table 32. – Road Density for BWR on the Gifford Pinchot N. F.

If all the roads in BWR that are prescribed for closure could be effectively closed, we would have achieved a road density of 1.2 mile per square mile of BWR.

Road Density in Deer & Elk Winter Range	
Miles of open road	702
Land Area (sq. mi.)	428
Road Density	1.6 mi./mi. ²

The 1.6 mile figure may under-represent actual closures during the critical period, since during the years that BWR is needed by elk and deer populations, many more roads are closed to vehicle traffic by snow.

Table 33. Road Projects completed from January – December 2001.

Project Type	Project Name	Miles	Watershed
Reconstruction	Road 8040 & spur 500	4.4	White Salmon River
Reconstruction	Road 2300	0.1	Upper Cispus River
Reconstruction	Road 2203	0.1	Upper Cispus River
Reconstruction	Road 2800	0.3	Lower Cispus River
Reconstruction	Road 2810	0.5	Lower Cispus River
Reconstruction	Road 2130038	3.8	Upper Cowlitz River
Reconstruction	Road 2130410	1.1	Upper Cowlitz River
Reconstruction	Road 9039	0.1	Upper Lewis River
Reconstruction	Road 9039310	0.1	Upper Lewis River
Erosion Control	Road 2100	0.1	Upper Cispus River
Erosion Control	Road 7800	0.1	Upper Cispus River
Erosion Control	Road 7708067 slide	0.1	Lower Cispus River
Erosion Control	Road 7301 slide	0.1	Tilton River
Erosion Control	Road 54 cutbank	0.1	Merwin Reservoir – Lewis River
Erosion Control	Road 3200400 landing	0.1	Upper Lewis River
Erosion Control	Road 8800	0.1	Upper Lewis River
Stabilize/Open	Road 2208	2.6	Upper Cispus River
Stabilize/Open	Road 2212	5.3	Upper Cispus River
Stabilize/Open	Road 7800072	1.1	Upper Cispus River
Stabilize/Open	Road 7800075	0.3	Upper Cispus River
Stabilize/Open	Road 7802	1.4	Upper Cispus River
Stabilize/Open	Road 2810	8.3	Lower Cispus River
Stabilize/Open	Road 2816	4.4	Lower Cispus River
Stabilize/Open	Road 2816052	1.6	Lower Cispus River
Road to Trail	Road 8031023	1.3	White Salmon River
Decommission	Road 5505014	0.3	Middle Cowlitz River
Decommission	Road 3000712	0.1	Upper Lewis River
Decommission	Road 6500726	0.3	Upper Lewis River
Decommission	Road 8600130 & 132	3.2	Little White Salmon River
Decommission	Road 8600141	0.5	Little White Salmon River
Decommission	Road 8031022	0.4	White Salmon River
Decommission	Road 2360	1.0	White Salmon River
Decommission	Road 2360072	1.8	White Salmon River
Decommission	Road 2360750	0.1	White Salmon River

GENERAL ROAD CLOSURES The goal of 1,230 miles of closed road was intended to include roads no longer used for vehicular traffic, so this should not only include roads permanently barricaded or seasonally closed by means of gates, but also those roads we have decommissioned and taken permanently out of service. Since the Plan took effect, 296 miles of system roads have been decommissioned, (8 miles in 2001) bringing the total of roads closed permanently or at least part of every year to 1,383¹ this year, which is in excess of the goal. The need to mitigate the effects of storm-damaged roads on streams resulted in funds being available in prior years to decommission many roads that would otherwise have waited years to receive funds. Most of the mileage decommissioned this year was the result of contracts let in 2000 that did not finish work that year. Decommissioning has been a priority in recent years, but unless funding is found to continue the program, there will be much less in the immediate future.

KEY WATERSHEDS The Northwest Forest Plan requirement to maintain or decrease the road density in each key watershed has been met again this year. As Table 31 shows,

¹ 1,087 miles of year-around closure and 296 miles decommissioned.

296 miles of roads have been decommissioned since 1994.

there are now 7.3 percent fewer miles of roads in key watersheds on the Forest than there were in 1994, and no Key Watershed has experienced an increase in road mileage. There has been only two miles of new road construction in key watersheds since 1994. The Key Watersheds with the most decommissioning are the Wind River and Lewis River watersheds, with 60 and 40 miles of road decommissioning since 1994, respectively.

Recommendation: Continue to check for the effectiveness of road closures, repair road closure devices that are breached or ineffective, and locate funding to continue to close unneeded roads. It would also help to use more effective types of road closures, though this is more expensive. Historical records indicate that gate closures are about 25 percent more effective than berms.

Community Effects – Payments to Counties 

Introduction: By an act of Congress in 1908, 25 percent of Forest revenues were paid to counties in proportion to the amount of national forest system land in each county. The act stipulated that the money generated is to be spent on public schools and roads. While this formula worked well for many years, with the dramatic decline in timber harvest over the past decade there has been an interest in decoupling support to rural communities from timber harvest.

Beginning in 2001, there is an alternative system by which counties have chosen to receive payments from the federal government for the support of roads and schools. The “Secure Rural Schools and Community Self-Determination Act of 2000” stabilizes payment levels to their historic high and provides that 15 – 20 percent of the funds be used for local projects with advice from local citizens.

The new formula is based on averaging a state’s three highest payments between 1986 through 1999 to arrive at a compensation allotment or “full payment amount.” Communities have the choice to fund restoration projects on federal lands or on county endeavors such as search and rescue, community service work camps or fire prevention. Forest projects must be approved by one of two 15-member Resource Advisory Committees (RAC) made up of local citizens. The new legislation is slated to guide payment activities for the next six years through fiscal 2006. Details of the legislation are on the Internet at <http://www.fs.fed.us/payments/index.html>.

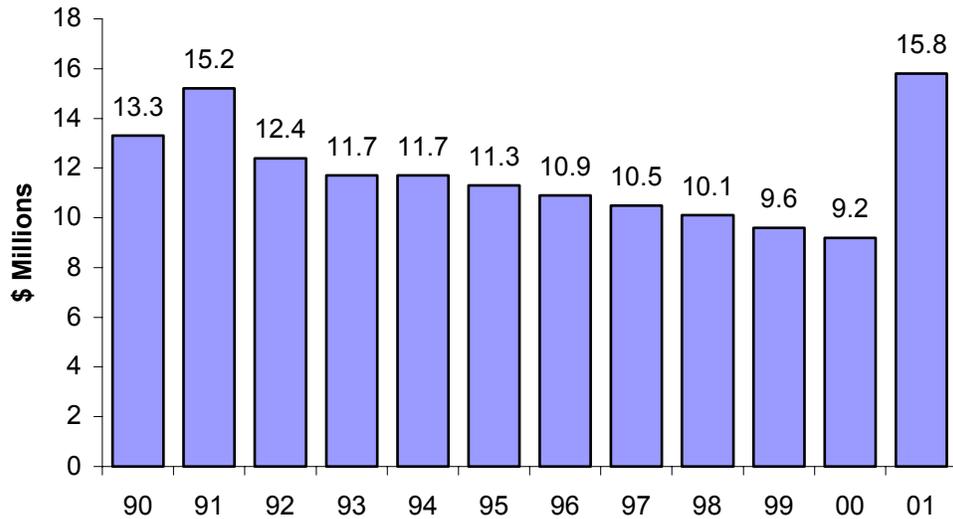
Results: Nearly \$16 million was returned to the six counties with lands in the Forest boundary. Restoration projects totaling nearly \$1.4 million will be reviewed and prioritized by the RACs. The current distribution among counties within the Forest boundary is displayed in, Table 34, page 62.

\$16 million was returned to the 6 counties within the Forest boundary.

Table 34. – Community Effects—Payments to Counties

County	Percent Total Distribution	2001 Distribution
Clark	0.1%	14,790
Cowlitz	2.6%	416,140
Klickitat	1.1%	168,057
Lewis	27.3%	4,313,454
Skamania	67.3%	10,637,108
Yakima	1.6%	253,302
Total	100%	15,802,851

Figure 18. – Payments to Counties



An important Forest Service goal in recent years has focused on helping rural communities adjust to changing federal land management practices and policies. The Forest Service has developed a program designed to provide both financial and technical assistance to natural resource-based communities and rural development organizations striving to diversify and revitalize local economies. In 2001, the program, called Rural Community Assistance, invested \$545 thousand in the infrastructure of communities surrounding the Forest. Grants by county in the past six years are tabulated in Table 35. The grant to Skamania County includes nearly \$200 thousand for work related to the conveyance of the former Wind River Nursery to Skamania County.

The Rural Community Assistance program invested \$545 thousand in communities surrounding the Forest.

Table 35. – Rural Community Assistance Grants

County	1996	1997	1998	1999	2000	2001
Cowlitz	400,200	90,538	2,500	0	86,750	78,000
Klickitat	302,832	227,600	178,700	129,000	117,500	50,000
Lewis	417,754	223,691	32,000	167,75	76,600	64,800
Wahkiakum	48,200	28,000	105,000	62,785	98,000	0
Clark	23,426	0	0	0	0	20,000
Skamania	118,560	192,050	164,000	273,280	111,800	332,600
Pierce	7,314	15,000	0	0	0	0
Total	\$1,318,286	\$776,879	\$482,200	\$632,840	\$490,050	\$45,400

Mining Operating Plans ⁹¹

Introduction: The Forest Service is charged with making minerals available to the economy, while minimizing the adverse impacts of mining activities on other resources. Mining is unlike other activities on federal lands in that the General Mining Law of 1872 grants the federal land management agencies far less authority over mining activities than over timber harvest, recreation, grazing and other activities. The Forest Service minerals regulations, 36 CFR 228, provide rules to ensure that mining operations be conducted to minimize environmental impacts. These regulations require that a Notice of Intent (NOI) be submitted to the Forest Service district ranger on the district where the mining is proposed. The operator is required to submit a Plan of Operations (POO) if the district ranger determines that such operations will likely cause significant disturbance of surface resources. Recreational suction dredgers are required to get hydraulic permits from the state for working in streams and should submit a NOI or POO to the Forest Service prior to working on the district.

Results: The Forest administered about 150 Notices of Intent and three Plan of Operations for mining activities. Each district administered about 55 to 60 NOI's and Mt. Saint Helens had 2 POO's and Mt. Adams had the other POO.

Most of the minerals involved salable (common variety) mineral resources. The districts administered many small use permits for rock during FY 2001. Mt. Adams also had one rock permit for larger quantities. These permits were issued for either building material (flat, platy flagstone-type rock), construction material (used for fill, road rock or similar use) or landscaping material (decorative type uses). The Forest has sold little to no processed rock such as crushed aggregate that is used as a surfacing for roads.

On-Forest use of rock for numerous construction projects amounted to about 20,000 tons. Most of this rock was utilized for restoration projects such as culvert replacements. There was some surface rock replacement to improve drivability. Some was also utilized for rock fills or riprap for stabilization of slopes.

An area of concern that has been raised is the potential for adverse effects to fish habitat from recreational suction dredging on certain streams within the Forest. The required hydraulic permits limit mining activity and its timing, based on guidelines set up in a state publication, *Gold and Fish*. This publication contains rules and regulations for mineral prospecting and placer mining in Washington State (WDFW Publication GF-1-99). Through monitoring this year the Forest had nine NOIs for suction dredging on the Forest; two were on Copper Creek which is a tributary of the East Fork Lewis and the other seven were located on Yellowjacket/McCoy creeks and various tributaries of this system. There is some concern that *Gold and Fish* allows suction dredging in the lower Yellowjacket and McCoy creeks that may adversely impact anadromous fish spawning. The district fish biologist is working with the state to initiate a change to *Gold and Fish* to reduce the potential of spawning salmon from being adversely affected.

Evaluation: Standards and guidelines were met.

Recommended Action: Continue monitoring the level of activity by recreational suction dredgers. Encourage the state to notify the Forest of applicants for hydraulic permits on the Forest. The dredgers should also be providing Notices of Intent to each district where they plan on working. Help the state revise *Gold and Fish* to reduce impacts to the fish.

The Forest administered 150
Notices of Intent and 3 plans
of operation

C. Accomplishments

The following table compares program accomplishments for FY's 96-00:

Output	Units	Outputs					2001 Target
		1997	1998	1999	2000	2001	
Developed and Dispersed Recreation Use**	Recreation Visitor Days	5,600	5,518	4,480	5,152	5,600	*
Wilderness Use	(thousand)	76.1	72.2	44.7	69.6	69.9	*
Trail Const/Recon.	Miles	10.9	66	13.7	1.7	6.7	*
Trails Maintained	Miles	627.3	832	668	76.8	819	*
Wildlife Habitat Improvement:							
Structural	Structures	28	19	0	0	0	*
Nonstructural	Acres	199	250	1,200	849	765	623
Wildlife Indicator Species:							
Deer	Habitat Capability	18,300	18,150	18,000	17,850	17,900	*
Elk	Animals	4,570	4,530	4,490	4,450	4,500	*
Mountain Goat	Animals	290	290	290	290	290	*
Net Sell Volume	MCF	12,000	9400	606	260	400	10,670
	MMBF	61.9	48.8	3.3	1.3	2	55
Volume Harvested	MMBF	41.0	34	30	17.8	9.4	*
Reforestation	Acres	3,888	1,342	923	891	552	574
Fuel Wood	MCF	295	141	279	178	306	*
Precommercial Thin	Acres	2,643	2,087	1,419	2,012	6,027	6,073
Release	Acres	257	438	25	14	55	*
Fertilization	Acres	74	0	0	0	0	*
Grazing	Head Months	2,756	1,736	1732	1732	1,732	*
Watershed Improvement	Acres	72.3	53	55	77	318	150
Instream Restoration	Miles	1.9	2.5	2.1	7.1	8.75	*
Air Quality	Particulate/ Tons	30.2	16.8	N/A	85.1	51.7	*
Fuel Treatment	Acres	316	0	629	15	518	544
*There are no Regional targets for these items.							
**Estimated							

D. Accomplishments (continued)

Output	Units	Output					2001 Target
		1997	1998	1999	2000	2001	
Timber Purchaser Roads:							
• Construction	Miles	0	0	0	0	0	*
• Reconstruction	Miles	41.5	14.3	1.1	0	0	*
Allocated Funding (Roads):							
• Construction	Miles	6	0	0	0	0	*
• Reconstruction	Miles	31.4	0	48.0	31.7	10.5	*
• Decommissioning	Miles	37	47	42	72.3	8.6	*
Roads Open to**:							
• Passenger Cars	Miles	828	822	822	833	821	*
• High Clearance	Miles	2388	2,352	2,319	2,631	2,583	*
Roads Closed	Miles	1009	1,004	995	600	658	*
TOTAL ROAD SYSTEM	Miles	4225	4,178	4,136	4,064	4,061	*
Returns to	\$ Million	6.1	6.8	4.1	4.8	3.5	*
Payments to	\$ Million	10.4	10.0	9.6	9.2	15.8	*
Landlines:							
• Located	Annual Mi.	4	3.8	6	2	5	5
• Maintained	Annual Mi.	7	7	2	5	5	15
Congressionally Designated Boundaries	Miles	2.5	4.3	0	3	1	1
Total Expenditures	\$ Million	35	36	29	24	36	*

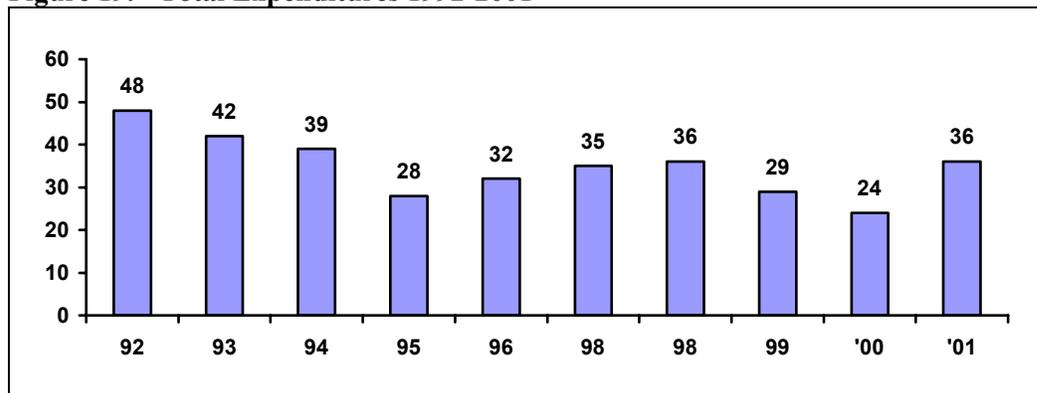
*There are no Regional targets for these items.
 ** 2001 figures were developed from a new data base and are not directly comparable to previous years.

E. Expenditures

The budget for the Gifford Pinchot National Forest is an outcome of the annual congressional appropriations process. Congress allocates an annual budget for the Forest Service that is subsequently disaggregated to the nine Forest Service Regions. Forest Service Regional Offices then allocate the Regional budget among Forests in each Region. Budgets are not directly related to receipts from timber sales or other activities on the Forest. In FY 1997, the Forest began collecting user fees on the Mount St. Helens National Volcanic Monument. Eighty percent of the user fees collected on the Monument are kept on the Forest for use in maintaining recreation facilities. Collections from the NW Forest Pass program funds are used to improve maintenance of low development level campgrounds and dispersed camping areas. Beginning in 2002, the Forest will have access to over a million dollars of Title II funds under the Secure Rural Schools Act for road and trail maintenance and watershed restoration projects. (See page 62)

Figure 19 display expenditures on the Gifford Pinchot National Forest over the eleven years we have implemented the Forest Plan. Expenditures were buoyed in 2001 by \$9 million dollars in land acquisitions and over \$2 million spent suppressing the Salt Creek Fire on Mt. Adams.

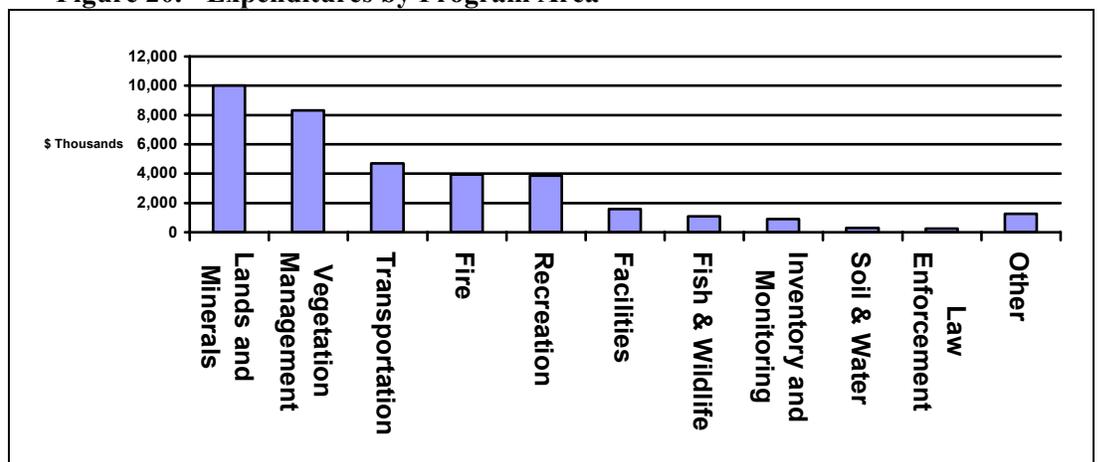
Figure 19. - Total Expenditures 1992-2001



Expenditures were buoyed by unusually large land acquisitions and a \$2 million forest fire.

Figure 20 shows the composition of 2001 expenditures by program area. As noted, above Lands and Minerals was exceptionally high in 2001. The Other category, in Figure 20, includes costs for fleet, computers, human resource programs and land management planning.

Figure 20. - Expenditures by Program Area



F. Forest Plan Amendments

The following is a list of amendments to the Forest Plan that have been approved to date:

Table 37. - List of Forest Plan Amendments

Amendment No.	Approved	Description
1	5/1/91	Decision Memo - Adds Pacific Yew to the list of Acceptable Species in all working groups.
2	9/24/91	Decision Memo - Provides additional direction for visual resource management and mineral claims and leases in Wild River corridors.
3	9/24/91	Decision Memo - Clarified the lower terminus of the Cispus River Wild and Scenic River recommendation in the Forest Plan documents so that it coincided with the Federal Energy Regulatory Commission license boundary of the Cowlitz Falls Hydroelectric Project.
4	9/24/91	Decision Memo - Adds Bigleaf Maple as an Acceptable Species in the Western Hemlock Working Group.
5	9/24/91	Decision Memo - Includes monitoring criteria for the goldeneye and wood duck.
6	8/12/92	Decision Memo - Adds a section on Managing Noxious Weeds and Unwanted Vegetation to the Forest Plan.
7	11/24/92	Decision Notice - Opens Blue Horse Trail 237 to winter motorized use (snowmobiles).
8	3/3/93	Decision Memo - Modifies boundaries of the Forest Plan Map of Record.
9	12/13/93	Decision Notice - Allows grazing in enclosure area of the Cave Creek Wildlife Special Area.
10	7/08/94	Decision Memo - Allows grazing in the Grand Wildlife Special Area, a great blue heron rookery.
11	4/13/94	Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl. Subsequent documentation reconciles Forest-wide and Management Area Standards and Guidelines and the Forest Plan Map with the Record of Decision for the President's Plan. Replaces Forest Plan pages IV-45 through IV-150.
12	5/29/98	Decision Notice – Established the Monte Cristo RNA
13	9/30/98	Record of Decision - White Pass Ski Area Expansion Amends the GP Forest Plan and Northwest Forest Plan to authorize construction of approximately 0.25 miles of road. The ROD and this amendment were invalidated in September 2000 by a court ruling in <i>Northwest Ecosystem Alliance, Hogback Basin Preservation Ass'n., and Washington Wilderness Coalition v. U.S. Forest Service, et al.</i> A new proposal is being studied.
14	4/19/99	Decision Notice - Amends wilderness management standards and guidelines, particularly those related to determining limits of acceptable change.
15	4/30/01	Decision Notice – Amends standards and guidelines forbidding new road construction in a portion of a roaded recreation management area to allow construction of 400 feet of road to access campsites that were relocated away from a riparian reserve.

G. Northwest Forest Plan Implementation Monitoring

Monitoring is a key component of the Northwest Forest Plan. A Region wide implementation monitoring program was initiated in FY 1996 to monitor our implementation of the Northwest Forest Plan standards and guidelines. The Middle Cispus and Upper Cowlitz watersheds were selected for review in 2001. Below is an excerpt from the monitoring report filed by the Gifford Pinchot and Southwest Washington Province.

2001 Province Implementation Monitoring
Southwest Washington Province
August 1-2, and August 28, 2001

Introduction

Monitoring was conducted in two sessions: the White Salmon Watershed and East Timber Sale were monitored on August 1-2; the Wind Watershed and Pass Creek culvert replacement were monitored on August 28. This year's monitoring effort followed the process initiated last year. District resource specialists presented brief overviews and led discussions of conditions and trends in the watershed for each resource program. Presentations emphasized how the watershed analysis contributed to project decision-making.

Following the presentations the team reviewed the draft questionnaires, which had been completed by district personnel prior to the monitoring meeting.

White Salmon Watershed Presentations – August 1-2

Name	Topic	Name	Topic
Neil Oliver	Transportation system	Jon Nakae	Recreation
John Forsberg	Vegetation Management	Bengt Coffin	Hydro/Fish
Gail Bouchard	Fire and Fuels	Joseph Esteves	Grazing
Sally Claggett	Botany		
Wind Watershed Presentations – August 28			
Bengt Coffin	Aquatics	Ruth Tracy	DOE MOA

East Timber Sale

The team split up into four groups to monitor scattered retention trees, aggregates, down wood and soil compaction on Units 9 and 11. Data collected by the team shows that standards were over-achieved for all but down wood. We were only able to monitor Unit 11 for down wood in the available time. Down wood was found to be only 75 percent of the standard in Unit 11. Because the sale is located in an area suffering extensive mortality from a spruce budworm outbreak, the shortage of down wood in Unit 11 is not believed to be biologically significant.

Pass Creek Culvert Replacement

Pass Creek is a fish-bearing tributary to Trout Creek in a Tier 1 key watershed. The Forest Road 42 double culvert crossing was undersized and frequently required maintenance. High flows overtopping the culverts and washing away portions of the road fill was a recurring source of sediment. The culvert was a seasonal fish migration barrier. Pass Creek channel was actively downcutting.

The culvert was replaced with a prefabricated bridge at a cost of about \$57,000. The total cost included installation of four grade control structures in the stream that are intended to stop stream channel headcutting from migrating upstream. Discussion centered on whether the crossing was overbuilt and whether there were alternatives that might have reduced disruption to the natural hydrologic flow caused by the road. Other designs were considered which might have met project objectives at less cost. None considered mitigating the interception of flow by the road.

The project had used an erosion control seed mix that contained non-native annual species. Use of the non-native species in the LSR is contrary to NWFP direction without an assessment of effects on LSR objectives prior to its use.

Summary of the Project Questionnaire Responses

	Met	Not Met	Not Capable	Not Applicable
East Timber Sale	29	1	0	90
Pass Creek Project	20	2	0	98

East Timber Sale did not meet the standard for down wood (Question 71)

The Pass Creek project did not meet standards for avoiding non-native plant species introduction and assessing the effects of the introduction on LSR objectives (Questions 20 and 21)

Both projects met the spirit and intent of the Northwest Forest Plan.

Comments on the Questionnaires

Watershed Questionnaire

Question 4f. The use of the words “have or will” causes confusion as to the whether implemented, planned or both categories of projects are sought. Please clarify.

Question 5d. The Forest does not maintain data on miles of temporary road by either key watershed or 5th field watershed.

Question 6e. The question suggests that a road management plan specific to Riparian Reserves is required. We do not understand that to be the intent of the cited RF-7 standard.

Project Questionnaire

Question 73. Clarify what is meant by “the original stand.” Is this the stand prior to the current entry or prior to any management?

Question 81. Please explain what is required to demonstrate that retention trees are retained indefinitely.

Participants:

Name	Affiliation	White Salmon	Wind River
Greg Cox	USFS, District Ranger	X	X
Lee Carlson	Yakama Nation	X	
David Jennings	Gifford Pinchot Task Force	X	
Susan Jane Brown	Gifford Pinchot Task Force		X
Tom McDowell	USFWS	X	X
Bob Dick	Northwest Forestry Association	X	
Dorothy Saunders	Evergreen College	X	X
John Roland	USFS, PIMT Lead	X	X
Julie Knutson	USFS, District Planner	X	
Rolando Mendez	USFS, District Biologist	X	
Aldo Agular	USFS Soil Scientist	X	
Al McKee	Skamania Co. Commissioner	X	
Llang Hsin	BLM, RIMT	X	
Jon Martin	USFS, RIMT		X
Ken Wieman	USFS District Fish Biologist		X
Craig Graber	Washington DOE		X
Dave Howard	Washington DOE		X

H. Other Forest Monitoring Activities

The Forest routinely conducts a wide range of monitoring activities which are not directly linked to the Forest Plan. Examples of these monitoring activities, which we conduct to evaluate the effectiveness of resource program management and trends in the resources, are briefly described in this section.

Recreation

- Campsite facilities monitoring.
- Activity reviews.
- Review and inspection of special-use permittees at visitor centers.

Research Natural Areas (RNAs)

- Monitoring for compliance with RNA management plans. Long-term structure monitoring every three to four years.

Wildlife

- Monitoring of northern spotted owl nests not connected to timber sales.
- Effectiveness monitoring for K-V projects.
- Periodic monitoring (throughout the year) of raptor (osprey/goshawk) nests.
- Nest box monitoring (ducks, etc.).
- Annual surveys for harlequin ducks.
- Annual breeding bird surveys.
- Monitor restoration projects.
- Verification of wildlife sitings.
- Status checks on various habitats (e.g., heron rookeries).
- Monitoring for challenge cost-share projects (e.g. amphibian project).

Botany

- Informal monitoring of sensitive species sites.
- Monitoring of specific species across the Forest in partnership with Partners for Plants.
- Tracking of population trends of rare plant species (such as the fringed pinesap, which has nine sites across the Forest).
- Pine broomrape monitoring study.

- Pale blue-eyed grass monitoring study on grazing impacts.

Fisheries

- Annual stream surveys.
- Annual steelhead snorkel surveys.
- Bull trout monitoring in the Lewis River.

Hydrology/Watershed

- Monitoring of restoration projects within the Adaptive Management Area (in collaboration with PNW Research).
- Yearly utilization monitoring for grazing allotments.
- Informal observation/monitoring of watershed/ soils condition when FH personnel out in the field.
- Monitoring of mass movement through the watershed analysis process.

Air Quality

- Air quality monitoring (Packwood Lake) in collaboration with EPA and WA State Ecology Department, June through September.
- Lichen surveys, one quarter of the Forest each summer.

Timber

- Surveys for down and dead woody material, and standing wildlife trees during sale administration.
- Random sale inspections documented with Inspection Reports.
- Monitoring of roads, landings, mitigation, riparian areas, wildlife trees, and down woody material.
- Forest Headquarters sale area visits.
- Contracting Officer Review of performance/ techniques of individuals administering timber sales.
- Official sale inspections.
- Genetics program monitoring.
- K-V reforestation surveys (1st and 3rd year).
- Informal slash monitoring.

Engineering/Roads

- Maintaining status of roads gated and decommissioned (necessitated by p. C-7 of ROD, which requires no net increase in roads).
- Inventory of number and mileage of temporary roads.
- Monitor road maintenance activities (ours and purchasers) for compliance with Road Management Objectives and Road Management Specifications.
- Monitor road and trail bridges for safety.
- Monitor public drinking water stations.

Monitor traffic signing program (monitoring of uniform traffic control devices).

- Quarterly groundwater monitoring at Chelatchie Prairie.
- Year-round traffic counts across the Forest.
- Weather conditions, especially rain-on-snow events for flood forecasting.

Fire

- Effectiveness monitoring in units after prescribed burning.
- Annual preparedness monitoring.
- Periodic NIFMAS monitoring.
- Pre/post-prescribed burn fuel inventories.

Glossary

A

Anadromous fish - Those species of fish that mature in the sea and migrate into streams to spawn. Salmon, steelhead, and searun cutthroat trout are examples.

B

Big game - Large mammals hunted for sport. On the National Forest these include animals such as deer, elk, antelope, and bear.

Big game winter range - A range, usually at lower elevation, used by migratory deer and elk during the winter months; usually more clearly defined and smaller than summer ranges.

Board Foot = a piece of wood 12 inches wide by 12 inches long by one inch in width

MBF = 1000 Board Feet, approximately 1.94 CCF depending on growing site

CCF= 100 Cubic Feet

MCF= 1000 Cubic feet = 10 CCF

1 MCF = 8 cords of wood

C

Cavity - The hollow excavated in trees by birds or other natural phenomena; used for roosting, food storage, and reproduction by many birds and mammals.

Ceded lands - Lands surrendered to the federal government by treaty.

CF (cubic foot) - The amount of timber equivalent to a piece of wood one foot by one foot by one foot.

Cord of firewood a stack of wood 4 feet high by four feet wide by 8 feet long = 1.28 CCF or 128 cubic feet---- which includes the air space between pieces of wood.

Creel - A wicker basket used by anglers to carry fish.

Cultural resource - The remains of sites, structures, or objects used by humans in the past-historic or prehistoric.

Cumulative effects - Those effects on the environment that result from the incremental effect of the action when added to the past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other action. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

D

Diameter at breast height (d.b.h.) - The diameter of a tree measured 4 feet 6 inches above the ground.

Dispersed recreation - A general term referring to recreation use outside developed recreation sites; this includes activities such as scenic driving, hiking, backpacking, hunting, fishing, snowmobiling, horseback riding, cross-country skiing, and recreation in primitive environments.

E

Endangered species - Any species of animal or plant that is in danger of extinction throughout all or a significant portion of its range. Plant or animal species identified by the Secretary of the Interior as endangered in accordance with the 1973 Endangered Species Act.

F

Forage - All browse and nonwoody plants that are available to livestock or game animals and used for grazing or harvested for feeding.

Fringed pinesap - A sensitive plant species.

K

Knutson-Vandenberg (K-V) - Legislation authorizing the collection of money from timber sales receipts for reforestation, stand improvement or mitigation projects on timber sale areas.

M

Management Area - Provides direction and practices for specific portions of the Forest. Each Management Area identifies a goal, or management emphasis, and the desired future condition of the land. Each MAC includes one or more Management Prescriptions.

Management indicator species - A species selected because its welfare is presumed to be an indicator of the welfare of other species using the same habitat. A species whose condition can be used to assess the impacts of management actions on a particular area.

Mass movement - A general term for any of the variety of processes by which large masses of earth material

are moved downslope by gravitational forces - either slowly or quickly.

Meaningful Measures - A recreation management process to better guide recreation management activities at the project and site level intended to provide quality service to recreation visitors. It includes standards of quality, as well as prioritization for work to be accomplished based on documented expectations, needs, visitor preference and resource condition. Examples of standards for trail maintenance include: trees removed, tread maintained and brush cleared to predetermined widths.

MMBF - Million board feet

MMCF - Million cubic feet

MRVDs (Thousand recreation visitor day) - A measure of recreation use, in which one RVD equals twelve visitor hours, which may be aggregated continuously, intermittently, or simultaneously by one or more persons.

N

National Environmental Policy Act of 1969 (NEPA) - An Act to declare a National policy which will encourage productive and enjoyable harmony between humankind and the environment, to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humanity, to enrich the understanding of the ecological systems and natural resources important to the nation, and to

establish a Council on Environmental Quality. (The Principle Laws Relating to Forest Service Activities, Agriculture Handbook No. 453, USDA, Forest Service, 359 pp.)

Northwest Forest Plan (NWFP) -An amendment to westside Forest Plans intended to ensure viability of the spotted owl and other late-successional dependent species, and maintenance and restoration of healthy riparian ecosystems.

O

Optimal cover - For elk, cover used to hide from predators and avoid disturbances, including humans. It consists of a forest stand with four layers and an overstory canopy that can intercept and hold a substantial amount of snow, yet has dispersed, small openings. It is generally achieved when the dominant trees average 21 inches diameter at breast height or greater and have 70 percent or greater crown closure.

ORV - Off Road Vehicle. A category of recreational vehicles which includes four-wheel-drive vehicles and trail bikes.

Owl Region - National Forests and BLM districts within the range of the northern spotted owl.

P

Partial Retention - Management activities remain visually subordinate to the characteristic landscape.

PC (Precommercial) thinning - The practice of removing some of the trees less than marketable size from a stand so that the remaining trees will grow faster.

R

Raptor - Predatory birds, such as falcons, hawks, eagles, and owls.

Redd - Depressions in gravel in streams where salmon, steelhead, and trout lay their eggs.

Riparian - Pertaining to areas of land directly influenced by water. Riparian areas usually have visible vegetative or physical characteristics reflecting this water influence. Streambanks, lake borders, or marshes are typical riparian areas.

S

Selection - The annual or periodic removal of trees (particularly mature trees), individually or in small groups, from an uneven-aged forest, to realize the yield and establish a new crop of irregular constitution.

Semi-primitive motorized - A classification of the Recreation Opportunity Spectrum, characterized by a predominantly unmodified natural environment in a location that provides good to moderate isolation from sights and sounds of people, except for those facilities/travel routes sufficient to support motorized recreational travel opportunities which present at least moderate challenge, risk, and a high degree of skill testing.

Semi-primitive non-motorized - A classification of the Recreation Opportunity Spectrum, characterized by a predominately unmodified natural environment of a size and location that provides a good to moderate opportunity for isolation from sights and sounds of people. The area is large enough to permit

overnight foot travel within the area, and presents opportunity for interaction with the natural environment with moderate challenge, risk, and use of a high degree of outdoor skills.

Sensitive species - Plant or animal species which are susceptible or vulnerable to activity impacts or habitat alterations. Those species that have appeared in the Federal Register as proposed for classification or are under consideration for official listing as endangered or threatened species, that are on an official State list, or that are recognized by the Regional Forester as needing special management to prevent placement on Federal or State lists.

Seral - Transitory stage in an ecological succession.

Shelterwood - A regeneration method under an even-aged silvicultural system. A portion of the mature stand is retained as a source of seed and/or protection during the period of regeneration. The mature stand is removed in two or more cuttings.

Silviculture - The art and science of controlling the establishment, composition, and growth of forests.

Snag - A standing dead tree.

Soil productivity - The capacity of a soil to produce a specific crop such as fiber or forage under defined levels of management. Productivity is generally dependent on available soil moisture and nutrients, and length of growing season.

Special Interest Areas - Areas managed to make recreation opportunities available for the understanding of the earth and its geological, historical, archeological, botanical, and memorial features.

T

TE&S - Threatened, endangered and sensitive species.

Threshold of Concern - Degree of departure from a standard and guideline which would trigger an analysis to determine if a change in practices or plan adjustment is needed.

Threatened species - Those plant or animal species likely to become endangered species throughout all or a significant portion of their range within the foreseeable future. (See also Endangered species.)

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