

4 Range Management Commitments

The Commitments

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Numerous studies have demonstrated that improper livestock grazing can damage streams and degrade fish habitat (see review by Platts 1991). Streambank trampling by livestock, by itself or in conjunction with a reduction in riparian vegetation, can lead to channel widening channel downcutting, and decreased streambank stability. When streams downcut and the local water table is

lowered, riparian vegetation can be reduced or eliminated. Channel widening can cause increased levels of fine sediment on the stream bottom and increased stream temperatures (Meehan and Platts 1978).

Since the late 1800s, livestock grazing has been a traditional use on much of what is now Plum Creek land in the NFHCP Project Area. For a thorough discussion of the magnitude and extent of grazing practices on Plum Creek land, see the Plum Creek white paper *Livestock Grazing on Plum Creek Timber Company Land in the Native Fish Habitat Conservation Planning Area* (Plum Creek 1998f). Because improper grazing can impact fish habitat and water quality, Plum Creek has developed NFHCP conservation measures to address grazing on company lands.

At present, Plum Creek has 764,560 acres within grazing leases or allotments in the Project Area, 98 percent of which are in Montana. While some of these leases are inactive, 106 ranch operations are currently active on nearly 600,000 acres of Plum Creek land. It is estimated that more than 10,000 cows grazed on Plum Creek lands in the summer of 1998.

There are a total of 1,928 miles of streams that flow through grazing lands in the Project Area. Of the total, 265 miles (14 percent) occur within Tier 1 watersheds. Also, 40 miles of streams designated under the NFHCP as Key Migratory Rivers (35 percent of the total) flow through grazing lands. These are rivers of particular importance to migratory fish species such as bull trout. Though there is no extensive survey of grazing impacts on these lands, Plum Creek has compiled information from a variety of sources that quantify in various ways the impacts to streams that might be attributed to grazing. The extent of grazing in the Project Area represents a considerable opportunity for conservation benefit through NFHCP commitments.

In addition to lands leased for grazing, other lands in the Project Area experience some unauthorized cattle use. Most of the land in the Project Area is subject to an open range law that requires landowners who do not wish to allow cattle grazing on their land to fence cattle out, as contrasted with the typical requirement that ranchers fence to keep cattle on their property where there is no open range law. This creates some interesting challenges when managing for grazing impacts in the open range. Simply canceling grazing permits does not ensure the absence of cows. Huge investments in fencing would be required to keep open range cattle off someone's property without the benefit of a ranching or leasing income to

pay for those investments. It is Plum Creek's experience that an investment in educated and cooperative ranchers is more effective in achieving conservation on the range.

Why does Plum Creek have grazing leases? All existing grazing leases were established in the Project Area well before Plum Creek became an independent corporation. Plum Creek desires to continue leasing these lands for grazing for several reasons:

1. It generates revenue for the company and diversifies income sources.
2. Because of open range laws in the Project Area, cattle use of some Plum Creek lands is inevitable. Maintaining grazing leases with responsible operators can be more effective than merely trying to fence out all cows.
3. Forested range grazing is important to the region both economically and culturally. In the absence of Plum Creek leases, many livestock producers would either go out of business or dramatically reduce their herd sizes.
4. Lastly, Plum Creek believes that both forestry and livestock grazing are legitimate land uses, and if conducted in a manner consistent with good stewardship of the land, are fully compatible with maintaining high quality water and fisheries.

An Historical Perspective

The earliest livestock grazing in the Project Area probably occurred in the 1870s when cattle ranches were developed in the Blackfoot and Lower Clark Fork Valleys. However, the first known livestock grazing on what are now Plum Creek's lands occurred in the early 1880s. During this time, ranchers expanded their cattle and horse operations from the Flathead Valley into Pleasant Valley, Smith Valley, and Lost Prairie west of Kalispell, Montana. Also during the 1880s, sheep grazing was rapidly expanding in the Bitterroot and Middle Clark Fork River Valleys. This included a herd of 1,000 sheep in the Miller Creek area southeast of Missoula. By 1890, sheep began to outnumber cattle in western Montana. A renewed expansion of sheep grazing in western Montana began in the 1910s as a result of forage made available following the 1910 wildfires and good market conditions. This continued through World War II.

Although the exact extent and magnitude of livestock grazing on Plum Creek land during the late 1800s and early 1900s is unknown, it was likely confined to sparsely-forested areas and natural meadows, or it followed forage made available after wildfire or timber harvest. Wildfires burned vast acreages of forestland in the northern Rockies between 1910 and 1919 and included large amounts of Plum Creek land. Though timber harvest began around 1900, heavier levels of harvesting from the 1950s through the 1970s opened more acres to grazing. As these cut-over lands have regenerated with sapling-sized trees, cattle numbers have been reduced since the late 1980s.

Plum Creek Grazing Best Management Practices

Unlike forestry, ranchers and landowners have not had the benefit of clearly defined Best Management Practices (BMPs) or regulations for grazing to guide their operations. In some cases this has resulted in virtually no management for riparian values, while in others the management has been inconsistent depending on the knowledge or motivation of the rancher.

Foresters implementing forestry BMPs have long felt there may be inconsistencies between land uses in what is required to protect water quality or in the BMP tools available to managers. This became particularly evident to Plum Creek foresters who started implementing the Environmental Principles in 1991 for forestry on Plum Creek land. If Plum Creek was to apply those principles to forestry, what about other resource uses under our

responsibility, such as grazing? While there existed a wide variety of literature geared toward the range scientist, there seemed to be a lack of straightforward and simple implementation guidelines for Plum Creek to use to ensure consistent stewardship among the scores of ranchers who leased Plum Creek lands.

So in 1995, Plum Creek developed their own Grazing BMPs (Appendix G-1). They began to work with ranchers who used Plum Creek land to implement their Grazing BMPs to achieve riparian conservation while continuing their ranch operations. In developing the BMPs, Plum Creek tried to make them simple to understand and use.

Leaseholders' reaction to the BMPs has been mixed. Some ranchers became frustrated with dealing with what appeared to be a whole set of new restrictions and voluntarily terminated or decided not to renew their leases. But other ranchers embraced the challenge and demonstrated they could proactively implement sound and proven measures to achieve better resource protection while still continuing their business.

Environmental Rancher Award

Each year since the development of the Plum Creek Grazing BMPs, Plum Creek's Flathead Unit has recognized a leaseholder with the "Environmental Rancher Award." This goes to the rancher who best exemplifies a partnership with the company to achieve resource protection goals in implementing the Grazing BMPs. In 1998, this award went to Leo and Ellen Hargrave and the Hargrave Ranch who installed several miles of fence to protect the Thompson River, a Key Migratory River. They also implemented an effective rotation system developed under their Range Management Plan.

Input from various individuals has been incorporated into a 2000 revision of the BMPs. These include scientists at the University of Montana Riparian Wetland Research Program, FWS, NMFS, Missoula County Conservation District, Oregon State University, and the Natural Resource Conservation Service. They also incorporate feedback received from Plum Creek's leaseholders, Montana Trout Unlimited, and the Montana Stockgrower's Association.

The BMPs have four primary components:

- **Environmental Trend Indicators (ETIs)** to be achieved on Plum Creek property over time (Table NFHCP4-1). These indicators are also used to establish whether a positive trend toward improvement is being obtained as a result of implementing the leaseholder requirements.
- Leaseholder development of an annual **Range Management Plan (RMP)** describing the management system that will be implemented during a grazing season. This system must be designed to achieve the ETIs or result in an improving trend toward attainment of the ETIs. A toolbox of individual practices is provided that the leaseholder can include in the RMP. Some of these BMPs are mandatory (such as salting away from streams and maintaining existing fencing) and some are optional (such as constructing new fencing). Because of the site-specific nature of environmental conditions and sensitivities on each grazing lease, a simplistic set of mandatory BMPs is not workable. This system has built-in flexibility that gives leaseholders latitude to implement a system that will achieve the desired outcome.

- **Monitoring** stream and riparian conditions at several sensitive locations on the allotment at least twice each grazing season. Monitoring involves a simple form and photo-points submitted to Plum Creek by the leaseholder. A copy of a simple monitoring form based upon the rancher's observations that may be used by the rancher is included as a part the Grazing BMPs. Or the rancher may use more complex monitoring approaches that are available. Leaseholder self-monitoring information will be verified in a site visit by a Plum Creek lease administrator who will also evaluate trends in ETIs.
- Preparation of an **end of year report** by the leaseholder that describes what worked well during the grazing season and what did not with regard to environmental compliance, and includes a list of things needing to be modified in the next year's RMP. If adequate progress is not made in attaining the ETIs, or improving conditions over time, Plum Creek may require specific practices be implemented, or terminate the lease.

Environmental Trend Indicators

The intent of Environmental Trend Indicators (ETIs) is to provide a benchmark by which we can ensure that Plum Creek is meeting its corporate environmental objectives such as clean water and healthy fisheries. We believe for the vast majority of cases, the indicators outlined in Table NFHCP4-1 will maintain or improve conditions over time. Adaptive management research, as developed under Plum Creek's NFHCP and other outside research, will be the basis for refining these indicators (see AM1, Section 8 of the NFHCP, page 8-13).

The overall goal of the BMPs and ETIs described in Table NFHCP4-1 is to protect existing high-quality fish and riparian habitat and to restore areas that are not functioning properly. In order to ensure this, indicators are measured in areas most heavily used by cattle. In many cases, changes and impacts that have occurred on grazed lands have taken place over many years and can be very obvious or subtle. Because these changes have occurred over time, improvements are not obvious in the short term. This is why the ETIs are useful as a tool in helping to objectively determine whether improvement is being achieved. Comparison of actual conditions on the range with the ETIs is measured by both leaseholders and by Plum Creek lease administrators visiting the allotment periodically to determine whether or not conditions are improving. This comparison is then used to determine whether the range management plan is effective at achieving an improving trend. The determination of an improving trend will also be verified through internal and third-party audits under the NFHCP (see A4 and A5, Section 7 of the NFHCP, page 7-3).

Many of the ETIs are interrelated. That is, a conclusion on a trend cannot be drawn from observing just one indicator. The "Visual Appearance" indicator gives the Plum Creek lease administrator the opportunity to introduce subjective judgments not captured by the other, more quantified ETIs.

TABLE NFHCP4-1
Environmental Trend Indicators in Plum Creek's Grazing BMPs

Environmental Trend Indicator	Description
Streambank Stability	Livestock-caused bank disturbance will affect no more than 10 percent of streambanks. <i>This will be measured as the number of feet of livestock-altered bank divided by 100 feet of measured bank.</i>
Riparian Compaction	Less than 10 percent of riparian soils will be affected by livestock hoof displacement/compaction (riparian soils occur in the lush, damp area around streams and ponds). <i>This will be visually estimated over a 1/10th-acre area (66 feet by 66 feet).</i>
Grass Utilization	Riparian grasses, sedges, and rushes may be utilized to no less than 8 inches in height. Where 8-inch heights are unattainable, allotment-specific analyses can be performed to determine what the potential is. The allotment-specific indicator value would then be a maximum of 50 percent utilization. In no case however, will stubble heights be less than 4 inches. Upland grasses may be utilized at levels that promote healthy range conditions.
Shrub Utilization	No more than 25 percent of the current year's shrub growth (including willows and trees) can be damaged/utilized by livestock. <i>An illustration demonstrating 25 percent shrub utilization is provided to leaseholders.</i>
Visual Appearance	Must look good. <i>Subjectively rated by lease administrator.</i>
Tree Regeneration	Less than 10 percent of seedlings and other trees can have physical damage caused by livestock. This includes damage to the terminal bud and leader or scarring/scraping. In addition, compaction caused by livestock must not inhibit tree regeneration. <i>This will be visually evaluated over a 1/10th-acre area (66 feet by 66 feet).</i>
Shrub Regeneration	Where they can exist, shrubs must be present along streams and in riparian areas, with all age classes represented. <i>This is to be measured by noting presence, size classes, and numbers.</i>
Noxious Weeds	Note presence and species (no specific numeric indicator value—monitor and note).

Leaseholder Requirements

Each leaseholder must do the following to graze livestock on Plum Creek lands:

1. Each leaseholder will complete a Range Management Plan (RMP) which must be approved by the designated Plum Creek lease administrator before cattle are allowed to begin grazing in the spring.
2. Where current riparian conditions are not in compliance with Environmental Trend Indicators, the leaseholder's RMP must provide for steady improvement over time.
3. Each leaseholder will monitor riparian conditions at sensitive locations on their lease at least twice yearly.
4. Each leaseholder will complete an end of year report. This report will summarize how ETIs were met, whether or not environmental concerns were effectively addressed,

whether the RMP was fully implemented and whether it was effective, and what changes should be made to the RMP next year. Monitoring forms will be attached to the report. This report must be turned in to Plum Creek by November each year.

Hierarchical Approach to Monitoring Range Conditions and Trends

Range conditions and trends will be monitored at several levels under the NFHCP, involving the rancher, lease administrator, external auditors, and researchers. Hierarchical monitoring levels are as follows:

1. **Rancher Self Monitoring:** As described in the leaseholder requirements and Grazing BMPs, leaseholders will be responsible for monitoring range conditions twice during the grazing season. This monitoring includes completing a simple checklist for evaluating ETIs at several sensitive locations throughout the lease. Additionally, photographs will be taken at each monitoring site. Copies of these forms and photographs will be submitted to Plum Creek. This level of monitoring requires leaseholders to make observations of their lease and can lead to rapid modification of management where necessary. While this level of monitoring is not research-grade, it will be occurring at hundreds of sites across the Project Area and provide broad-scale feedback on conditions and trends.
2. **Plum Creek Administration Site Reviews:** At least once during the later part of the grazing season, the allotment will be field-visited by a Plum Creek lease administrator for purposes of checking trends and verifying compliance with leaseholder requirements. An audit form will be prepared for inclusion in the Field Implementation Manual (see Commitment A1) that may be used by the lease administrator for purposes of documenting their rationale in trend determinations.
3. **Annual Reporting of Leaseholder Requirements:** Each year, Plum Creek will provide the Services with the percentage of leaseholder requirements that are being achieved (see Table NFHCP 7-1). This number will be used in the implementation framework (see Table NFHCP 8-1B) for determining if an adaptive management trigger is tripped.
4. **External Audits:** Under NFHCP Commitment A5, external audits will serve as an additional level of monitoring and verification. As part of this audit, a sub-sample of allotments will be reviewed to verify compliance with leaseholder requirements.
5. **Effectiveness Research:** Under NFHCP Commitment G3 and AM1 (CAMP4), research will be conducted to determine if the Grazing BMPs are effective at leading to attainment of the Biological Goals and Specific Habitat Objectives of the NFHCP over time. As part of this research, monitoring data will be collected on sensitive channel types in representative allotments over the life of the NFHCP.

G1: Grazing BMPs

Plum Creek will implement Grazing BMPs on all grazing leases in the Project Area throughout the life of the NFHCP. Plum Creek may improve these BMPs from time to time in response to changing scientific information. Significant revisions to the BMPs will be conducted in cooperation with the affected Services. A complete description of the Grazing BMPs is provided in Appendix G-1.

As a part of Grazing BMP implementation, for each grazing lease that contains a stream that flows more than 6 months per year and is connected by surface flow to another stream, lake, or other body of water, a designated Plum Creek lease administrator will visit the site late in the grazing season at least once annually to ensure compliance and to make a determination of whether positive trends are being achieved, using Environmental Trend Indicators. The determination should be supported by a rationale statement or the use of the optional internal audit form (to be developed as part of the Implementation Manual) that will be filed with the leaseholder's range management plan.

The Grazing BMPs may be modified over the course of time under NFHCP adaptive management as a predefined mandatory management response if implementation triggers are tripped (see Table NFHCP8-1B, Specific Habitat Objective 1). They may be modified as a mandatory collaborative management response if effectiveness monitoring triggers developed under CAMP 4 are tripped (see same table). And they can be modified as a cooperative management response (see Commitment AM2).

Rationale:

Taken collectively, the acreage Plum Creek leases for grazing would constitute one of the largest ranches in Montana. A commitment to implement sound range management planning and implementation of grazing BMPs not only provides for improved riparian function over a substantial length of stream, but also contributes to the quality of range management in the region as a whole.

The Grazing BMPs represent a straightforward system for managing grazing to improve degraded stream and riparian conditions and maintain existing high-quality riparian areas. The BMPs require accountability by the rancher because the rancher is the manager.

Plum Creek's Grazing BMPs are a specific implementation strategy consistent with the Prescribed Grazing BMP system developed by the Montana Grazing Practices Work Group (NRCS 1996).

G2: Grazing Enclosures

In cooperation with grazing lessees and grazing allotment cooperators, Plum Creek will provide for the construction of riparian area cattle enclosures along all stream reaches that have been negatively impacted by grazing according to the following criteria. Work will be completed by the end of year 9 of the NFHCP, as selected on the basis of priority for native salmonid conservation. Fencing will begin in year 1 of the NFHCP and progress will be reported annually per commitment A6. If progress is not adequate, acceleration of fencing work will be required per table NFHCP 8-1B. Enclosures will be required in all areas where the following two criteria apply:

1. Where the impacted stream reach:
 - Is a perennial stream with a 6 percent gradient or less that lies within a Tier 1 watershed, or
 - Is a Key Migratory River.
2. And where both of the following are determined to be true:
 - The area is determined to be “not functioning properly” using the Riparian Condition Survey, described in Lg1.
 - The causal factor is determined to be continued leasing for livestock grazing.

The intent of using enclosures is to effectively exclude livestock from streams. In most cases, enclosures will consist of streamside fencing, but where opportunities exist, may also include drift fences, brush barriers, etc.

Livestock will not be allowed to graze within enclosures until such time as riparian areas are “functioning properly” based on the Riparian Condition Survey in Lg1.

In addition, other biologically important individual stream reaches in Tier 1 or Tier 2 watersheds (such as known spawning reaches where livestock may directly impact fish by trampling redds) may be identified by Plum Creek or the Services and included in this commitment by mutual agreement as a cooperative management response if necessary to reduce cattle impacts. Also, fencing remains an optional tool that may be used in any Range Management Plan developed for any lease under Plum Creek’s grazing BMPs.

Rationale:

The scientific literature contains examples that demonstrate severely degraded riparian areas can be dramatically improved by fencing out livestock (Elmore and Kauffman 1994; Platts and Wagstaff 1984; Keller and Burnham 1982; Dahlem 1979; Duff 1979). While this is not the only grazing management system that can achieve results (Ehrhart and Hansen 1997), it is the only one where success is virtually guaranteed.

Low gradient streams (less than 6 percent slope) are targeted for assessment and treatment under this measure because

The Kessler Creek Story

Kessler Creek, located 18 miles southwest of Kalispell, Montana, is a stream on Plum Creek property that was severely degraded due to decades of unmanaged livestock grazing. In 1993, several miles of Kessler Creek were fenced and excluded to livestock grazing as part of a new Range Management Plan. Since that time, Plum Creek has collected data on stream channel and riparian conditions along a portion of Kessler Creek. These data demonstrate dramatic stream channel and riparian recovery in response to cattle enclosure, including channel narrowing, increased pool formation, improved bank stability, and increased recovery of streamside grasses and sedges. For more detail, see the NFHCP white paper entitled: *Livestock Grazing on Plum Creek Timber Company Land in the Native Fish Habitat Conservation Planning Area* (Plum Creek 1998f).

they tend to be the most sensitive to grazing disturbance (Rosgen 1996) and they contain some of the most productive fish habitat (Plum Creek 1999a). Tier 1 watersheds and Key Migratory Rivers were also targeted because of their importance to native fish, and bull trout in particular. In grazing leases within the Project Area, there are approximately 51 miles of perennial streams with less than 6 percent gradient in Tier 1 watersheds, and 40 miles of Key Migratory Rivers.

G3: Evaluate the Long-Term Effectiveness of Plum Creek's Grazing BMPs

A network of monitoring plots will be established to evaluate the long-term effectiveness of Plum Creek's Grazing BMPs at maintaining or improving riparian conditions and fish habitat. This rigorous scientific study will complement the semi-annual riparian monitoring conducted by grazing lessees as a part of Grazing BMP implementation. Results from this research will be used to fine-tune the Grazing BMPs over time.

A conceptual study plan is described in Appendix AM-1. This study plan will be fully developed in the first year of NFHCP implementation, in cooperation with Universities, the Services, and other riparian/range experts. The research will be initiated within 2 years of plan development.

This project is discussed in more detail in Adaptive Management (see NFHCP Section 8), and in Core Adaptive Management Project No. 4 in Appendix AM-1.

Rationale:

Plum Creek believes that the Grazing BMPs (described in G1) and other range management commitments will appreciably contribute to recovery of native fish species in the Project Area. There is, however, less scientific evidence available to support this assertion than for other conservation measures in the NFHCP. This study will build a knowledge base by which the long-term effectiveness of Plum Creek's Grazing BMPs can be evaluated, and serve as a basis for BMP modifications.

G4: Status of Vacated Leases

When a grazing allotment is vacated, it will not be re-leased unless the following conditions have been met:

- Plum Creek determines that the lease area is suitable for grazing from a riparian management perspective. For example:
 - Adequate forage remains that has not been displaced by growing timber.
 - The entire allotment is not within a riparian area (such as a river bottom lease).
- An onsite assessment determines that substantially all riparian areas in the allotment are meeting the Environmental Trend Indicators in Plum Creek's Grazing BMPs. If riparian areas are not functioning, the allotment will be rested until recovery occurs.

Rationale:

Historically, allotments typically became vacant when the leaseholder sells their own ranch, usually adjacent to lands the rancher leased from Plum Creek for summer grazing. In most cases, Plum Creek and their predecessors have automatically re-leased the allotment to the new owner of the ranch. However, vacated leases provide an excellent opportunity to re-evaluate the long-term suitability of an allotment for livestock grazing because an active leaseholder need not be displaced.

While some vacant areas may be suitable for re-leasing, others may require several years of rest before renewed grazing. The status of allotments may also have changed as a result of the transitional nature of forage. For example, forage biomass is usually highest in the decade following timber harvest, then it typically decreases as tree density increases. Other allotments may be simply unsuitable for continued grazing because the vast majority of the lease is in a riparian area. This commitment will ensure allotments are re-leased only if they are suitable for grazing and when riparian areas are functioning as they should.

G5: Rancher Training

Plum Creek will provide training for grazing lessees and Plum Creek personnel who have grazing lease administrative responsibility within 2 years of NFHCP Permit issuance. Training will be geared to implementation of Grazing BMPs that achieve riparian protection goals. The Services will be invited to participate in these training workshops.

Rationale:

Considered collectively, Plum Creek grazing lessees would be one of the largest cattle ranches in the state of Montana. A commitment to provide training to ranchers is an important opportunity to significantly advance the state of knowledge of the practical implementation of sound conservation measures in the region. The benefit of this structured continuous improvement activity would occur not only on Plum Creek lands, but also on the home ranches of the lessees as well as other ownerships, such as the state and the U.S. Forest Service, on which their cattle are grazed.