

**APPEAL TO THE CHIEF OF THE FOREST SERVICE
OF A DECISION BY THE REGIONAL FORESTER
REGION FOUR USDA FOREST SERVICE**

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|---------------------------|---|--------------------------------------|
| Idaho Conservation League |) | In RE Appeal of the Record |
| Idaho Rivers United |) | of Decision and FEIS for the Revised |
| The Wilderness Society |) | Forest Plans for the Southwest |
| Pacific Rivers Council |) | Idaho Ecogroup (Boise, Payette, |
| |) | and Sawtooth National Forests) |
| |) | |
| APPELLANTS |) | |
| |) | |
| v. |) | |
| |) | |
| Jack Troyer |) | |
| Regional Forester |) | |
| Intermountain Region |) | |
| USDA Forest Service |) | |
| RESPONDENT |) | |

NOTICE OF APPEAL

STATEMENT OF REASONS

RELIEF REQUESTED

DATED this ___/12/_____ day of November, 2003

By
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APPELLANTS

Appellant Idaho Conservation League (ICL) is a non-profit conservation organization with 3,000 members. The mission of the Idaho Conservation League is to protect and restore the water, wildlands, and wildlife of Idaho through citizen action, public education, and professional advocacy. ICL members participate in recreation activities in the Boise, Payette, and Sawtooth National Forests, including bird watching, hiking, fishing, and hunting. The Revised Forest Plans for the Boise, Payette, and Sawtooth National Forests would negatively impact the plants, wildlife, ecological integrity, and scenery of these National Forests that ICL member's value.

Appellant The Wilderness Society is a 200,000 member nonprofit conservation organization dedicated to the preservation of wilderness and the establishment of a nation-wide network of wild lands and the fostering of an American land ethic. TWS brings economic and ecological analysis and policy advocacy to conservation issues on public lands. TWS is based in Washington D.C. and has eight regional offices, including one in Boise, ID. TWS has been involved in forest management on the Boise, Payette, and Sawtooth National Forests for several years. TWS members use and enjoy the resources on the Boise, Payette, and Sawtooth National Forests, including roadless areas and fish and wildlife populations.

Pacific Rivers Council ("PRC") is a non-profit conservation organization dedicated to the development and implementation of science-based public policies that protect and restore aquatic ecosystems and the species that depend on them. PRC is incorporated and has its headquarters in the State of Oregon. For over a decade, PRC has developed substantial scientific, legal, economic, and policy support for ecologically sound forest management standards in the Pacific Northwest. PRC has members in 26 states, including Idaho, and Canada. PRC members participate in recreational activities, such as hiking, backpacking, cross-country skiing, nature photography, and river and lake boating throughout the west, including Idaho, and where possible, observe and benefit from native fish dependent on Idaho forests. Many of PRC's members participate in recreational activities such as hiking, backpacking, cross-country skiing, nature photography, fishing and river and lake boating throughout the Montana and, where possible, observe salmonid species, including bull trout and west slope cutthroat trout.

The failure of federal lands management policies to protect freshwater habitats for salmon and other native aquatic species led PRC to become a lead advocate for the Aquatic Conservation Strategy component of the federal Northwest Forest Plan during 1990-93. PRC has been a strong proponent since 1993 of a science-based regional plan for the Interior Columbia Basin of which the three Southwest Idaho Ecogroup National Forests are a part. We have participated extensively in federal lands policy processes affecting water quality and aquatic biota in the Interior Columbia Basin, including Pacfish and Infish, the Eastside and Upper Columbia EIS projects, and the Draft and Supplemental EIS's for the Interior Columbia Basin Ecosystem Management Project.¹ Most recently, on June 15, 2001, PRC commented on the DEIS and

¹ See e.g. PRC, "Comments on the Environmental Assessment for the Implementation of Interim Strategies for Managing Anadromous Fish-Producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of

Proposed Revisions to the Boise, Payette, and Sawtooth National Forests Forest Plans. PRC has consistently advocated for federal and state policies that effectively control the effects of road building, logging, grazing, mining and other land uses on aquatic species and their habitats. In particular, we have worked for many years to bring the environmental impacts associated with roads to the forefront of environmental policy debates and to gain greater recognition for the significance of roadless and lightly roaded areas to aquatic conservation and recovery. Specifically, we have engaged in work intended to ensure that the Forest Service administrative policies regarding road building and maintenance are implemented as intended.²

Appellant Idaho Rivers United (IRU) is a statewide, non-profit river conservation organization with over 2500 members. Most of our members are avid river users - boaters, fishing enthusiasts, hikers, swimmers - and all of our members support our mission to protect and enhance the biological integrity of Idaho's rivers. Since its founding in 1990, Idaho Rivers United has been actively involved in advocating for protection and restoration of water quality and healthy fish populations of Idaho's National Forest rivers. IRU members participate in recreation activities throughout the Boise, Payette and Sawtooth National Forests and support sound watershed management strategies to protect water quality and fish populations throughout the forest. The Revised Forest Plans will negatively impact these values supported by IRU's membership.

California (Pacfish) (May 20, 1994) (11 pages); PRC, Letter to David Wright Infish Team Leader commenting on Infish EA (12 July 1995) (14 pp); Columbia River Bioregion Campaign, Key Elements of Ecological Planning: Management Principles, Recommendations, and Guidelines for Federal Lands East of the Cascade Crest in Oregon and Washington (19 May 1995) (113 pages); PRC, "A Call for a Comprehensive Watershed and Wild Fish Conservation Program in Eastern Oregon and Washington," Briefing Book (February 1995) (33 pages); PRC, Comments on the Interior Columbia Basin Ecosystem Management Project Draft Environmental Impact Statements for the Eastside and Upper Columbia River Basin, dated May 1, 1998, 32 pp; PRC Comments on ICBEMP DEIS, SDEIS and FEIS, 1998-2000; PRC, Pacific Rivers Council Protest to December 2000 FEIS and March 2000 SEIS for ICBEMP (15 January 2000); Pacific Rivers Council, Protest of Regional Executives' Decision to Implement Alternative S2 as described in the Final Environmental Impact Statement (December 2000) and the Supplemental Environmental Impact Statement (March 2000) for the Interior Columbia Basin Ecosystem Management Project (15 January 2001) 29 pp.

² PRC, Roads and Rivers: An Implementation Guide to the Forest Service Roads Policy (November 2002) (Policy Implementation Guide (2002)).

NOTICE OF APPEAL

On July 25, 2003 USDA Forest Service Intermountain Region Regional Forester Jack Troyer signed a Record of Decision (ROD) for the Revised Forest Plans (RFPs) for the Boise, Payette, and Sawtooth National Forests. This appeal is timely pursuant to 36 C.F.R. § 217.8(a)(3). The Regional Forester's decision is based upon analysis referenced in the Final Environmental Impact Statement (FEIS) for the Southwest Idaho Ecogroup Land and Resource Management Plans.

The ROD selected Alternative 7.

Pursuant to 36 C.F.R. § 217, Appellants hereby appeal Regional Forester Troyer's decision to approve the unlawfully inadequate plans. As a result of the Regional Forester's selection of Alternative 7, the appellants would be directly and significantly affected by environmental degradation from road construction and reconstruction, logging, grazing, and motorized recreation. Appellants are conservation organizations working to ensure protection of wildlife habitat and watersheds within Idaho and the Pacific Northwest. The groups' members use the general areas for primitive recreation, fishing, wildlife watching, and other forest related activities. The proposed activities, if implemented, will result in forest fragmentation, degradation of wildlife habitat, recreational user conflicts, and reduce visual and recreational quality, among other impacts, in and around the analysis area.

Staff and members of individual appellant groups regularly use the Boise, Payette, and Sawtooth National Forests and the areas specifically impacted by the decisions made in the RODs for work, recreation, wildlife observation, and other forest-related activities. Implementation of the RODs Revised Forest Plans will adversely affect Appellants, their members and the public at large.

Appellants will demonstrate that the Regional Forester's decision is in error and not in accordance with the legal requirements of the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321 et seq., and its implementing regulations, and the National Forest Management Act (NFMA), 16 U.S.C. § 1600 et seq., and its implementing regulations.

Although the Appeal Record “is the information assembled and/or created during the course of an appeal and upon which review of an appeal is conducted,” and includes “the decisional documentation, the appeal, the Responsible Official’s documentation of the informal disposition meeting, the public notice of decision document, and written comments submitted by interested parties,” 36 C.F.R. 215.2, in NEPA cases, such as this, the Appellants may extend the record “beyond the administrative record and permit the introduction of new evidence.”³

³ *Oregon Natural Resource Council v. Lowe*, 109 F.3d 521, 526 (9th Cir. 1997).

STATEMENT OF REASONS

I. The Boise, Payette, and Sawtooth LRMPs Violate the NFMA and the Roadless Area Conservation Rule

A. The Boise, Payette, and Sawtooth LRMPs Assign Management Prescriptions to Roadless Areas that Violate the Roadless Area Conservation Rule.

The Boise, Payette, and Sawtooth LRMP RODs state that “All IRAs (Inventoried Roadless Areas) will be managed consistent with the most current national direction for management of IRAs. The Roadless Area Conservation Rule (RACR) if in effect would supercede Revised Plans. Those areas in the Revised Plans that are identified as available for treatment could not be treated unless they meet the exceptions to the RACR (ROD-32).”

Despite stating that the Boise LRMP manages IRAs in compliance with the RACR, the Boise LRMP allocates 892,000 roadless acres (out of a total 1.8 million acres) to management prescriptions that are not consistent with the RACR (S-119). The Boise ROD states that "conservation" is emphasized in most Inventoried Roadless Areas (IRAs) (82%), in fact only 20% have prescriptions that maintain undeveloped and roadless values and allow no development. Sixty-two percent of IRAs would allow "low levels of restoration activities and salvage harvest" – but apparently no roads. Sixteen percent of IRAs would allow "low levels of restoration activities and salvage harvest, including associated road construction/reconstruction." Approximately 2% of the IRAs allow "full development." Boise ROD at 28.

The Payette LRMP allocates 631,000 roadless acres (out of a total 908,500 acres) to management prescriptions that are also not consistent with the RACR (S-119). The ROD indicates that 30.5% will allow for no development, with about 59% allowing for salvage harvest and trail construction, but not road construction or non-salvage timber harvest. Ten percent allows for salvage and limited road building. Full development is allowed on only 2700 acres or .2% of the total IRA..

The Sawtooth LRMP allocates 959,300 roadless acres (out of a total 1.2 million acres) to similarly inconsistent prescriptions (S-119). Twenty-two percent will maintain its roadless characteristics; 48% "unroaded character" (salvage and trail construction). On 20% thinning, salvage, and limited roading will be allowed, with 10% to be "fully developed" though most is within "non-forested vegetation types." These include prescriptions that allow salvage timber harvesting, which is not consistent with the direction of the RACR.

Under the RACR, timber may be cut, sold, or removed in IRAs only if it is determined that one of the following circumstances exist:

- 1) the cutting of timber is needed for the following purposes and will maintain or improve one or more of the roadless area characteristics as defined by the RACR -- to improve

habitat for endangered, threatened, proposed, or sensitive species habitat, or to maintain and restore characteristics of ecosystem structure, such as reduction of the risk of uncharacteristic wildfire,

- 2) the cutting of timber is incidental to the implementation of a management activity not otherwise prohibited by the Rule,
- 3) the cutting of timber is needed and appropriate for personal or administrative use as provided for in the Rule,
- 4) roadless characteristics have already been altered by activities conducted after the area was designated an IRA and prior to January 12, 2001.

The Boise, Payette, or Sawtooth LRMPs do not document that any of these circumstances exist on these National Forests. Furthermore, the RFPs use inappropriate indicators to justify development of IRAs: “Acres within IRAs having high or extreme uncharacteristic wildfire hazard ratings, high or extreme ratings for resistance to control, **or** high insect hazard ratings assigned to prescriptions...that would allow both a full range of treatments and access capabilities (emphasis added).⁴ According to this criteria, only one of the above criteria needs to be met to allow a full range of treatments and access capabilities. An area might have a low wildfire rating and a low insect rating but consist of rugged or inaccessible terrain that make it difficult to control a wildfire. For example, Map 1 (see appendix) shows the relationship between designations of high or extreme wildfire and high or extreme resistance to fire control. Nearly 60% of lands designated as high or extreme resistance to control are classified as only low to moderate risk of wildfire yet they have been placed in an active management category. Of the 2.4 million acres of IRA planned for low and high level development, only 1 million acres is in the high or extreme fire hazard risk category and only 600,000 acres is considered high or extreme for resistance to control. The Forest Service could use this wide-open guidance to justify entries into such areas. The language should read “and” to justify treatments only where all three conditions are met. These cases should be restricted to the wildland-urban interface.

By way of establishing some kind of prior standard for roadless protection, we note that the 1995 LRMP BO on the Pacfish amendments called for no more than a "de minimis" risk of degradation by all proposed actions two years into the future.⁵ We do not find that the proposed plans replacing this direction ensure only "de minimis" risk to the aquatic values of roadless areas.

The Boise, Payette, and Sawtooth LRMPs state that IRAs will be managed under the RACR if the RACR is in effect (ROD 32). In fact the RACR is in effect. The Ninth Circuit Court issued a mandate to lift the injunction imposed by the Idaho District Court on April 14. Furthermore, on June 14th the Interim Directive expired and the RACR went into effect. Merely putting in a caveat that IRAs would be managed under the provisions of the RACR does not remedy the error of selecting an alternative that is in violation of the roadless rule.

⁴ Southwest Idaho Ecogroup Land and Resource Management Plans FEIS, vol. 1, p. 2-116.

⁵ NMFS 1995 LRMP BO (requiring that in all watersheds with imperiled salmon actions must pose "no more than a de minimis risk of degrading the functions and values of roadless areas)

B. The Boise, Payette, and Sawtooth LRMPs Violate the NFMA by Not Complying with the RACR

Allocating 892,000 roadless acres on the Boise, 631,000 acres on the Payette, and 959,300 acres on the Sawtooth to management prescriptions that do not comply with the RACR violates requirements of the NFMA.

NFMA 16 U.S.C. sec. 1604(e)(2) requires that “(i)n developing, maintaining, and revising plans for units of the National Forest System pursuant to this section, the Secretary shall assure that such plans ... determine forest management systems, harvesting levels, and procedures in the light of ... the availability of lands and their suitability for resource management.” The NFMA requires that forest plan revisions must determine management, and in particular timber harvesting levels, in light of the availability of land for such uses. The RACR makes IRAs unavailable for uses like salvage harvesting that are included in management prescriptions in these LRMP. The NFMA prohibits the Forest Service from prescribing such activities in areas that are off limits to development. Thus, these three LRMP violate 16 U.S.C. sec 1604(e)(2).

C. The Boise, Payette, and Sawtooth LRMPs Fail to Recognize the Importance of Roadless Area Protection

It is disappointing that the Forest Service would allocate IRAs to salvage harvesting and to prescriptions that require “active” management for fuel reductions. Most of the IRAs on these National Forests are roadless for a reason. Building roads and conducting development activities into these areas is too impractical, too expensive, and ecologically too damaging. These National Forests should have recognized the ecosystem services these IRAs offer in terms of providing watershed protection, fish and wildlife habitat, and opportunities for primitive recreation.

In 2000 over 350 scientists from around the nation sent a letter to President Clinton advocating protection of the remaining national forest roadless areas:

Research documents the crucial ecological role of unroaded and undeveloped areas, quite apart from their aesthetic and recreational values to the public. As the landscapes least altered by human activity, they are generally our most healthy and resilient ecosystems, an increasingly important factor as global warming stresses natural systems. They have intact soil resources and low susceptibility to introduced tree diseases and insect attacks, compared to roaded and logged areas. Without road access, they also have suffered less from the adverse effects of fire suppression. These characteristics make them essential as benchmarks for research on ecological processes and as controls for management agency experiments in the restoration of degraded ecosystems on federal lands.

These same factors, combined with the absence of habitat fragmentation and low levels of invasive, non-native species, make roadless areas refuges for sensitive wildlife and plant species, many of which are increasingly at risk in more developed settings. They contribute

to the continued viability of numerous species, and may help avert the need to list some of them—including some found on private as well as public lands—as threatened or endangered. These characteristics also mean that roadless areas serve as important genetic reservoirs for the future.

Additionally, undeveloped areas have been spared from the increased erosion associated with road building, logging and other forms of development that causes damaging sedimentation of streams and rivers. These roadless areas therefore harbor some of the country's most intact aquatic ecosystems, and play a critical role in efforts to bring about the recovery of imperiled stocks of salmon and other fish. The clean flows they provide are important not only to organisms but also as sources of drinking water. And particularly where forested, these areas regulate stream flows and reduce flood threats, absorbing excess waters during storm events and releasing them slowly over time.

Similarly, The Wilderness Society documented in 2002 that protection of existing roadless areas greatly expanded the protection of elements of natural diversity that are underrepresented in existing conservation areas. Substantial scientific literature suggests that at least 25% of the area of each plant community should be included in a protected, conservation area network as part of a comprehensive conservation strategy for natural diversity. In Idaho, including IRAs in the existing conservation reserve network increased the number of communities exceeding the 25% threshold from 14 to 38. The number of vegetation types that are inadequately protected would decrease if IRAs received permanent protection. The study also found that roadless areas also connect existing conservation lands into the large and intact areas needed by wide-ranging wildlife such as bears, elk, and wolves. Protection of IRAs also created stronger conservation bastions to accommodate ecosystem functions such as natural wildfire.

In 1999 the World Wildlife Fund and the Conservation Biology Institute provided scientific documentation that in general, roadless areas provide many ecological benefits that excel in comparison to roaded landscapes, including:

- relatively high levels of late-seral/old growth forests
- essential habitat for species of conservation concern
- broad array of habitat types
- buffers from exotic species invasions
- key watersheds for salmonids
- critical winter range for ungulates
- landscape and regional connectivity
- areas where fire regimes are most likely to be within historic bounds

Yet despite the preponderance of scientific literature that documents to importance of protecting the remaining roadless areas on National Forests, the Boise LRMP allocates 892,000 acres, or 80%, of its IRAs to management prescriptions that do not comply with the protections of the RACR. The Payette allocates 631,000 acres, or 70%, and the Sawtooth allocates 959,300 acres, or 78% to these

prescriptions.

D. Recommended Wilderness in Inventoried Roadless Areas is biased against forested areas and Management Indicator Species

Of the 650,000 acres recommended for wilderness, approximately 350,000 acres, or 54%, are classified as non-forested or not physically suitable for timber production (see Map 2). This contrasts with the fact that only 1.3 million acres of the 3.2 million acres of IRA's, or 40%, were classified as non-suitable timber lands. Thus 26% of the unsuitable timber lands in IRA's have been recommended for wilderness, while only 16% of the suitable timberlands were recommended for wilderness.

Given the bias against suitable timberlands for wilderness, it is not surprising that the recommended wilderness areas contain very little habitat for the pileated and white-headed woodpeckers, two indicator species dependent on late seral forests (see Map 3). Similarly, none of the sage grouse habitat was considered for wilderness recommendation. When viewed in conjunction with the extensive road network and extreme habitat fragmentation of the roaded lands, the habitat remaining in the IRA's is critical to these species.

II. The RFPs Violate the NFMA and Its Implementing Regulations by Failing to Insure Viable Populations of Wildlife Species

In the case of the Boise, Payette, and Sawtooth RFPs, the Forest Service violated the NFMA and its implementing regulations by failing to select adequate and appropriate management indicator species in the development of the RFPs. The National Forest Management Act (NFMA) imposes a substantive duty on the Forest Service to provide for diversity of plant and animal communities.⁶ Diversity is explained at 36 C.F.R. §219.26. Forest planning shall provide for diversity of plant and animal communities and tree species consistent with the overall multiple-use objectives of the planning area. Such diversity shall be considered throughout the planning process. Inventories shall include quantitative data making possible the evaluation of diversity in terms of its prior and present condition. This means that forest planning shall provide for management of habitat to provide for the maintenance of viable populations of existing native and desired nonnative wildlife and fish,⁷ and plant species⁸ well distributed throughout their current geographic range within the National Forest System. The relevant regulation states that:

“Fish and Wildlife habitat shall be managed to maintain viable populations of existing native and desirable non-native vertebrate species in the planning area ... In order to insure that viable populations will be maintained, habitat must be provided to support, at

⁶ 16 U.S.C. §1604 (g)(3)(B).

⁷ 36 C.F.R. §219.19.

⁸ USDA Regulation 9500-4.

least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area.”⁹

and...

“Management direction includes objectives for selected *management indicator species*. In order to estimate the effects of each alternative on fish and wildlife populations, certain vertebrate and/or invertebrate species present in the area shall be identified and selected as management indicator species *and the reasons for their selection* will be stated. These species shall be selected because their population changes are believed to indicate the effects of management activities. In the selection of management indicator species, the following categories shall be represented where appropriate: **Endangered and threatened plant and animal species identified on State and Federal lists for the planning area; species with special habitat needs that may be influenced significantly by planned management programs; species commonly hunted, fished, or trapped; non-game species of special interest; and additional plant or animal species selected because their population changes are believed to indicate the effects of management activities on other species of selected major biological communities or on water quality.** On the basis of available scientific information, the interdisciplinary team shall estimate the effects of changes in vegetation type, timber age classes, community composition, rotation age, and year-long suitability of habitat related to mobility of management indicator species. Where appropriate, measures to mitigate adverse effects shall be prescribed.”¹⁰

Other sections of 36 C.F.R. § 219 require

- standards and guidelines for protection, viability, recovery or restoration as appropriate to meet overall multiple-use objectives;¹¹
- the expected future conditions in terms of distribution and abundance of populations or habitats to meet overall multiple-use objectives;¹²
- the schedule for monitoring and evaluation of standards, guidelines and objectives for plant and animal species and communities;¹³
- In any Forest Service proposal, [p]lanning alternatives shall be stated and evaluated in terms of both amount and quality of habitat and of animal population trends of the management indicator species.¹⁴

All of these determinations are to be made by taking into account all of the science available.

⁹ 36 C.F.R. §219.19.

¹⁰ 36 C.F.R. § 219.19(a)(1).

¹¹ 36 C.F.R. §219.27.

¹² 36 C.F.R. §§219.11, 219.26.

¹³ 36 C.F.R. §219.27.

¹⁴ 36 C.F.R. §219.19 (a)(2) (1992)

The courts have also frequently addressed the adequacy of the Forest Service's scientific evaluations. Most of these cases have found that the Forest Service's analyses were adequate when based on all the scientific data currently available,¹⁵ or the current state of scientific knowledge.¹⁶

Courts have affirmed that, when §1604 of NFMA is read in light of the historical context and overall purposes of the NFMA, as well as the legislative history of the section, it is evident that section 6(g)(3)(B) requires Forest Service planners to treat the wildlife resource as a controlling, co-equal factor in forest management and, in particular, as a substantive limitation on timber production.¹⁷

A. Threatened, Endangered, Proposed, Candidate, and Sensitive Species should be MIS

The Boise, Payette, and Sawtooth Forests need to establish all appropriate Threatened, Endangered, Proposed, Candidate, and Sensitive Species as MIS. While species such as adult Chinook salmon and steelhead may be disproportionately affected by exterior factors such as dams, many of the most listed species still respond adequately to management activities to be effective MIS. These species include the Northern Idaho Ground Squirrel on the Payette National Forest.

Also, the Forest Plans propose reviewing only 5% of projects within known occupied habitat to determine whether Forest management actions are affecting species habitats. This monitoring effort is insufficient to accurately monitor populations with any statistical certainty.

B. The FEIS contains insufficient information on specific reasons for deleting previous MIS

The FEIS contains insufficient information on the specific reasons why each MIS is being reevaluated and should have included the following data for *each* previous MIS species:

- 1) why it was originally selected as a MIS (original purpose or habitat)
- 2) past monitoring efforts (annual capture days, number of surveys, etc)
- 3) past results of these efforts (population estimates or density)
- 4) annual funding and staffing of these past monitoring efforts
- 5) whether or not these past monitoring efforts were statistically significant
- 6) if previous surveys were not statistically significant, cost and staffing needed for statistically significant monitoring efforts
- 7) primary factors affecting population (both related to Forest management and other factors)
- 8) proposed replacement MIS (purpose and habitat)
- 9) habitats not represented by MIS
- 10) the cost and staffing needed for statistically significant monitoring efforts

¹⁵ Inland Empire Public Lands Council v. United States Forest Service, 88 F.3d 754, 758 (9th Cir., 1996).

¹⁶ Seattle Audubon Society v. Moseley, 80 F.3d 1401, 1404 (9th Cir. 1996).

¹⁷ Sierra Club v. Marita, 46 F. 3d 606, 615 (7th Cir. 1994), (favorably quoting Charles F. Wilkinson and H. Michael Anderson, Land and Resource Planning in the National Forests, 64 Or. L. Rev. 1, 296 (1985).

of replacement MIS

11) current budget and staffing to monitor replacement MIS

The Forest Service needs to demonstrate that it has attempted to monitor a previous MIS before disqualifying it. Simply because these Forests have failed to collect basic and baseline data on MIS for the 1985 plans is not an excuse to disqualify these MIS. For example, the Payette National Forest needs to describe monitoring efforts and results for Williamson sapsuckers before dropping it.

This lack of responsible monitoring has led the Forest Service into numerous challenges:

Several recent legal challenges throughout the country have alleged failure to comply with requirements pertaining to monitoring MIS and the lack of use of such information for evaluating proposed projects. In many cases the plaintiffs have prevailed because the project record contained little or no information on population trend data for MIS species; the record did not indicate whether or how MIS population trend data was considered in NEPA analysis for the project; and/or the conclusions about effects on forest-wide viability were not substantiated.¹⁸

Instead of designing an effective monitoring program that would prevent these problems and ensure viable populations, the Forest Service has decided to eliminate these monitoring requirements by decimating the number of MIS and leaving viable populations unknown. This is the wrong solution to the problem. By relinquishing the basic responsibility for knowing how its actions affect wildlife resources, the Forest Service will not know what it is doing incorrectly and what it is doing correctly.

C. The proposed MIS fail to represent the full diversity of terrestrial habitat types on the Forests

The Forest Service needs to select a suite of MIS that represents the full diversity of habitat types on the Forests. The Forest Service's selection of MIS species is inadequate and does not comply with the requirements of NFMA. By reducing the number of MIS from eleven, seven, and fifteen on the Boise, Payette and Sawtooth National Forests to three on each Forest, the Forest Service will lose important insights into how management practices impact sensitive species, and ultimately, the entire ecosystem. In comparison, the revised Forest Plan for the Targhee portion of the Caribou-Targhee National Forest selected twenty-six MIS for terrestrial and aquatic habitats on the Forest, including eight cavity nesters, elk habitat and vulnerability, red squirrel, and so on.

The Boise and Payette National Forests identified only two MIS, the pileated woodpecker and white-headed woodpecker, for forested habitats. The Sawtooth National Forest identified only one MIS, the pileated woodpecker, for forested habitats. The Forest Service should select sufficient MIS

¹⁸ Southwest Idaho Ecogroup Land and Resource Management Plan FEIS, Appendix F, p. 22.

to thoroughly cover each habitat. Additional MIS that should be considered for dry ponderosa pine/doug fir/grand fir forests are the pygmy nuthatch, Lewis' woodpecker, and the flammulated owl. The boreal owl is non-migratory and is associated with large snags and downed logs.

Other forest habitats are clearly missing, such as lodgepole pine, cool moist subalpine fir, grand fir, high elevation subalpine fir, and whitebark pine. Given the Forest Service's interest in reestablishing fire-adapted ecosystems, the Forests should adopt three-toed woodpeckers that inhabit insect and fire-killed stands and the black-backed woodpecker for low-elevation mixed conifers. Given concerns over white pine blister rust and mountain pine beetles, Clark's nutcrackers should also be considered for high-elevation mixed conifer forests. With the interest in reestablishing open, large-diameter ponderosa pine stands, the Forest Service should consider species that rely on diverse, closed-canopy forests such as the red-breasted nuthatch and MacGillivray's Warbler. Since snowshoe hares rely on dense conifers affected by thinning and timber harvests and are in turn serve as the primary food source for lynx, the Forest Service should consider this species as an MIS.

The types of non-forested vegetation types identified in the FEIS include pinyon-juniper, climax aspen, mountain mahogany, mountain shrub, alpine herb, annual grass/forbs, burned herbaceous, dry meadows, perennial (introduced) grass, perennial grass montane, perennial grass slope, tall forb meadow, wet meadow, cliff-talus, and several species of sagebrush and the following assemblages: chokecherry, serviceberry, rose, snowberry, bitterbrush. Riparian habitats, non-riverine wetlands, slope wetlands, and lacustrine wetlands are also important wildlife habitat. For all these non-forested lands, only one MIS was selected by one Forest. The Sawtooth NF selected sage grouse for non-forested lands. While sage grouse should be accorded MIS status, only a portion of the non-forested lands on these Forests provide habitat for sage grouse. Sage grouse should not be the sole MIS for most of these non-forested types. For example, the non-migratory ruffed grouse could be used in aspen communities, the black rosy-finch for alpine habitats, and the American dipper for riparian stretches.

D. The proposed MIS fail to represent the full diversity of aquatic habitat types on the Forests

Even more troubling than the inadequate representation of the terrestrial MIS selected for these Forests is the fact that only bull trout were selected for aquatic MIS, even though these Forests contains important aquatic habitats, many of which have been significantly impacted by past and current administratively approved activities such as logging, road building, mining, and domestic livestock grazing. This oversight is a serious defect in the Boise, Payette, and Sawtooth RFPs given the number of 303 (d) listed streams and number of streams that are non-functioning or functioning at risk. By comparison, the Targhee NF RFP selected five MIS for aquatic resources, including Yellowstone cutthroat trout. The Salmon-Challis National Forest recently proposed adding beaver to its MIS list.

1. There is no rational basis upon which to base a finding that species viability requirements are met for aquatic vertebrate species

No formal population viability analysis is offered for any of the management indicator species. Rather, the forests and the consulting agencies use various habitat indicators to assess habitat quality for five categories: watershed conditions, water quality, habitat access, channel conditions & dynamics and flow/hydrology. Each is rated as either functioning appropriately, functioning at risk or functioning at inappropriate risk.

As the attached statement by Dr. Chris Frissell explains¹⁹, problems with the "viability analysis" offered for aquatic species in support of these Plans include:

- A fundamentally inadequate proscription of the location, schedule, and specific nature of the actions authorized in the plan. The management standards, guidelines, and the schedule and location of activities are inadequately specified to justify a conclusion of viability.
 - Opaque, undocumented, and not clearly defensible assumptions about the likely harm associated with the actions authorized by the plan. The allowable slate of activity includes, and fails to exclude, many potentially harmful actions
 - Inadequate biological detail in the assessment, i.e., the failure to offer even a rudimentary explicit model of population structure, viability and persistence and hence the quantitative response of the fish to the authorized actions. Also, the biological effects of fire disturbances are inaccurately characterized and the cumulative risk of harm from multiple past, present and future actions by the Forest Service is not adequately described or evaluated
 - Reliance on a monitoring protocol that is essentially undefined, and unlikely to provide relevant and precise information of the type required accurate even if it were effectively implemented.

As Dr. Frissell observes "[t]he long-term viability and potential for recovery of the species can only be maintained . . . if the persistence of each extant population can be assured, i.e., that the range-wide distribution of the species is not further diminished through loss of local breeding populations. . . ." This presumption could only be overcome if "a model were developed and applied to quantify the status of individual breeding populations, and then, based on their status, location, connectivity, genetic integrity, and other factors, predict their contribution to maintaining or restoring the future spatial distribution and life history diversity of the species or ESU within the planning area." However, "[w]hile it may be possible to do such an analysis within the scope of existing knowledge and biological data pertinent to the study area, this clearly has not been done in

¹⁹ Frissell, C.A. "Review of Federal Agency Consultations on the Viability and Recovery of Native Salmon and Trout: Revision of the Boise, Payette, and Sawtooth National Forest Land and Resource Management Plans" (November 10, 2003).

the BA." ²⁰

2. Rationale for Management Indicator Species : Proposal to use Bull Trout as Only MIS when the DEIS proposed all native trout is not justified

As noted in the FEIS, the Plan area supports at least 50 different native and non-native species of fish. However, the Forest identified only one MIS, the bull trout, for all aquatic species.

While bull trout are excellent indicators of clear, cold, complex, and connected habitat, other species should appear on this list. We note that the DEIS proposed to identify six fish species, including rainbow/redband, cutthroat and Wood River sculpin as MIS.²¹ No rationale for this change is offered. Aquatic macroinvertebrates also represent "keystone" species and should be retained. American dippers may also serve as useful indicators of watershed health^{22,23}.

3. The MIS fails to adequately address amphibian conservation concerns.

The MIS discussion (Appendix F) does not even consider and reject amphibians as indicator species, it simply does not consider them at all. Likewise, the BA and the FWS BO do not assess impacts to amphibians, despite the existence of a number of sensitive and at-risk species within the planning area. For example, the Columbia spotted frog (*Rana luteiventris*) has declined throughout its range in the western United States and Canada. The Great Basin population (Idaho, Nevada) is a candidate for listing under the U.S. Endangered Species Act (Federal Register, 7 May 1993, 2 April 1998), and the remaining Idaho population is considered vulnerable. It is a highly aquatic species that has been heavily impacted by habitat loss (particularly the loss of breeding habitat such as emergent wetlands such as sedge fens, riverine over-bank pools, beaver ponds, and the wetland fringes of ponds and small lakes). The Terrestrial Assessment at 1516 acknowledges that Columbia spotted frog is highly vulnerable to grazing activities.

The Idaho Giant Salamander (*Dicamptodon aterrimus*) is another amphibian species that is heavily dependent on high quality aquatic habitat, and it has a low range of tolerance for changes in dissolved oxygen and (ICBMEP Aquatics Assessment at 1582). The Coeur d'Alene salamander (*Plethadon idahoensis*) shows a particular correlation with forest canopy conditions such as density of live tree crowns and canopy closure (Terrestrial Assessment at 1591). The boreal toad (*Bufo boreas boreas*) is another amphibian that has declined throughout its range; although currently

²⁰ Id.

²¹ DEIS at 3-40-40 (proposing MIS as Chinook salmon and Steelhead trout in incubation and rearing life stages; rainbow/redband trout, bull trout, native cutthroat trout and Wood River sculpin) (October 2000).

²² Osborn S. A. H. 1999. Factors affecting the distribution and productivity of the American Dipper (*Cinclus mexicanus*) in western Montana: Does streamside development play a role? [M. S.]. Missoula: University of Montana. 150.

²³ Backlund D. 2001. The American dipper, *Cinclus mexicanus*, in the Black Hills of South Dakota: Past and Present. South Dakota Department of Game, Fish, and Parks.

holding steady in Idaho other subpopulations are close to extirpation. A principal cause of decline has been habitat loss and fragmentation due to logging and related activities. Nowhere does the EIS address the tailed frog (*Ascaphus montanus*) which is another species highly sensitive to logging impacts, particularly sediment input and temperature variations (Adams and Frissell 2001; Bury and Corn 1988; Corn and Bury 1989).

All of the above referenced species are at risk of further declines and are extremely vulnerable to various environmental changes imposed by management of headwater watersheds and streams, lakes, and wetlands via logging, grazing, road use, and other ground disturbing activities.

E. The proposed MIS fail to reflect the connectivity of habitat types on the Forest

The selected MIS also fail to reflect the connectivity of forested habitat. For example, knowing the status of the pileated woodpecker may offer some insights into the availability of large diameter snags, but this information says little about the spatial arrangement or connectivity of these snags for other species such as American marten. Marten also prefer mature forests but avoid crossing openings that pileated woodpeckers can easily fly across. Fragmentation of the landscape may not be reflected in pileated woodpecker populations as well as in American marten. It is important to keep track of several species in order to understand the quality of this habitat and its spatial arrangement across the landscape.

The current selection of MIS fail to capture the effects of management activities that fragment habitat. Habitat can be effectively disconnected by direct changes to vegetation, as with regeneration harvesting or road-construction, or by developing opportunities for activities that displace wildlife such as motorized recreation on ATVs and snowmobiles. Even temporary road construction can spread noxious weeds that then displace native vegetation and wildlife. The Forests need to select MIS which are sensitive to the connectivity and contiguity of habitat.

F. The FEIS ignores the relationship between administration decisions and habitat effects

The Forest Service inappropriately disqualified several species by stating that populations are affected more by outside influences than Forest Service management. While species such as adult Chinook salmon and steelhead may be disproportionately affected by exterior factors such as dams, many of the former MIS still respond adequately to management activities to be effective MIS.

For example, the Sawtooth NF stated that mountain goats did not qualify as MIS because management activities have little effect on the steep, rocky, high-elevation areas. The FEIS dismisses the fact that both summer and winter recreation, particularly expanding snowmobile use, can have negative impacts on goat populations. This recreational use is determined by Recreational Opportunity Spectrum development and travel management plans. Objective 0374 for the Sawtooth LRMP acknowledges that mountain goat populations are in fact affected by winter recreation activities and that management actions can influence these effects: "Provide winter habitat security for mountain goats and wolverines in the Boulder and White Cloud Mountains by reducing

disturbance from winter recreation activities. Restrict or modify winter recreation activities where conflicts exist with mountain goats and/or wolverine.” The Forest Service is being inconsistent when it dismisses mountain goats as an MIS because management actions have no effect and then states that an objective is to reduce disturbance from winter recreation activities.

Another stated reason to dismiss mountain goats as a MIS is that fact that mountain goats are a hunted species and hunting represents a factor not affected by forest management. Ironically, the Sawtooth NF states that the fact that the sage grouse is a hunted species makes it a better candidate as an MIS. The strict regulation by the Idaho Department of Fish and Game makes it easier for the Forest Service to monitor this species and to factor in the effects of hunting: “Additional information is gathered during the hunting season with harvested animals²⁴. Livestock grazing in the summer may also adversely impact mountain goats and is another activity under Forest Service jurisdiction. The Forest Service should reinstate mountain goats as an MIS, particularly given the concern over dramatically increasing recreational use in the area.

In addition, the Forest Service disqualified vesper sparrows because population changes may be due to parasitism by cowbirds rather than management activities under Forest Service control. However, cowbird distribution is affected by livestock grazing, which *is* under administrative control: “Even the very presence of livestock can affect some wildlife species. For example, cattle attract cowbirds in open forest settings. ... The presence of livestock may be giving cowbirds an ecological advantage over other bird species in the area²⁵. The cattle that are bringing cowbirds into vesper sparrow habitat are under strict administrative control via authorized grazing permits and designation of suitable grazing habitat. In addition, grazing activities affect forest succession and subsequent nesting habitat. Because of an estimated 38% decrease of vesper sparrow populations in the Columbia River Basin and the limited nesting requirements, the Forest Service should continue to monitor this species and the relationships between grazing and vesper sparrow populations.

III. The Boise, Payette, and Sawtooth National Forest Land and Resource Management Plans Fail to Analyze the Impacts of Growing All-Terrain Vehicle Use on these National Forests.

The revised Land and Resource Management Plans (LRMP) for the Boise, Payette, and Sawtooth National Forests fail to analyze the impacts of All-Terrain Vehicles (ATVs) on these National Forest. Rather, the LMRPs contain only a provision to “update” the Forest Travel Plans (ROD-8), at some unspecified time and piecemeal scale, and allows all trails currently open to motorized use to remain open (S-73).

By approving all existing motorized use on these National Forest, the Forest Service has failed to fulfill its regulatory duty to evaluate the effects that ATVs have on forest resources. It has also

²⁴ Southwest Idaho Ecogroup Land and Resource Management Plans FEIS, Appendix F, p. 16.

²⁵ Ibid. p. 3-292.

failed to fulfill its regulatory duty to minimize conflicts between recreationists on these Forests. By delaying any evaluation of ATV use to some unspecified date and some piecemeal scale, potential resource impacts and recreational conflicts will continue well into the future.

A. The Current Management Framework for ATVs on National Forest Lands

In 1972 President Richard Nixon signed Executive Order 11644 in an attempt to provide a unified federal policy to control the use of ATVs on all federal lands. This Executive Order (EO) was later amended and strengthened by President Jimmy Carter with Executive Order 11989.

These EOs require that the use of ATVs on public lands must be managed to “*protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands.*” These EOs also require that when ATV routes are designated, federal land managers must minimize damage to soil, watershed, vegetation, and other land resources, minimize wildlife harassment and impacts to wildlife habitat, and minimize conflicts between ATV use and other uses of the land.

The EOs also establish other requirements. They mandate that agencies must annually monitor ATV use and its impacts. If it is determined that ATV use “will cause or is causing considerable adverse effects on the soil, vegetation, wildlife, wildlife habitat or cultural or historic resources of particular areas or trails of the public lands,” federal agencies must immediately close those areas or trails to such use.

EO 11644 provided federal land managers with policies and procedures intended to “ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands.” EO at §1. To accomplish these objectives, the EO required federal agencies to develop regulations to provide for the designation of areas and trails where ATV would and would not be permitted and for the operation of such vehicles. In rendering such designations, the agency not only had to comply with the objectives specified above, but they also were required to ensure that: 1) areas and trails were located to minimize damage to soil, watershed, vegetation, and other public land resources; 2) areas and trails were located to minimize harassment of wildlife or significant disruption of wildlife habitats; 3) areas and trails were located to minimize conflicts between ATV use and other uses of the same or neighboring land and to ensure compatibility of such uses taking into account noise and other factors; and 4) areas and trails were not located in Wilderness Areas or Primitive Areas. EO at §3(a)(1-4). The EO also required the agency to involve the public in the promulgation of such regulations and in the designation of areas and trails, to prescribe appropriate penalties for violations of regulations adopted pursuant to the EO, and to monitor the effects of ATVs on federal lands.

While these policies and procedures were a substantial improvement from the complete lack of such guidelines previously, EO 11644 failed to provide authority to federal agencies to protect lands damaged by ATV activities. The 1977 amendment, EO 11989, provided such direction by requiring

federal agencies to immediately close ATV areas or trails to any or all ATV activities if it is determined that the use of ATVs “will cause or is causing considerable adverse effects on the soil, vegetation, wildlife, wildlife habitat or cultural or historic resources of particular areas or trails of the public lands.” EO at §9(a) (emphasis added). In addition, the amendment to EO 11644 also authorized federal agencies to adopt a policy closing all areas to ATV use unless specifically designated as open. EO at §9(b).

In response to EO 11644, as amended, the USFS promulgated regulations and policies governing the management of ATVs on National Forests. These regulations specifically pertain to the designation of “specific areas and trails of National Forest System lands on which the use of vehicles traveling off National Forest development roads is allowed, restricted or prohibited,” 36 C.F.R. §295.1, and closely follow the guidelines established in the Executive Orders.

USFS policy or directives are incorporated in the Forest Service Manual (FSM) and related Forest Service Handbooks (FSH). These documents are intended to: 1) codify the agency’s policy, practice, and procedures affecting more than one unit and the delegations of continuing authority and assignment of continuing responsibilities; 2) serves as the primary administrative basis for the internal management and control of all programs; and 3) is the primary source of administrative direction to Forest Service employees. 36 C.F.R. §200.4(b)(1).

As directed in the regulations, the management of ATVs is intended to protect resources, the safety of all users, and to minimize conflicts among users. *Id.* at §295.2(b). To do this, the regulations specify that: 1) areas and trails must be located to minimize damage to soil, watershed, vegetation, or other public land resources; 2) areas and trails must be located to minimize harassment of wildlife or significant disruption of wildlife habitat; 3) areas and trails must be located to minimize conflict between ATV and other existing or proposed recreational uses of the same or neighboring public lands and to ensure the compatibility of such uses with existing conditions in populated areas; and 4) areas and trails must not be located in officially designated Wilderness or Primitive Areas. *Id.* at §295.2(b)(1-4).

To meet these conditions, the USFS is required to monitor “the effects of use by specific types of vehicles off roads on National Forest System lands.” *Id.* at §295.5. If the monitoring determines that the use of one or more ATVs “is causing or will cause considerable adverse effects” on Forest resources then the area or trail must be immediately closed to one or more types of ATVs until the adverse effects have been “eliminated and measures have been implemented to prevent future recurrence.” *Id.* at §295.5. ATV Forest management plans are subject to review annually by Forest Supervisors. *Id.* at §295.6.

In allowing ATV use on National Forest Lands the Forest Service must also conduct an analysis and evaluation of the current and potential impacts of specific types of ATVs on the soil, water, vegetation, fish and wildlife, forest visitors, and cultural and historic resources. *Id.* at §295.2(a). If this analysis reveals that one or more specific types of ATVs used off-road will cause “considerable adverse effects on the resources or other forest visitors” use of such vehicles “will be prohibited

until such time as the adverse effects can be eliminated.” *Id.* at §295.2(a).

Any trails designated for ATV use must be in compliance with the provisions included in 36 C.F.R. §295.1 *et seq.* In addition to the restrictions or prohibitions placed on ATV use imposed by those specific regulations, general USFS regulations also prohibit a number of activities on and off Forest Development roads and trails. For example, forest uses, including ATV use, which damage any natural feature or other property, damage any imperiled, sensitive, or unique plant, or which disturbs, injures, or destroys any prehistoric, historic, or archeological resource, site, artifact, or property are prohibited. *Id.* at §261.9. Vehicle use on Forest Development roads or trails is prohibited if such use damages any such road, trail, or segment thereof. *Id.* at §261.12. If used off of roads, vehicles, including ATVs are prohibited, if they violate any applicable noise emission standard imposed by any Federal or State agency, if they create excessive or unusual smoke, if used carelessly, recklessly, or without regard for the safety of the public or property, and if used in a manner “which damages or unreasonably disturbs the land, wildlife, or vegetative resources.” *Id.* at §261.13 (emphasis added).

The Forest Service also has an obligation under the National Environmental Policy Act (NEPA) regarding ATV management. NEPA is the nation’s basic charter for the protection of the environment. 40 C.F.R. §1500.1(a). The Council on Environmental Quality (CEQ) has promulgated regulations implementing NEPA which all federal agencies are required to follow. These regulations specify that “environmental information” relevant to federal actions must be “available to public officials and citizens before decisions are made and before actions are taken.” *Id.* at §1500.1(b). Not only must the information be of “high quality,” but also “accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA.” *Id.* Ultimately, NEPA is intended to “help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.” *Id.* at 1500.1(c) (emphasis added). approving existing ATV use without any analysis of the effects of that use does not fulfill the stringent requirements of NEPA.

The “human environment” is broadly defined to include “the natural and physical environment and the relationship of people with that environment.” *Id.* at §1508.14. Similarly, actions and impacts under NEPA are also broadly defined. An “action” includes “new and continuing activities, including projects and programs entirely or partly financed, assisted, conducted, regulated or approved by federal agencies.” *Id.* at §1508.18(a). An “impact” or “effect” includes “ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. *Id.* at §1508.8.

The Boise National Forest acknowledged as early as 1996, at the beginning of the revision process for the forest plan, that “...recreation demand on the Boise NF for the next five years is expected to increase substantially, as compared to Forest Plan projections” (pg. 28, July 29, 1996 letter from David Rittenhouse initiating forest plan revision). More tellingly, the same letter states:

Across Idaho, recreational activities showed substantial growth, as the number of boat, snowmobile, off-road motorbike/ATV registrations, and cross-country skiing permits, greatly increased. Data from the Idaho Department of Parks and Recreation indicates that statewide, off-road motorbike registration grew by 156 percent between 1988 and 1995....

The (previous) Forest Plan was developed with the assumption that all sites and trails were in adequate condition. Recreation maintenance/reconstruction was planned with the assumption that facilities were in at least fair condition. Given the 1989 backlog of almost \$4.0 million, this assumption was not valid. If all maintenance and reconstruction had been accomplished as scheduled in the Forest Plan, deterioration of facilities would continue to accelerate. In fact, backlog continues to grow (July 29 letter, pg. 29).

The Forest Service was aware of the increase recreational use on the National Forests, and specifically knew of the increase in off-road motorcycle/ATV registrations. Yet the agency simply adopted existing levels of ATV use on the Boise, Payette, and Sawtooth National Forests with only the most superficial discussion of impacts or recreational conflicts.

Additionally, the agency was aware of the growing backlog in trail maintenance, and yet again adopted existing levels of ATV use without any analysis on the effects such use was having on trail maintenance requirements.

The LRMPs do not analyze the effects of allowing continuing ATV use on forest resources. It does not analyze recreational conflicts caused by ATV use on these National Forests. There is virtually no evidence that the Forest Service meaningfully considered user conflicts, or actions to minimize them. The Final EIS contains only a superficial discussion of recreation conflicts, and only briefly mentions some of the resource problems with ATV use. Discussion and tables in the FEIS (pgs. 3-718, 3-724, 3-755, 3-761,) only list miles of trail open to various uses. These lists and superficial discussions do not examine the effects of approving in the existing ATV levels on these three National Forest. The Forest Service did not identify any appropriate mitigations to remedy conflict problems that currently exist.

The Boise, Payette, and Sawtooth LRMPs allow all existing ATV use to continue. There is no explanation or proposed monitoring plan to detect **increasing** levels of ATV use on the National Forests, which is a certainty given the increasing use seen over the past several years, or how it would mitigate the resource impacts or recreational conflicts that increasing use would create.

In fact, the Boise, Payette, and Sawtooth National Forests have **never** conducted any type of analysis that complies with the direction of EOs 11644 and 11989 and with Forest Service regulations governing ATV use on National Forest lands. The first forest management plan developed for these Forests contained no analysis of the effects of ATV use and recreational conflicts. The LRMPs continue this tradition by approving in existing ATV use. The Forest Service has never systematically evaluated the specific effects of ATV use and the specific recreational conflicts created by ATV use on these National Forests.

B. ATV Impacts on National Forest Lands Are Well-Documented

ATV use impacts to public lands have been well documented over the past 20 years. The Forest Service ignores this fact and continues all existing , Payette, and Sawtooth National Forests in the LRMPs without any analysis of the effects of motorized use.

Soil disturbance attributable to ATVs facilitates the colonization of exotic and weedy species (Mooney and Drake, 1986, Hobbs and Heunneke 1992, Pickett and White 1985, Kotanen 1997, Johnstone 1986) which can drastically alter the ecology of an area. ATV impacts to vegetation can be both direct and indirect and can impact all plant species from grasses to trees. Such impacts may include crushing, breaking, trampling, and reduction of vegetative cover, damage to germinating seeds, and increased erosive forces which can alter the soil structure weakening the plant and its root structure resulting in impaired growth or death (Bury et al 1977, Weaver and Dale 1978, Lathrop 1983, Wilshire et al 1977, Bury 1980, Griggs and Walsh 1981, Cole 1983, Cole and Bayfield 1993, Cole and Knight 1990, Ikeda and Okutomi 1990, 1992, Keddy et al 1979, Kockelman 1983, Neumann and Merriam 1972, Povey and Keogh 1991, Sheridan 1979, Wanek 1971, Whittaker 1971, Wilshire et al 1978).

Cumulatively, when the direct and indirect adverse impacts of ATVs is combined with the other adverse impacts of ATVs on soil, the result is fewer and less vigorous plants, reduced plant cover, lowered plant diversity, reduction in plant biomass, adverse changes in plant species composition, increases in density of exotic species, increase in erosion impacts as plant density declines....(Brodhead and Godfrey 1977, Cole and Knight 1990, Davidson and Fox 1974, Duck 1978, Henry 1978, Keddy et al 1979, Wanek 1971, Snyder et al 1976, Webb et all 1977, Allcock 1973, Bayfield and Brooks 1979, Buckhouse et al 1973, Holmes and Dobson 1976, Rogova 1976, Griggs and Walsh 1981)

A decrease in nutrient uptake as well as a decrease in water and oxygen uptake in impacted soils may also alter trailside vegetation increasing the abundance of invader species, including exotic species, along trails to the detriment of native plant and animal species (Adkison 1991).

While ATV trails may directly and indirectly contribute to the spread of noxious, weedy and exotic species to the detriment of the ecology of an area, ATVs also act to transport and facilitate the colonization of an area by noxious and non-native weeds and other plants (Cousens and Mortimer 1995). Knapweed is easily transported and deposited by ATV activity (Lacey et al 1997). “Knapweed plants are often caught in the undercarriage of recreational vehicles.... Vehicles driven several feet through a knapweed site can pick up nearly two thousand seeds, 10 percent of which may still be attached to the vehicle after 10 miles of driving. Thus, seed can spread rapidly over hundreds of miles. Off-road vehicles also damage existing vegetation and disturb the soil surface, making it easier for knapweed to invade.”

Northwest Motorcycle Association v. USDA 18 F.3d 1468 (9th Cir. 1984) makes clear the Forest Service’s obligation to restrict ATV use if there is a future likelihood of considerable adverse

effects. Given the extent of ATV use on these National Forests, the same extent which these LRMPs approve, the likelihood of considerable adverse effects is very real.

Forest Service Chief Dale Bosworth is certainly aware of the impacts of ATV use on National Forest lands. In a speech delivered on April 22, 2003 – Earth Day - Chief Bosworth stated:

But the number of people who own OHVs has just exploded in recent years. In 2000, it reached almost 36 million. Even a tiny percentage of impact from all those millions of users is still a lot of impact. Each year, we get hundreds of miles of what we euphemistically refer to as “unplanned roads and trails.”

For example, the Lewis and Clark National Forest in Montana has more than a thousand unplanned roads and trails reaching for almost 650 miles. That’s pretty typical for a lot of national forests, and it’s only going to get worse. We’re seeing more and more erosion, water degradation, and habitat destruction. We’re seeing more and more conflicts between users. We’re seeing more damage to cultural sites and more violation of sites sacred to American Indians. And those are just some of the impacts. We’re going to have to manage that by restricting OHV use to designated roads, trails, and areas.

Forest Service Chief Bosworth recognizes the problems of ATVs on National Forests. Yet by approving existing levels of ATV use, the Boise, Payette, and Sawtooth LRMPs do little to address these problems, particularly the problems created by ATV user-created routes – Chief Bosworth’s “unplanned roads and trails.” It simply ignores the presence of unauthorized routes across these three National Forests.

C. Site-Specific Actions Must Comply with the Forest Plan.

The National Forest Management Act (NFMA) provides that actions on National Forest Lands must conform to the Forest Plan for the area. Specifically, the statute states:

Resource plans and permits, contracts, and other instruments for the use and occupancy of National Forest System lands shall be consistent with the land management plans. 16 U.S.C. § 1604(i).

Forest Service regulations and guidance reinforce this mandate: See 36 C.F.R. § 219.10(e) (“[T]he Forest Supervisor shall ensure that . . . all outstanding and future permits, contracts, cooperative agreements, and other instruments for occupancy and use of affected lands are consistent with the [land and resource management] plan”); FS Manual 1922.41(1) (Forest Supervisor is required to “Confirm and document that the proposed management decisions are consistent with the management direction in the forest plan”); FS Handbook 1909.12(5.3) (“All administrative activities affecting the National Forest must be based on the forest plan (36 CFR 219.10(e)). Thus, all management practices and activities must be consistent with the forest plan”).

There is no evidence of any analysis or documentation that ATV use at existing levels is consistent

with the management area directions developed for these LRMPs. In allowing the continuation of existing levels of ATV use, the Forest Service is concluding that such levels of use are consistent with the LRMP. It makes this conclusion without any analysis, documentation, or evaluation of existing ATV use on forest resources. In fact, it is hard to believe that ATV use at existing levels will not conflict with the goals of several of the management areas.

For example, the objective of management prescription 3.2 is to “actively restore or maintain conditions for TEPCS fish, wildlife, and botanical species, or 303(d) impaired bodies of water”(pg. III-84, 85, and 86). This management prescription has a standard to “maintain and restore habitat for native and desired non-native wildlife and plant species” (pg. III-86). The FEIS for the LRMPs acknowledge that “Other recreational impacts (to botanical resources) include ORV use, which can also disturb soil, affecting both habitat and potential habitat”(pg. 3-372) and “Motorized and non-motorized recreation activities are likely the second most common vector of weed seed transport and establishment”(pg. 3-621). Given the documentation above that ATV use can and often does result in increased spread of exotic weeds and impacts to vegetation, the Forest Service simply cannot allow continuing levels of ATV in areas covered by management directions like this one without some kind of analysis that existing levels of ATV use is compatible.

Additionally, the LRMPs contain the following goals related to noxious weed containment: “Work to reduce the risk of establishing new noxious weed populations by minimizing weed seed transport and reducing favorable establishment conditions on disturbed sites”(Objective NPG005, pg. III-35). Given the above FEIS documentation that ATVs can exacerbate the spread of noxious weeds, it would seem logical that the Forest Service identify those areas most prone to weed invasion/infestation and close motorized trails in those areas. This would seem particularly true since the FEIS acknowledges that ATV use disturbs soil and those roads and trails for recreational use contribute to the spread of noxious weeds (pg. 3-372). Yet these LRMPs outline no steps beyond basic education efforts (Objective NPOb06, pg. III-36). While education efforts are commendable, they are clearly not enough to stop the spread of noxious weeds on these National Forests.

It is clear from the lack of documentation and analysis that the Forest Service has ***absolutely no idea*** whether approving existing ATV levels of use complies with the various standards and guidelines and management prescriptions of the LRMPs. Thus, the Forest Service fails to ensure compliance with the LRMPs in violation of law, regulation, and policy. There is simply no way the LRMPs can “confirm and document that the proposed management decisions are consistent with the management direction in the forest plan.” See FS Manual 1922.41(1).

Despite the numerous requirements of varying management areas, the Final EIS contains virtually no discussion of how, or whether, the various existing motorized routes approved in one fell swoop comply with the management prescriptions, directions and standards of the LRMPs. Again, this violates the Forest Service’s mandatory duty to ensure that its actions comply with the Plan.

The result of approving existing use levels of ATVs on these National Forests should not be

underestimated. According to information received from the Boise National Forest in 1999, the vast majority of trails on the Forest are open to motorized use. There are 1,056 miles of motorized trails on the Boise Forest, as compared to merely 282 miles of non-motorized trails. On the Payette Forest, there are 622 miles of motorized trails and 509,000 acres open to motorized summer use. Because so many trails are open to motorized use, the potential for resource degradation and user conflicts is high. Yet this potential is not addressed in the LRMPs.

The Payette LRMP does acknowledge that illegal ATV use, resource damage, and user conflicts are occurring throughout the forest:

- MA-4-Rapid River --“Illegal ATV use is occurring within designated non-motorized areas, and increasing big-game vulnerability during hunting season....Unauthorized use by ATVs has also caused erosion and sediment deposition problems”
- MA9-Lake Creek/French Creek -- “Illegal ATV use is occurring in the Rainbow Lakes/Upper Twin Lakes area. ATV users are pioneering unauthorized trails throughout the Patrick Butte Roadless area. ATV users are riding on trails designated for 2-wheel motorized vehicles, causing erosion, rutting, and flow channels.”
- MA-6-Goose Creek/Hazard Creek --“Illegal ATV use is occurring within designated non-motorized areas, and increasing big game vulnerability during hunting season.....Illegal ATV use is originating from the Morgan Lake/Bascom Creek Trailhead, Grassy Mountain Lakes Trailhead and Buck Lake Trailhead. In all three areas, resource damage (i.e. erosion, rutting, and damage to vegetation) is occurring due to ATV users pioneering cross-country trails to access new areas. User conflicts are escalating in the Buck Lake area due to illegal ATV use. Trails designated for 2-wheel motorized vehicles are being used illegally by 4-wheel ATVs.”

Despite this admission, the Payette LRMP approves existing use levels of ATVs, making no specific commitment to how or when these resource impacts and user conflicts will be dealt with.

Another glaring problem with approving existing ATV use on all three Forests is the legitimization of the many user-created ATV routes. To legitimize user-created motorized routes across these Forests with no documentation or analysis of the resource impacts or user conflicts generated by those routes stands contrary to the intent of the forest planning process and thereby to the requirements of NEPA and the NFMA.

NEPA insures that the Forest Service will provide supporting evidence for its decisions and statements made in environmental documents. At 40 CFR 1502.24, and 1502.1, NEPA's implementing regulations are clear in their requirement to provide supporting evidence. The decision made to allow existing levels of motorized use, including that on user-created routes, is unsupported by such evidence. There is no reasoned discussion, scientific methodology, or other such evidence upon which to base this decision.

The 9th Circuit Court (see *Idaho Sporting Congress v. Thomas*, 137 F. Third 1149-1150, 1998) decided that in order to prove NEPA violations, plaintiffs need only to point to “substantial questions” about the project’s environmental effects which the Forest Service fails to address, and need not show those effects will in fact occur. This appeal demonstrates that there are many environmental effects likely to occur from existing ATV use on the Boise, Payette, and Sawtooth National Forests that are not analyzed in the FEIS.

Forest Service regulations explicitly prohibit the construction of new trails on FS lands without a permit. 36 C.F.R. § 261.10(a). The Forest Service must also plan the location of travel routes. See 36 C.F.R. 219.21(g); 36 C.F.R. 295.2(a).

Because users created these routes, no effort was made to comply with Forest Service regulations governing travel management before they were constructed. Thus, no effort was made to ensure that the trails were located to:

- “minimize damage to soil, watershed, vegetation, or other resources,” (36 C.F.R. § 295.2(b)(1));
- “minimize harassment of wildlife or significant disruption of wildlife habitat,” (36 C.F.R. § 295.2(b)(2));
- “minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands” (36 C.F.R. § 295.2(b)(3)).

In creating these routes there was also no evaluation of any environmental impact as required by NEPA. These routes were created only to suit the recreational experience of the law-breaking trail creator, not any other resource.

For these reasons, it is arbitrary and capricious for the Forest Service to assume that the baseline condition for environmental analysis is the situation as created by illegal use and activity. If the Forest Service approves illegal, user created trails through the LRMPs, the agency will never undertake an analysis of the impacts of the creation of the illegal routes. These user-created routes become the baseline for future travel plan analysis. This would lead to the arbitrary result that the Forest Service would never review in a NEPA document the impacts to wildlife of those routes that were not created by the agency. Thus, those routes created with the least amount of concern for wildlife would become part of the Forest travel system with absolutely no analysis of their impacts.

This clearly ignores the fact that the construction of illegal motorized routes did in fact cause the destruction of habitat. Such construction – whether by repeated use or by tool – caused the creation of new trails through undisturbed habitat or the widening of existing footpaths into ATV trails, in many instances. Such construction thus did alter habitat, without analysis or approval by the Forest Service. The Forest Service’s approach – to allow all existing motorized uses to continue – ensures that there will never be an analysis of the impacts of user-created trails as required by NEPA and

USFS regulations.

At best, the LRMPs only promise a piecemeal approach to dealing with user-created routes. Objectives REOB21 and 22 state that “During project planning and implementation, develop measures to mitigate degrading effects from National Forest System and non-National Forest System trails.” So it will be years and years before the Forest Service addresses the effects of non-system user-created ATV trails. Likely degradation of resources and conflicts with other users will continue for years and years under the LRMPs.

In Sierra Club v. US Department of Agriculture, 116 F.3d 1482, 1997 WL 295308 (7th Cir. 1997) (unpublished order), the USFS adopted an amended Forest Plan for the Shawnee NF that referenced “the minor effects of ATV use.” Plaintiffs alleged, in part, that the EIS accompanying the Forest Plan amendment failed to consider the cumulative effects of various activities, including the likelihood that all terrain vehicles and off-highway motorcycles (ATVs/OHMs) engage in illegal activities. Plaintiffs alleged that EIS should have considered the likelihood of OHV use off-trail, and alleged that the USFS failed to acknowledge studies showing the prevalence of such off-trail use (as well as vandalizing, littering, and excessive use of alcohol) at one location, apparently within the Forest.

The Court ruled for the Plaintiffs, and required the USFS to supplement its analysis, holding in part: “[t]he failure to acknowledge the problems at the Land Between the Lakes and to provide a meaningful analysis of the Forest Service’s plans to enforce its trail regulations is of great significance ... because the FSEIS’s environmental analysis is based largely on the assumption that ATV/OHM users will abide by the regulations” Court also noted that a neighboring national forest had banned all ATV use, and that the Shawnee failed to explain why it chose to take a different course. The Court also held that the USFS failed to analyze cumulative impacts of ATV and other uses in combination. The lower court enjoined the USFS from undertaking any projects to facilitate ATV use.

The situation here is similar. The LRMPs here approve existing levels of ATV use on the Forests without evaluating the effects of that use or accounting for likely illegal use. Given that those illegally creating routes have been rewarded by the LRMPs by the approving of existing use levels, this decision is only likely to encourage more illegal use. Yet these impacts have not been analyzed, in violation of NEPA.

The only commitment to a more detailed examination of ATV use on these Forests are Objectives REOB17 and 18: “Initiate a process of phased, site-specific travel management planning as soon as practicable. Prioritize planning based on areas where the most significant user conflicts and resource concerns are occurring. Identify and address inconsistent access management of roads, trails, and areas across the Forest, Ranger District, and interagency boundaries (pg. III-63).” Based on the information from a briefing with some of the appellant groups following release of the FEIS, Forest Service personnel indicated their intent to deal with traveling planning in the above piecemeal process. Personnel could not guarantee that this approach would allow them to complete

a travel plan for the Boise National Forest over the course of the next planning cycle, i.e. ten years. This “phased, site-specific” management process will obviously take a decade or more to complete across all three Forests.

So under these LRMPs, there will be no comprehensive, forest-wide evaluation of the impacts of ATV use on the Boise, Payette, or Sawtooth National Forests. There will no comprehensive analysis of recreation conflicts. There will no cumulative effects analysis of ATV use on the Forests. There will no monitoring effort to gauge the effects of increasing ATV use on the Boise National Forest. There will be no comprehensive assessment of the environmental impacts of user-created ATV trails. Once again, these National Forest will not comply with the direction of the EOs 11644 and 11989 and with the agency’s own planning regulations.

D. Allowing Continued ATV Use in Proposed Wilderness Violates Goals of the Boise, Payette, and Sawtooth LRMPs

The Boise, Payette, and Sawtooth LRMPs allow existing levels of “mechanical transport” to continue in recommended wilderness areas (Guideline WRGU05 pg. III-74 and 75). Mechanical transport is allowed to continue unless it a) degrades wilderness values, b) resource damage occurs, or c) results in user conflicts.

The management goal for recommended wilderness on these National Forests is to “manage recommended wilderness to protect wilderness values as defined in the Wilderness Act. Activities permitted in recommended wilderness do not compromise wilderness values nor reduce the area’s potential for wilderness designation” (Goal WRGO02 pg. III-73).

It is absolutely preposterous to conclude that allowing continued ATV use in recommended wilderness is consistent with the goals of protecting wilderness values as defined by the Wilderness Act. Fundamental to the concept of wilderness and its associated values under the Wilderness Act is an area free of motor. Back in 1929, Forest Service Regulation L-20, which provided the first formal guidelines for the establishment and management of “primitive areas,” directed that such areas “...will be maintained in primitive conditions of environment, transportation, habitation, and subsistence....” The Forest Service recognized that maintaining “primitive conditions” of “transportation” was essential to the value of primitive areas. This meant no motorized travel. The subsequent more restrictive “U Regulations” reclassified some “primitive areas” as administratively created “wilderness” or “wild” areas. Motorized vehicles were prohibited in both wilderness and wild areas.

Freedom from motorized vehicles has always been a fundamental value under the Wilderness Act and its administrative predecessors. Any management goal that directs that areas be managed to protect wilderness values must include closure of those areas to motorized vehicles. This management goal cannot allow for regular motorized ATV use as sanctioned by the LRMPs.

The FEIS acknowledges that allowing continuation of non-conforming uses in recommended

wilderness areas diminishes the opportunity for solitude and primitive recreation experiences, two key wilderness values that are part of any effort to provide for wilderness values in these areas: "... opportunities for solitude and primitive recreation experiences within these recommended wilderness areas would remain at less than what could potentially be offered (because of continued non-conforming uses)(pg. 3-850)."

Furthermore, since the LRMPs contain no analysis for anywhere on the Forests that ATV is not damaging resources or creating user conflicts, the Forest Service cannot allow ATV use in recommended wilderness where mechanical transport can continue only if it is not damaging resources or creating user conflicts. Until the Forest Service can affirmatively demonstrate that such damage or conflicts are not occurring, the areas should be closed to mechanical and motorized use. The Forest Service has not affirmatively demonstrated that resource damage or user conflicts are not occurring anywhere on the Boise, Payette, and Sawtooth National Forests, let alone within the recommended wilderness areas.

It is equally preposterous that the Forest Service would conclude that allowing motorized use to continue in recommended wilderness areas would not prevent their consideration for future congressional designation. Socially, politically and ecologically, the development and popularization of such continued levels of motorized use – as ratified in these Plans – will detract from and could eventually preclude the designation of this area as wilderness. Once use is established in the mind of the motorized public, it becomes increasingly difficult for this area to be returned to a non-motorized status.

Twenty years ago, in testimony before the U.S. House of Representatives Subcommittee on Public Lands, the then-president of the Idaho Trail Machine Association testified that "prior motorized recreational use of an area should have a bearing on its suitability for wilderness." In 1988, in testimony before the U.S. Senate Subcommittee on Public Lands, National Parks and Forests, the president of the Blue Ribbon Coalition specifically cited existing ATV use as reasons for excluding areas from wilderness designation. In a speech to a meeting of environmental activists in Washington DC, Jim Furnish, formerly of the USDA, noted that an astute forest supervisor would recognize that encouraging motorized use in a roadless area has great potential to preclude the area from future wilderness through creating a constituency which will then ascertain a "right" to future use.

The FEIS only makes a passing reference to the problem of allowing non-conforming uses to continue: "... current, non-conforming uses would be allowed to continue and possibly contribute to their long-term establishment (pg. 3-850)." This backhand acknowledgment that continuing non-conforming uses creates an obstacle to wilderness designation is understated at best. Time and time again, motorized recreationists have opposed wilderness designation in areas where motorized use is occurring.

The Forest Service also seems hesitant to close recommended wilderness areas to non-conforming uses because of the \$1.8 million the agency would have to repay the Idaho Department of Parks and

Recreation to refund money used for trail work from the state ORV fund. These areas have been recommended for wilderness for over 20 years now, and the Department of Parks and Recreation should have realized that the areas will eventually be designated wilderness, and therefore “took its chances” on approving state ORV funds for trail work. In any case, the Forest Service should not allow itself to be blackmailed by the Department of Parks and Recreation and allow the Parks and Recreation Department to dictate National Forest management.

To comply with the goal of managing recommended wilderness so as not to reduce the area’s potential for wilderness designation, the Forest Service must close these areas to mechanical and motorized use.

IV. The Forest Service illegally removes the “substantial impairment” mandate of the Sawtooth National Recreation Area.

The Forest Service illegally removes the “substantial impairment” mandate of the Sawtooth National Recreation Area. This change is arbitrary and capricious because it reflects an unexplained and unwarranted weakening of the substantial impairment definition The SNRA Organic statute provides: “the lands will be administered in a manner that will best provide for the conservation and development of scenic, natural, historic, pastoral, wildlife and other values.” 16 U.S.C. § 460aa (Public Law 92-400; 86 Stat. 612). The SNRA organic statute states that activity such as timber, grazing, and mining may only proceed “insofar as their utilization will not substantially impair the purposes for which the recreation area is established.” Id.; see also 36 C.F.R. § 292.17(a). The SNRA is, above all else, a “recreation area,” and other uses are secondary to that principal purpose.

A. Grazing authorization in the Sawtooth National Recreation Area violates the SNRA Organic statute

Authorization of livestock grazing in the Sawtooth National Recreation Area violates the SNRA Organic statute because livestock grazing has substantially impaired wildlife, recreation, and other SNRA values. Despite a recent court ruling that the Forest Service had violated the SNRA’s Organic act by enabling livestock grazing to substantially impair these values, the Forest Service authorized grazing at similar levels and failed to undertake an analysis of whether the level of livestock grazing authorized in the RFP substantially impairs wildlife, recreation, and other SNRA values.

Congress directed the U.S. Forest Service, as manager of the Sawtooth National Recreation Area (“SNRA”), to only allow extractive uses of the SNRA to the extent those uses do not “substantially impair” the wildlife, recreation, and related values for which the SNRA was established. 16 U.S.C. § 460aa. Pursuant to this direction, the Forest Service committed in its 1987 Sawtooth Land and Resource Management Plan (“Sawtooth Forest Plan”) to protect the incredible resources of the SNRA, in part by undertaking specific analyses to ensure that extractive activities do not

“substantially impair” SNRA values. With the RFP, the Forest Service is taking a giant leap backwards and ignoring its Congressional mandate to protect wildlife, recreation and related values for which the SNRA was established.

In designating the SRNA in 1972, Congress provided that “the lands will be administered in a manner that will best provide for the conservation and development of scenic, natural, historic, pastoral, wildlife and other values.” 16 U.S.C. § 460aa (Public Law 92-400; 86 Stat. 612). The SNRA organic statute restricts activity such as logging, grazing, and mining, providing that such activities may only proceed “insofar as their utilization will not substantially impair the purposes for which the recreation area is established.” Id.; see also 36 C.F.R. § 292.17(a).

B. Wolves' legal status supercedes that of livestock

Since wolf-reintroduction efforts began in 1995-96, conflicts between livestock and wolves, including wolf predation on livestock, have occurred. From October 1998 through September 1999, when an estimated 141 wolves were present in central Idaho, the federal agency Wildlife Services reported that wolves were confirmed to have killed 9 calves, 1 cow, 57 sheep, and 1 guard dog.²⁶ In the 2000 fiscal year, wolf numbers throughout Idaho increased sharply from 141 to 187 wolves, while confirmed livestock depredations increased only slightly to 15 calves and 55 sheep. Id. at 6, 12.

Conflicts between wolves and livestock on public land in the SNRA constitute a significant portion of the overall number of wolf/livestock conflicts throughout central Idaho. Between August 1998 and September 1999, wolves killed some 24 sheep on public lands in the SNRA. In 2000, wolves killed some 17 sheep on public lands in the SNRA.

Federal efforts to haze and disperse wolf packs in the SNRA, kill individual wolves (including alpha wolves), and ultimately eliminate entire wolf packs – in response to wolf-livestock conflicts on public lands – have “substantially impaired” wolves in the SNRA. This total loss of wolf packs in the SNRA, while impairing wolves within the boundaries of the SNRA, also negatively impact broader wolf recovery efforts. De-listing of wolves from the Endangered Species list can only occur once certain numeric goals for breeding wolves are reached. Loss of a pack can affect attainment of the larger recovery goals.

The new Forest Plan still allows lethal control of wolves that depredate on livestock as long as six or more breeding pairs exist in Idaho²⁷. This strategy is illegal and violates Judge Winmill’s 2002 ruling stating that the Feds cannot automatically kill or move wolves in the SNRA if livestock and wolves come into conflict. Judge Winmill ruled that the requirements of the Fish and Wildlife Service wolf control rules and the SNRA Act can and must be read together -- neither trumps the

²⁶ Wildlife Services, “Summary of Responses to Reported Wolf Depredations to Livestock and Livestock Guarding Dogs by the Idaho Wildlife Services Program From January 1, 1995 to September 30, 2000” at 3, 12

²⁷ 2003 Sawtooth LRMP, p. I-22.

other. Nowhere in the EIS or ROD do the wolf reintroduction rules exclude the SNRA's substantial impairment requirement. The Judge concluded that the 1972 law that established the SNRA does not include grazing as a 'historic' or 'pastoral' use and gives wolves and other wildlife precedence over livestock. **The new Forest Plan needs to reflect the current legal status of wolves and give wolves and other wildlife precedence over livestock.**

As noted, the Forest Service has authorized livestock grazing in the SNRA at locations and time periods where conflicts between wolves and livestock are predictable, and have in fact occurred, even though such conflicts could have been avoided through implementation of alternative grazing schemes to avoid or minimize wolf/livestock conflicts. Such alternative grazing schemes may include: changed locations or time periods, reduced livestock numbers, elimination of grazing in certain areas, improved livestock camp management, and increased measures to guard livestock from wolves, all of which the Forest Service has the authority to require of livestock grazing permittees under the statutes and regulations governing their management of the SNRA.

Furthermore, these conflicts are neither confined to wolves, nor to the SNRA, but are occurring throughout the Forests at issue here and with other species such as sage grouse, migratory birds and fish. Therefore, the RFP should include an assessment of conflicts of sheep or cattle grazing with wolves and other fish and wildlife species to determine appropriate grazing seasons, numbers and closures. This is the only way the Forest Service can ensure the viability of the numerous Threatened, Endangered, Proposed, Candidate, Sensitive and MIS species that are impacted by livestock grazing.

C. Fish are not protected from "substantial impairment"

The former Sawtooth Forest Plan defined "substantial impairment" for fish as a "change in habitat characteristics within the project area which would result in a decrease of inherent production potential equaling or exceeding 10%."²⁸ The new Forest Plan fails to include any such stipulations, stating only that all Federal regulations will apply: "Substantial impairment of natural values on the SNRA should never occur as long as there is compliance with all of the applicable laws and regulations."²⁹ Under the new Forest Plan, the only statement concerning substantial impairment states only that, "water quality should protect beneficial uses." This language is considerably weaker than the existing substantial impairment definition for fish. Under the new Plan, the baseline effects of management actions are occurring may impair streams far more than the 10% production potential threshold under the old Forest Plan and this change is totally unjustified. Because the SNRA is inherently different from other Forest System lands and is held to higher standards, the new Forest Plan must reflect these higher standards.

The new Forest Plan also states that substantial impairment would be determined during federal action requiring an environmental analysis or an environmental impact statement or at the request of

²⁸ Ibid at IV-99.

²⁹ 2003 Sawtooth FEIS, p. I-16.

the Area Ranger. This requirement fails to consider the new categorical exclusions for fuels reduction projects which would normally warrant environmental analyses or environmental impact statements. **The new Forest Plan needs to include quantitative definitions for substantial impairment that meet or exceed previous Forest Plan standards.**

D. Recreation strategies reflect inappropriate mix of uses and high risk of resource degradation

The ROS strategies presented within the SNRA are inappropriate and will lead to significant resource degradation. The lack of primitive class and extent of semi-primitive non-motorized is inconsistent with reducing conflicts with non-motorized recreationists and wildlife. We also believe that the new definition for substantial impairment is too broad to be effective. The new Forest Plan defines substantial impairment for recreation when “an action creates a change in the desired recreation settings by one ROS class of any area on the DNRA and occurs over a time period greater than six months cumulatively.”³⁰ Under these guidelines, snowmobile use could occur in primitive and semi-primitive non-motorized areas for over two years before “substantially impairing” non-motorized recreationists or wildlife in these areas. A snowmobile organization could state that their activities do not substantially impair use because they do not snowmobile in the spring, summer, or fall and thus their use is not a “long term” or “permanent change”. Also, the Vegetation, Water Quality, Soils, and Riparian guidelines improperly state that human waste be buried at least 100’ from surface water when the best available science and Leave No Trace Guidelines recommend a minimum distance of 200’.³¹ **The Forest Plan must correct these recreational loopholes with meaningful, quantitative, and appropriately sensitive standards.**

V. The Payette LRMP Does Not Provide Habitat Suitable for Bighorn Sheep Populations

A. The Payette LRMP Does Not Provide Disease-Free Habitat for Bighorn Sheep

The Payette LRMP ROD states that “(f)orest-wide wildlife management direction and desired vegetation conditions for the Revised Plan are designed to provide well-distributed habitats suitable for native and desired non-native species found on the three forests (ROD-30).” The LRMP does not, however, provide habitat suitable, i.e. disease-free habitat, for bighorn sheep with respect to domestic sheep, in that the LRMP does not set forth a specific standard, goal or objective eliminating domestic sheep from bighorn habitat. The need to “reduce or eliminate” the risk of disease transmission is recognized as a Need to Establish or Change Management Direction (pg. II-22) from the former forest plan. While the Forest Service claims that the LRMP will reduce the risk of disease transmission to bighorn sheep (pg. II-23), there is no evidence in the LRMP

³⁰ Ibid, p. I-25.

³¹ <http://www.Int.org/TeachingLNT/LNTEnglish.php>

explaining how the Forest Service will go about reducing or eliminating the risk of disease transmission short of eliminating domestic sheep grazing from bighorn sheep habitat.

There are forest-wide goals and objectives that indicate the Forest Service should take steps to eliminate domestic sheep grazing from bighorn sheep habitat. These include:

WIGO01- provide habitat capable of supporting viable populations of native and desired non-native wildlife species,

WIGO02 – reduce human-caused disturbances that cause undesirable effects to wildlife populations during critical life stages,

WIGO03 – provide habitat for wildlife species on National Forest System lands capable of contributing to sustainable populations for socio-economic and tribal needs.

WIGOB11 – Work with Idaho Department of Fish and Game to address their species plan objectives when Forest Service management activities may affect those objectives.

Providing disease-free habitat is a fundamental consideration when providing habitat capable of supporting viable populations of bighorn sheep, reducing human-caused disturbances (in this case, the disturbance caused by the grazing of disease-carrying domestic sheep), and providing habitat capable of contributing to sustainable populations.

The LRMP contains a goal of “(c)oordinating livestock grazing to address conflicts with other resource uses in a manner that is consistent with Forest Plan management direction (pg. III-44).” There are also specific objectives in Management Area 01-Hells Canyon and Management Area 02-Snake River to “(c)oordinate with Idaho Department of Fish and Game, Oregon Department of Fish and Wildlife, and domestic sheep permittees to reduce the risk of disease transmission between domestic and wild sheep (pg. III-99).” (Similar standards should be applied to Management Area 03 – Rapid River and Management Area 10 – Fall Creek/Warren Creek to eliminate the risks to bighorn sheep from domestic sheep in these areas.) In the case of bighorn sheep and domestic sheep, the only way of “reducing” conflicts between domestic sheep and bighorn sheep is elimination of disease-carrying domestic sheep. There is no other evidence available that methods other than eliminating the potential for physical interaction between domestic sheep and bighorn sheep will succeed in eliminating disease transmission to bighorns.

B. The Presence of Domestic Sheep Guarantees Disease and Death to Bighorn Sheep

The U.S. District Court of Oregon has found the following facts undisputed:

Bighorn sheep are native to much of western North America . . . , including the [Hells Canyon National Recreation] Area. However, as a result of indiscriminate hunting, unregulated grazing by domestic livestock and parasites and diseased carried by

domestic, bighorn sheep were eradicated from the Area by 1945. See Idaho Wildlife Federation v. Richmond, CV 94-1347-AS, p.5 (Decided April 10, 1996) (sic.)

The causal connection between domestic sheep grazing and bighorn sheep die-offs is clear, and it remains as true today as it has been in the past. To be sure, when domestic sheep and bighorns intermingle, the bighorns die. The cause of death is *Pasteurella haemolytica*, a bacteria that causes pneumonia against which bighorns lack sufficient natural resistance. No vaccine or other cure has been identified to date, despite years of research. As described in the findings adopted in Idaho Wildlife Federation v. USFS in light of available scientific facts on this question:

Numerous studies on the possible cause of the death of the bighorns have occurred in the meantime with the general conclusion that domestic sheep naturally carry a strain of pneumonia (*Pasteurella Haemolytica*) (“Pasteurella”) that does not affect the domestic sheep but is fatal to bighorn sheep. When bighorn sheep intermingle with domestic, the Pasteurella is transferred from the domestics to the bighorns through nose-to-nose contact. The bighorns then either die within two or three days while grazing with the domestics or they live long enough to return to their bighorn herd and infect the entire herd, resulting in bighorn herd die-offs.

This cycle of death has been replicated across the native bighorn sheep populations in the Hells Canyon National Recreation Area adjacent to the Payette National Forest. With every transplant of native bighorns where the bighorns subsequently come into contact with domestic sheep, die-offs have ensued. See Idaho Wildlife Federation v. Richmond (discussing history of transplants and die-offs due to *Pasteurella*-induced pneumonia in the HCNRA’s four bighorn herds: Cherry Creek, Lower Imnaha, Upper Hells Canyon, and Granite / Three Creek.).

The Forest Service has previously determined bighorn sheep and domestic sheep grazing are incompatible in the Hells Canyon National Recreation Area (HCNRA). It is inconceivable that the Forest Service cannot now determine that bighorn sheep and domestic sheep grazing are flatly incompatible on the Payette National Forest. A clear connection exists between domestic sheep grazing on Payette allotments and ongoing harm to native bighorns. The Forest Service is aware of this. Unfortunately, the only identified Payette LRMP direction specific to the bighorn-domestic sheep issue comes in the form of the vague objectives listed above.

In preparing the new comprehensive management plan for the Hells Canyon National Recreation Area, the Forest Service made the following determinations:

- a) A vaccine or other technique does not currently exist to eliminate or reduce the risk to bighorn sheep from domestics, as various references to (Schommer and Woolever 2001) confirm in the HCRNA FEIS (“The likelihood of [finding a vaccine] within the life of this plan is very low.”)(“It is unlikely that a vaccine that would resolve the incompatibility between domestic and bighorn sheep grazing would occur within the next decade.”).

- b) Separation of wild and domestic sheep is still recognized as the method to ensure healthy bighorn populations...

To ignore the ongoing HCNRA bighorn-domestic sheep conflict, the associated bighorn die-offs, and the incompatibility of this situation with respect to the Echols Butte and Deep Creek allotments is to ignore the law and the Forest Service's own previous determinations that domestic sheep and bighorn sheep are incompatible. The Forest Service has already found domestic sheep grazing and bighorn sheep survival are incompatible and responded to this situation by terminating domestic sheep grazing on the problem allotments.

Beginning in 1994, the Forest Service specifically analyzed the compatibility of bighorn sheep and domestic sheep in an Environmental Assessment ("EA"). See EA, "Proposal to terminate domestic sheep grazing on portions of the Hells Canyon National Recreation Area," (May 1994, USDA, Wallowa-Whitman NF, Baker City, OR). The EA recognized the science documenting the clear threat domestic sheep pose to bighorn survival as well as the difficulty of keeping the two species separated. The 1995 Decision Notice on this EA specifically stated:

The scientific research indicates that domestic sheep pose a severe health risk to bighorn sheep when the two species are allowed to intermingle The only way to avoid this health risk is to keep the animals spatially isolated, a task complicated by the tendency of both species to wander. Consequently, a high degree of incompatibility exists in portions of the [HCNRA] between the use of land as habitat for bighorn sheep and as range for domestic sheep.

See Decision Notice and FONSI for the "Proposal to terminate domestic sheep grazing on portions of the Hells Canyon National Recreation Area" (August 1995, W-WNF, Baker City, OR).

In this 1995 Decision, then Wallowa-Whitman National Forest Supervisor Robert Richmond decided to terminate domestic sheep grazing on several HCNRA livestock allotments based on his determination that domestic sheep grazing was "not compatible with the protection and maintenance of bighorn sheep habitat due to the probable transmission of fatal disease from domestic sheep to bighorn sheep." (Memo addressing Idaho Wildlife Federation v. Richmond, dated April 16, 1996 from Val J. McLam Black, Attorney, USDA Office of General Counsel to Robert Williams, Regional Forester, USFS Pac. NW Region).

In light of the science relevant to bighorns, the Payette LRMP objectives that do less than eliminate domestic sheep grazing from bighorn sheep habitat are inadequate too ensure the viability of bighorn sheep on the Payette National Forest because, in addition to the terminal result of direct intermingling, it places a death threat on their natural migratory tendencies and reduces the size and safety needs of patches and home-range. Domestic sheep on the Payette National Forest also jeopardize the survival of bighorn sheep on the adjacent Hells Canyon National Recreation Area. It is no wonder, in light of this, that bighorn die-offs have remained persistent as a result of domestic

sheep grazing on the Echols Butte and Deep Creek allotments since at least 1995.

Since 1995, the ODFW and other entities have made the Forest Service aware of ongoing bighorn die-offs, disease problems, and intermingling with domestic sheep related to existing active sheep allotments located on the HCNRA and Payette National Forest. Even with the elimination of domestic sheep grazing from the various allotments subject to the 1995 Forest Service decision, Hells Canyon bighorns continue to die and disease remains by far the top culprit:

Ongoing research on the causes of mortality in Hells Canyon bighorn sheep (1997-2000) indicates nearly two-thirds of the mortality of adults was due to disease.

Disease was also the cause of over 90% of the known lamb mortality. Bighorns in the closest proximity to domestic sheep or goats appeared to have the highest disease mortality rate. (March 28, 2002 and February 05, 2001 letters from ODFW to U.S. Forest Service).

The Sheep Mountain bighorn herd near Oxbow Reservoir had reached 80 animals in the 1990's. In July 1999, a *Pasteurella* pneumonia outbreak killed over half of the herd and no lambs were known to have survived in 2000. Id. The McGraw Creek herd was established in January 1999 within the HCNRA and had reached 22 bighorns by June of that year. Pneumonia, which ODFW believes was contracted from domestic sheep, had dropped the herd's numbers to 5 animals by the next winter. Id. The Upper Hells Canyon herd located within the HCNRA, which had declined to 10 animals in the 1980's due to pneumonia outbreaks, has slowly risen to about 30 bighorns but is again threatened by domestic sheep-borne *Pasteurella*. Id. Radio-collared members of this herd have been located as far south as Cuddy Mountain and Lime Point Creek in Idaho and well east into the Seven Devils mountains near Black Lake, which is on the Echols Butte allotment.

Rams from the Upper Hells Canyon herd are known to migrate at least 30 miles west through the HCNRA and into the Wallowa Mountains in order to mingle with the Lostine bighorn herd during the summer season. While the Lostine herd is not in the HCNRA, the radio collar data make clear that Hells Canyon bighorns travel into Idaho domestic sheep allotments both on and off of the HCNRA, then travel back through Oregon, both within and outside of the HCNRA, and present the risk of *Pasteurella* infection to other HCNRA and non-HCNRA wild bighorn herds. Pneumonia was detected in the Lostine herd this past year and has resulted in high summer lamb mortality. The most likely source was Upper Hells Canyon bighorns that had contact with domestic sheep on the Deep Creek and Echols Butte allotments while in Idaho. (Conversation between B. Brownscomb/Vic Coggins, ODFW, 10/2003).

Available science clearly demonstrates domestic sheep grazing in the vicinity of bighorns is not compatible. The Interior Columbia Basin FEIS Proposed Decision (December 2000) also found that "numerous research studies and monitoring of bighorn sheep "die-offs" have indicated a high correlation between die-offs and contact between domestic and bighorn sheep"(pg. 27). A medicinal cure or vaccine has not been identified and, as recognized by the Forest Service itself in

the HCNRA FEIS, is not likely to be discovered anytime soon.

Bighorns from the Upper Hells Canyon, McGraw Creek, and Sheep Mountain herds (i.e., Idaho side of the HCNRA) continue to either intermingle with domestic sheep on the Echols Butte and Deep Creek allotments.

The solution to the incompatibility of domestic sheep and bighorn sheep is to ensure the separation of domestic and bighorn sheep to the greatest extent possible. This should be done through the termination of domestic sheep grazing permits on the management areas on the Payette with bighorn sheep populations and with bighorn sheep habitat. The grazing permits for the two specific allotments, Echols Butte and Deep Creek, were last issued in 1990 for a 10-year term. Appellants are unaware whether such permits were re-issued in 2000 or for what period of time. Clearly, this period of permit re-issuance could address the bighorn-domestic sheep incompatibility issue. Or, bighorn-domestic sheep separation could be accomplished by continuing to allow bighorns to die through continued exposure to domestic sheep or more shooting of bighorns that have the highest likelihood of intermingling with nearby domestics.

Currently, the Forest Service and the Payette LRMP will follow the latter approach. The burden of bighorn-domestic sheep incompatibility has fallen on the bighorn sheep population. The ODFW routinely kills or captures native bighorn sheep either known or suspected of having interacted with domestic sheep. Since 1999, three bighorns have been shot on the Echols Butte and Deep Creek allotments (Shirts allotments) after being found near domestic sheep (ODFW Letter to USFS, March 28, 2002). The ODFW has made other efforts to keep bighorns separate from domestic sheep, including the radio collar monitoring and attempting to drive bighorn away from domestic sheep allotments. This has not been successful in preventing continued bighorn-domestic sheep intermingling and associated bighorn disease events.

The Forest Service's 1995 approach of terminating several active domestic sheep grazing permits in the HCNRA was and remains the appropriate action and should be duplicated to meet the management objectives on the Payette LRMP. The incompatibility of the domestic sheep-bighorn situation that drove management decisions in the HCNRA is today clearly present with respect to the occupied domestic sheep allotments on the Payette National Forest.

The FEIS references some agreement between the Hells Canyon Bighorn Sheep Restoration Committee and the Idaho Woolgrowers Association that recognizes that the Payette National Forest was not part of some restoration plan. To the appellants' knowledge, this agreement, which appears to be dictating management prescriptions on the Payette National Forest, was never put forward for public review and comment, and should not be used as a basis for forest plan management prescriptions. The Ninth Circuit ruled in Kern v. U.S. Bureau of Land Mgmt. that "... tiering to a document that has not itself been subject to NEPA review is not permitted, for it circumvents the purpose of NEPA. While NEPA empowers neither the plaintiffs nor this court to second-guess the BLM's management decisions, it does require the BLM to articulate, publicly and in detail, the reasons for and likely effects of those management decisions, and to allow public comments on that

articulation.”

Bighorn sheep should not be shot for the sake of perpetuating domestic sheep grazing, as is currently practiced.

VI. The LRMP directions are inconsistent with the "Road Management Policy" published in the Federal Register on January 12, 2001.

A. Decisions made regarding the forest-wide road systems in the Forest Plans do not adequately reflect consideration of Roads Analyses

The Rule on which the Policy is based specifically states, "the intended effect of this final rule is to help ensure that additions to the National Forest System network of roads are those deemed essential for resource management and use; that, construction, reconstruction, and maintenance of roads minimize adverse environmental impacts; and, finally, that unneeded roads are decommissioned and restoration of ecological processes are initiated."

Sec. 212.5 was amended to outline the following required components of the Road system (emphasis added):

- 1) Identification of road system...."the responsible official must identify *the minimum road system* needed for safe and efficient travel and for administration, utilization and protection of National Forest System lands. In determining the minimum road system, the responsible official **must** incorporate a science-based roads analysis at the appropriate scale..."
- 2) *Identification of unneeded roads.* "Responsible officials must review the road system on each National Forest and Grassland and identify the roads on lands under Forest Service jurisdiction that are no longer needed to meet forest resource management objectives and that, therefore, should be decommissioned or considered for other uses, such as for trails."

While a Roads Analysis was completed in June 2003 for all three forests³², and impacts on threatened and endangered species from the current road system are clearly documented, the decisions made regarding the forest-wide road systems in the Forest Plans do not adequately reflect consideration of this analysis. The recommendations made in the roads analysis and the identification of the minimum road system does not seem to be based upon these analyses. No unneeded roads were identified in the analysis.

The responsible official did not make a minimum road system determination consistent with the requirements in the rule, or based upon the actual data compiled in the roads analysis. As outlined in 36 CFR Section 212.5, the minimum road system is defined as:

³² USDA Forest Service. 2003. Forest Scale Roads Analysis for the Boise, Payette, and Sawtooth National Forests. USDA Forest Service Intermountain Region.

- the road system determined to be needed to meet resource and other management objectives adopted in the relevant land and resource management plan (36 CFR part 219),
- to meet applicable statutory and regulatory requirements,
- to reflect long-term funding expectations,
- to ensure that the identified system minimizes adverse environmental impacts associated with road construction, reconstruction, decommissioning and maintenance.

B. The minimum road system determination reflects a system in excess of what is needed to meet resource and management objectives, and in fact, detracts from restoration objectives that have been established for the majority of the Forest.

The Roads Analysis finds that the current road system is in excess of current timber harvest guides, provides an excess of roaded recreation and severely hinders attainment of resource protection goals throughout the forests. There is no rationale for determining that the current system of roads is, in fact, the minimum road system needed.

With approximately 10,000 miles of existing Forest System roads within Forest Service jurisdiction within the Ecogroup, it is anticipated the supply of roaded recreation opportunities exceeds demand. The recreation analysis (FEIS-Recreation) indicates that the available dispersed and developed recreation supply currently exceeds demand and is likely to continue to meet or exceed demand for the next planning period. (RA, 4-63)

ACS priority watersheds are identified and roads are called out as a significant threat to the watershed integrity of many of them in Appendix F of the Roads Analysis. Surprisingly, there are almost no resource management goals that prioritize reducing the road density and stream crossings in these watersheds throughout all three of the Forest Plans.

A cursory review of road density data indicates 12 ACS priority watersheds that currently have road densities that are over 2 mi/mi squared, all on the Boise and Payette forests. Only one of these watersheds includes a standard for "no net increase" in road density. Excepting those in roadless areas, most are over the at risk threshold of 0.7 mi/mi squared. This does not include the majority of high priority restoration watersheds that are named in the Plans, but not designated as ACS priorities. The Forests have done extensive analysis to identify restoration priorities and road related threats, but the standards for road management have not been set to realize the restoration needs. Limiting new road construction in these watersheds is not going to meet the management goals of protecting and restoring threatened and endangered species that are severely impacted by sedimentation and fragmentation of habitat directly linked to the road system.

C. Statutory and regulatory requirements under the Clean Water Act and Endangered Species Act are not met by the road system determination.

Where roads are known sources of water quality degradation and impact threatened and endangered terrestrial and aquatic species, there are no standards outlining the need to remove roads in critical habitat areas. Only in objectives outlined for relatively few watersheds is road density even considered, often in objectives to prioritize studying road crossing impacts, or analyze road impacts on the system. These threats are already well documented and the solution is known. Forest-wide direction should be given for no net increase and reduction of road density in all high priority watersheds. The Roads Analysis summarizes overall impacts:

Impacts on Aquatic Species

Disturbances to fish habitat result from construction, reconstruction, maintenance, and decommissioning of roads. Abandoned roads, or roads not adequately maintained to RMOs, have resulted in chronic sedimentation, or, in some instances, washed out or fail altogether, resulting in a massive surge of sediment. In addition to causing sedimentation, road development can remove streamside vegetation, compact soils, and encroach stream channels. Poorly installed stream crossings can increase sedimentation and restrict fish migration. Rieman and Clayton (1997) identified that road-related disturbances far overshadow disturbances associated with fire and logging activities. Furniss et al (1991) identified loss of water quality, altered hydrologic conditions, increasing frequency of landslides, and loss of fish habitat associated with road-related disturbance. Roads can also increase public access, which has the potential for increased fishing pressure and poaching problems. Bull trout are especially vulnerable to road-related impacts. Increased road use usually leads to increased levels of sedimentation. When increased road use results in increased road maintenance, sedimentation may also increase in the case of unpaved roads. (RA 3-5)

Impacts on Water Quality

All but three subbasins contain 303(d) water quality limited water bodies. Six subbasins contain subwatersheds associated with TMDLs. Sediment is the main pollutant source contributing to degraded water quality; however, elevated temperatures play a role as well. Heavy metals, nutrient loading, and chemical contamination contribute to degraded water quality in some subbasins. (RA, 4-15)

Few subbasins were found to have any pathways functioning appropriately across an entire 4th field HU, outside of the wilderness. Generally, those subwatersheds functioning at risk or unacceptable risk, with lower water quality integrity or geomorphic integrity ratings will be more vulnerable to impacts from road management activities. (RA, 4-22)

D. The minimum road system determination far exceeds logical long-term funding expectations and therefore, will result in continued resource degradation and substandard maintenance for safety and resource protection needs.

The Roads Analysis comprehensively reviews the current economic costs of the system, yet not one of the recommendations in the Roads Analysis or management standards in the Plans link this massive shortfall to identifying a need to reduce the road system and bring the forests into compliance with the Roads Policy.

On average, the Boise National Forest maintained only 21% of its roads to road management objectives (RMOs), the Payette maintained only 19% to stated RMOs and the Sawtooth Forest only 22% to RMOs. Furthermore, the Roads Analysis states:

The Boise, Payette, and Sawtooth NFs have not identified any needs for additional arterial and collector roads in the foreseeable future. (RA 2-11)

One of the objectives of the Roads Analysis process is to identify the minimum road system needed for public access and land management purposes. Forest Service Manual (FSM) 7712.01 requires the reflection of “long-term funding expectations” when making determinations of the “minimum road system”. Congressionally appropriated road maintenance funding has not proved sufficient to maintain the current road system. Currently, only 19-22 percent of the existing classified road system is maintained to RMO standards; 22-42 percent are provided some level of maintenance. In the case of maintenance class 3/4/5 roads, 20 to 90 percent are being maintained to RMO standards across the three Forests. (RA, 3-2)

The arterial and collector road system (i.e., generally the maintenance class 3, 4 and 5 roads) was developed over several decades to access different portions of the Forest, often to manage different resources and provide for a variety of public uses. The current system is believed to meet the current needs based on historical uses. However, travel management planning that will occur after the adoption of the revised forest plans may identify the need for additional level 3, 4, or 5 roads. (RA,)

The Roads Analysis goes on to state, "Obviously, all the annual, deferred, and capital improvement needs cannot be met with budgets of about the same levels that have been experienced during the last 11 years." (RA, 4-55). Given this statement and clear analysis to support, it is unclear why the current road system was named the minimum system. Glossed over in the analysis is that only the major roads were analyzed in this Roads Analysis. The costs and environmental impact of level 1 and 2 roads and the excessive number of user created roads across the forests indicate it is appropriate at the forest level to direct a reduction in the road system, as directed by the Roads Policy.

The road system should not be designed for historic use, but for current and future use based on economic and ecological realities of road management impacts on the resources managed by the Forest Plans. The road system is a major cause of aquatic species decline throughout the forests, maintaining the same system and only marginally restricting growth of the road system is inconsistent with the Road Analysis completed and direction of the Roads Policy.

E. Ecological Impacts of the road system are detailed in the Roads Analysis, but did not carry over into Forest Plan direction or the minimum road system determination.

The purpose of a Roads Analysis is not to simply document problems, but to *inform management decisions*. While many of the required data gathering exercises were done, there was a biased focus on access and recreation when recommendations were made, and no limits or management direction to reduce impacts of damaging roads or realistically curb the maintenance-funding shortfall are in the Plans.

Simply limiting new road construction in some areas will not reduce the backlog of maintenance and lack of funds or make significant gains in moving watersheds that are uniformly rated as "at risk" toward the desired future condition. In addition, there are disturbing allowances for the most damaging types of roads - temporary and low maintenance levels created for fire suppression that will only add to the ecological impacts of the road system and maintenance costs.

F. No unneeded road determination was made.

The Roads Analysis summary and priority setting chapter (Chapter 5) makes many recommendations on how to gain more money for road maintenance, and makes recommendations for right-of-way needs, recreation needs and improvement needs, but does not make a clear determination of unneeded roads or address decommissioning needs in any meaningful way, despite the plethora of information throughout the Analysis on the negative impacts to terrestrial and aquatic resources. At some point, some roads must be designated as "unneeded" and the road system reduced to meet recovery goals stated throughout the forest plans.

By only analyzing level 3,4,5 roads, the issue of reducing road densities and associated watershed and fragmentation impacts was left unaddressed.

G. Overall, the Forest Plans lack a clear connection to the Roads Analysis process.

The intent is clearly to look at both access needs, economics of maintaining those and keeping road system consistent with resource objectives as well as reducing ecological impact. The goals and objectives in the LRMPs are clearly inconsistent with this direction.

Transportation plans are put off until some undetermined time in the future, while the impacts of roads (and ORV trails) throughout the forest are clearly documented. Roads are the main threat to many of the aquatic species strongholds throughout the forest, though there is no commitment to reduce the size of the road system or impacts within the life of the plan.

VII. The proposed plans do not insure against damage to soils, slope, water and watershed conditions as prohibited by the National Forest Management Act and the Clean Water Act

This action purports to make several decisions, including the "Establishment of Forest-wide standards and guidelines to fulfill the requirements of 16 USC 1604 (NFMA) applying to future activities (36 CFR 219.13 to 219.27)." Specifically, section 6(g)(3)(E) of the National Forest Management Act requires that LRMPs "insure that timber will be harvested from National Forest System lands only where: (i) soil, slope, or other watershed conditions will not be irreversibly damaged," and "(iii) protection is provided for streams, streambanks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water temperatures, blockages of water courses, and deposits of sediment, where harvests are likely to seriously and adversely affect water conditions or fish habitat."

This action applies to an estimated 25,000 miles of perennial and intermittent streams, of which essentially all perennial and some intermittent streams are fish bearing. In addition, there are an estimated 34,000 acres of lakes and reservoirs. Forest streams comprise the headwaters of several important river systems, including the Snake, Salmon, Boise, Payette, Big Wood and Weiser Rivers.³³

These plan amendments must be supported by available science, notably including the scientific findings of the Interior Columbia Basin Ecosystem Management Project.³⁴ The top priority aquatic restoration item highlighted in the Aquatics SIT report is to restore connectivity by increasing the total amount of good quality habitat available and removing barriers that isolate such habitat. The report recommended that high quality habitat can best be increased by decreasing sedimentation, especially by stabilizing or obliterating roads and otherwise improving timbering and grazing practices to eliminate riparian impacts. Fragmentation should be addressed by minimizing or eliminating physical barriers such as those posed by small dams and diversions and inadequate road crossings, as well as barriers posed by high water temperatures in migratory corridors.

- A. There is an overall lack of standards that commit to particular management practices in critical areas, leading to an over-reliance on project-level consultations with the Services to limit jeopardy to protected species under the ESA: this approach does not adequately limit impacts to aquatic ecosystems as required to meet NFMA and CWA requirements.**

A key premise of the regional planning effort initiated at the time the interim aquatics direction was implemented was that "there are potential effects to listed species and critical habitat that may only

³³ FEIS at 3-107.

³⁴ USDA Forest Service and USDOJ Bureau of Land Management, "Broad-scale Assessment of Aquatic Species and Habitats," Chapter 4, Volume III of An Assessment of Ecosystem Components in the Interior Columbia Basin and Portions of the Klamath and Great Basins (June, 1997).

be addressed at broad scales. . . . because they may not be adequately addressed in project-specific consultation."³⁵

Yet the proposed Plans provide only "descriptive management direction" not prescriptive management standards.³⁶ As the FWS biological opinion explicitly acknowledges, it is not even possible to make a "no jeopardy" call for bull trout for all actions tiered to the plan direction, and the agency specifically states that its opinion does not exempt project-level take of protected species.³⁷ This approach does not provide adequate certainty that aquatic resources will be protected in accordance with legal requirements applicable at the Forest Plan level. Promises to make good decisions through future project-level analysis is not a substitute for the certainty plan-level prescriptions can provide.³⁸

The purpose of forest-wide and larger-scale planning and consultation should be to create proactive management sideboards capable of ensuring that projects causing ESA jeopardy or inconsistent with maintenance of NFMA viability -- collectively or individually -- are never even proposed. Yet, the key "standards" to be implemented on these three forests are really just statements about how future decisions will be made, deferring meaningful effects analysis to a subsequent stage of review and a to-be-developed "consultation framework" document. The "standards" only take effect when the Matrix and its "watershed condition indicators" are applied -- yet nothing about the Matrix is defined as a standard, since it is merely a decision tool -- though it is a component of the

³⁵ NMFS August 8, 1996 concurrence letter transmitting LRMP opinion at 3.

³⁶ There are essentially only three key forest wide standards:

> **TEPC Standard 6.** Management actions shall be designed to avoid or minimize adverse effects to listed species and their habitats. For listed fish species, use Appendix B for determining compliance with this standard.

> **SWRA Standard 1.** Management actions shall be designed in a manner that maintains or restores water quality to fully support beneficial uses and native and desired non-native fish species and their habitats, except as allowed under SWRA Standard 4 below. Use the MATRIX located in Appendix B to assist in determining compliance with this standard.

> **SWRA Standard 4. SWST04 Hydrology and Watershed Processes.** Management actions will neither degrade nor retard attainment of properly functioning soil, water, riparian, and aquatic desired conditions, except:

- a) Where outweighed by demonstrable short- or long-term benefits to watershed resource conditions; or
- b) Where the Forest Service has limited authority (e.g. access roads, hydropower, etc.).

In these cases, the Forest Service shall work with permittee(s) to minimize the degradation of watershed resource conditions. Use the MATRIX located in Appendix B to assist in determining compliance with this standard.

³⁷ See Incidental Take Statement, FWS BO at 138) (explaining this is a contingent decision that does not exempt project-level take and leaving open the possibility that future projects may cause jeopardy).

³⁸ See e.g. Attachment __, Rhodes, Jonathan J. "Standards needed in LRMPs as part of vital protection for imperiled native salmonids (November 2003).

ACS that must be "used" according to SWRA Standards 1 and 4.³⁹

These "descriptive" and procedural standards do not meet the NFMA mandates because they do not provide adequate assurance of protection for aquatic resources. They depend entirely on consultation analyses for listed species, leaving areas devoid of listed species with substantially less of a procedural safety net than listed species. Even for areas covered by consultation analyses, how aquatic resources are protected ultimately comes down to whether the forests and consulting agencies' determinations about balancing of short- and long- term impacts are reasonably likely actually to have a rational basis. But we find no basis for finding that increased reliance on these subsequent determinations will protect aquatic resources. The ultimate resource protection outcome is less certain than under the pre-existing interim direction. As NMFS notes, "these overarching standards place added burden on project-level Section 7 consultation" compared to interim direction.⁴⁰

Of additional concern is the fact that the consultation process is undergoing significant change, with more responsibility proposed to be borne by the managing agencies and less concurrence required by the Services.⁴¹ These proposed regulations further increase concerns about reliance on the consultation process because they would allow the Forest Service to entirely circumvent the ESA Section 7 consultation process, which would substantially weakening a key component of these plans.

As a result, the possibility that harmful management will occur in riparian areas and Priority Watersheds via grazing, salvage, thinning and logging may be greater under these plans than the interim direction. There is no reasonable basis upon which to ground an assumption that consultations will "catch" bad projects and a strong basis to argue that a stronger forest plan is needed to decrease reliance on judgment calls at later stages of planning.

Heavy reliance on project-level analysis to prevent harm to aquatic resources ignores the fact that the previous iterations of these management plans were deemed inadequate for the very reason that they emphasized "**planning actions on a site-specific basis, rather than based upon broader watershed and river basin conditions and capabilities.**"⁴² A key shortcoming of the prior plans is that there is no integrated, consistent way to balance the production of good and services with the needs of aquatic species, and that reconciliation of competing concerns was relegated to the project level.⁴³ We know that this paradigm is a failure, because it leads to inconsistent outcomes, multiple consultations and inadequate proposals when viewed at the larger scale.⁴⁴ This paradigm should not

³⁹ See e.g. NMFS BO at 52.

⁴⁰ See e.g. NMFS BO at 60.

⁴¹ Proposed Joint Counterpart Endangered Species Act Section 7 Consultation Regulations and the Environmental Assessment for the Healthy Forests Initiative Counterpart Regulations ("EA").

⁴² NMFS 1995 LRMP Biological Opinion at 36 (emphasis added).

⁴³ Id at 46.

⁴⁴ NMFS BO for this action at 60.

have been repeated here.

1. Key areas where management practices have not been adequately specified are in riparian areas, including where they are grazed and on landslide-prone slopes

a. Problems with Riparian Management and Delineation Direction

Riparian Management Standards (MPC 3.1 and 3.2) rely on site-level determinations about tradeoffs between near and longer term effects.⁴⁵ This is true even for areas where one or more Watershed Condition Indicator describes a degraded environmental baseline or where overall watershed conditions are "functioning at risk" or "functioning at inappropriate risk."

In watersheds considered to be "functioning appropriately" direction against "retarding or preventing attainment" of desired conditions specifically does not apply to impairment of specific WCI values, but targets only overall "desired future condition." The definition of degradation specifies that "Where existing conditions are within the range of desired conditions, "degrade" means to move the existing condition outside of the desired range" i.e. to and FR or FUR status. However, it is unclear from the plan direction exactly how one would measure the recovery rate of overall DFC, rendering this standard an ineffective guide to management.

Degradation of the individual condition objectives (previously RMOs, now WCIs)⁴⁶ should be prohibited in order for the riparian standards in these plans to be equivalent to that in the prior interim direction – Pacfish and Infish did not allow actions to retard or prevent attainment of RMOs.

⁴⁵ For example, 3.1 – *Passive Restoration and Maintenance of Aquatic, Terrestrial and Hydrologic Resources* reads as follows:

- | | |
|----------|--|
| Standard | Management actions, including salvage harvest, may only degrade aquatic, terrestrial, and watershed resource conditions in the temporary time period (up to 3 years), and must be designed to avoid resource degradation in the short term (3-15 years) and long term (greater than 15 years). Degrade and degradation are defined in the glossary. |
| Standard | Wildland fire use and prescribed fire may only be used where they: a. Maintain or restore water quality needed to fully support beneficial uses and habitat for native and desired non-native fish species, or b. They maintain or restore water quality needed to fully support beneficial uses and habitat for native and desired non-native fish species; or c. They maintain or restore habitat for native and desired non-native wildlife and plant species. |
| Standard | Road construction or reconstruction may only occur where needed: a. To provide access related to reserved or outstanding rights; b. To respond to statute or treaty, or c. To address immediate response situations where, if the action is not taken, unacceptable impacts to hydrologic, aquatic, riparian or terrestrial resources, or health and safety would result. |

⁴⁶ "Retard attainment of desired resource conditions" means: "When an effect resulting from a management action, individually or in combination with effects from other management actions, within a specified area and timeframe, measurably slows the recovery rate of existing conditions moving toward the range of desired resource conditions.

It appears that the standards do define degradation in terms of impairment to individual WCIs in basins considered to be outside "DFC," in FR or FUR basins. Again, from the definition of degrade: "Where existing conditions are already outside the range of desired conditions, "degrade" means to change the existing condition to anything measurably worse. The term "degrade" can apply to any condition or condition indicator at any scale of size or time, but those scales need to be identified." But it is not clear from this definition how WCIs are used to determine whether permissible degradation is proposed or is occurring, nor how the applicable scale of size or time will be decided.

The measurable management objectives (watershed condition indicators) still are not adequately tied to decision-making about riparian or upland management. Decision protocols for linking watershed condition and trend to the design and approval of management activities should be more clearly established. These relationships are particularly important given the great extent to which the meaning of riparian and landslide prone direction relies on monitoring.⁴⁷

(i) Riparian area delineation allowing site-level tailoring introduces uncertainty about area that will be covered by the riparian designation.

The default riparian delineation methods⁴⁸ are similar to Pacfish/Infish⁴⁹, but a third method allows for delineation "based on a site-specific analysis by a qualified specialist with expertise in the field of riparian function and ecological processes" to determine "the distance that best encompasses the extent of [riparian] functions and processes."⁵⁰ Biophysical principles that should be considered include but are not limited to: stream shading, LWD recruitment, fine organic litter, bank stabilization, sediment control, nutrients and other dissolved materials, microclimate and productivity, wildlife habitat, windthrow, role of small streams, hill slope steepness.⁵¹

Overall, NMFS found that the delineation generally will yield widths similar to or greater than interim widths.⁵² We generally agree with this finding for the default and SPTH-based methods, but the site-level analysis is vulnerable to abuse because line officers are directed to define the area as "the distance that best encompasses" "riparian functions and ecological processes" without any associated protocol for how to determine "best." Without additional constraints on the site-specific riparian delineation option, this option is impermissibly vague.

⁴⁷ "The effectiveness of RCA and landslide-prone area direction does depend on monitoring and adjustments." NMFS BO at ____.

⁴⁸ A summary of the RCA Criteria and Application appears in the NMFS BO at Attachment 1 (attachment pages 1-3) and a comparison between the plan provisions and the interim direction appears as Attachment 4 (attachment pages 10-14) and Attachment 6 (pp. 14-____).

⁴⁹ "The outer extent of the inner gorge was dropped from the proposed approach because of the general absence of this channel/valley form within the SWIE. Since landslides and landslide-prone areas are not always located in riparian areas, the Revision has also removed these areas from RCA designation. Instead, Forest-wide direction has been written to address protection of landslides and landslide-prone areas."

⁵⁰ NMFS BO, Attachment 1 at 3.

⁵¹ See e.g. Spence et. al. 1996.

⁵² BO at 85.

The agency does not have a good track record of implementing riparian guidance where excessive discretion exists for changes to riparian management objectives and riparian area delineation.⁵³ The chartering of the Interagency Implementation Team and ensuing implementation of solid accountability mechanisms was largely a result of extensive and flagrant abuse of discretion by line officers where changes were allowed to be made in riparian management objectives and riparian area delineation based on site-specific analysis.⁵⁴

Riparian delineations must be consistent with the Aquatics SIT report, which found that 300 foot minimum riparian zones typically are necessary to provide for most riparian functions, and that greater measures are needed to conserve or rehabilitate riparian structure and function on steeper and/or unstable slopes. This recommendation was borne out by field tests of the default widths. The tests found that while 300 feet was adequate in most areas on the Okanogan, it turned out to be as much as several hundred feet short of the mark for most areas on the Idaho Panhandle.⁵⁵

b. Grazing Standards are inadequate

The key forest-wide standard specifically applicable to grazing is:

RAST01: Maximum forage utilization of representative areas within each pasture shall not exceed either a maximum of 45% use or a minimum 4-inch stubble height of hydric greenline species, whichever comes first in RCAs.

The other standards applicable to grazing are generally applicable to all land uses:

TEPC Standard 6: All actions designed to minimize or avoid effects to ESA-listed species)

SWRA Standard 1: Maintain or restore water quality (with exceptions for limited authority)

SWRA Standard 4: Do not degrade or retard attainment of PFC (properly functioning stream conditions) (note: Not WCIs) (with exceptions for limited authority)

⁵³ Williams, 1997.

⁵⁴ Pacfish/Infish Implementation Team, Field Reviews from 1995 and 1996 (finding wide variation and widespread failure to fully implement interim direction and supporting need for prescriptive standards to limit riparian salvage, thinning, grazing and roadbuilding)

⁵⁵ USDA Forest Service, Idaho Panhandle National Forest, "INFISH Test of Alternatives C,D,E and Watersheds Analysis on the Idaho Panhandle and Okanogan National Forests, June 18, 1996 (File Code 2600) (transmittal cover memo from Dave Wright, INFISH Team Leader to Steve Mealey, UCRB Team Leader and Jeff Blackwood, Eastside EIS Team Leader, June 18, 1996). This report found that when watershed analysis is used to define riparian areas in Trestle Creek on the Idaho Panhandle, RHCAs ranged from 125 to 1000 feet, averaging 290 feet on each side for the mainstem and for tributaries and sensitive landforms, RHCAs ranged from 125 to 1250 feet, and averaged 500 feet on each side of the stream. On the Okanogan, using the Toats Coulee watershed for the test. Under some conditions it found that widths could be decreased from defaults but that they needed increasing where: roads were in or adjacent to riparian; there were lots of stream crossings; there were lynx or deer migration corridors, riparian vegetation is degraded or there is mass wasting going on.

Elimination of the detrimental effects of livestock in riparian areas is one of the top two restoration actions identified by the Aquatics Science Team of the ICBEMP and other investigators.⁵⁶ It is, therefore, both necessary and appropriate to specify the conditions under which riparian grazing should not occur. None of the above standards adequately specifies when and where livestock use must be prohibited in riparian areas to allow for recovery. However:

"it is absolutely essential to develop standards that provide robust protection for native salmonids and their habitats from the effects of grazing. Such standards include eliminating grazing in the riparian areas of streams that are innately susceptible to grazing damage. Such streams include those with the following attributes: banks composed of fine-grained, non-cohesive soils, perennially saturated banks, streams lacking deep-rooted vegetation, or in a degraded condition with respect to vegetation, shade, water temperature, overhanging banks, bank stability, pool, or fine sediment levels in channel substrate."⁵⁷

Limiting grazing impacts under the LRMPs unjustifiably depends on enforcing utilization and stubble height standards. There is no basis to support a finding that a 45% utilization and 4 inch stubble height would adequately protect riparian areas from grazing-caused degradation. This is not an adequate approach for reasons detailed in the attached expert statement from Jonathan Rhodes. In addition to enforcement problems inherent to this approach:

- * "forage utilization standards do not prevent damage to soils, streambanks, and soil hydrology caused by trampling or damage to trout habitat from elevated sedimentation from the combined impacts of grazing";
- * "Livestock can cause significant bank damage, including bank destabilization and destruction of overhanging banks at forest levels well below 25%";
- * "Field reviews indicate that forage utilization standards are an ineffective approach to restoration and protection in degraded reaches, wet meadows, seeps, and travel corridors . . ."⁵⁸

The most effective approach is to prohibit

"riparian grazing in systems with high water temperatures, degraded riparian vegetation, unstable banks, elevated sedimentation, with attributes rendering them susceptible livestock damage, and/or where stream and riparian conditions are unknown (Anderson et al., 1993; Henjum et al., 1994; Rhodes et al., 1994; USFS, 2000)."⁵⁹

We note that similar standards were recommended by the Services and the EPA in their 1995

⁵⁶ See Rhodes, Attachment ____.

⁵⁷ Rhodes, Attachment ____ at 5.

⁵⁸ Id. at 5-6.

⁵⁹ Id. at 7.

submittal during the ICBEMP process.⁶⁰

c. Management of Landslide Prone Areas is not certain to avoid increasing landslide frequency and adverse impacts in violation of NFMAs mandate to insure against detrimental changes in soil, slope and watershed conditions

The Plans' management direction does not provide certainty of that management will not cause increases in the rate and adverse impacts of landslides

Landslide-prone areas are addressed in forest-wide direction and associated guidance, but they are not delineated as part of the RCA designation as with Pacfish/Infish and no forest-wide management standards apply. Rather, a coarse/fine filter approach is used and "appropriate practices" will be identified at the project level. Thus, the question of what kind of practices will avoid increased incidence of sliding is deferred.

The only standard that specifically applies on landslide-prone areas is:

*SWRA standard 12: Site-specific analysis or field verification of broad-scale landslide-prone models shall be conducted in representative areas that are identified as landslide prone during site/project scale analysis involving proposed management actions that may alter soil-hydrologic processes. Based on the analysis findings, design management actions to avoid the potential for triggering landslides. Refer to the *Implementation Guide for Management of Landslide and Landslide Prone Areas* located in Appendix B to help determine compliance with this standard.*

In addition, two guidelines (SWRA 3 and 4) deal with identification of "controlling and contributing factors" to slope stability and field verification both of which reference Appendix B again.

Appendix B calls for application of "appropriate management restrictions" to avoid and prevent landslides, including "Standard Practices" in stable and low hazard areas, "Limited Practices" in Moderate Hazard Areas with low to moderate relative risk and "Restricted Practices" in high hazard or moderate hazard areas with high relative risk. It is stated in Appendix B (is this a standard or is it guidance?) that "[o]n extreme slopes abandonment of the area may be the best environmental and economic solution," but road building and harvest on even the highest hazard areas is not explicitly deemed off-limits.⁶¹ Rather, managers are told that "Chapters 3 and 4 of the publication, *A Guide*

⁶⁰ NMFS, FWS and EPA called for elimination or suspension of grazing in riparian areas not meeting habitat or sediment objectives where grazing is a factor of the degradation or is limiting the rate of recovery. Grazing was also restricted adjacent to critical habitat containing wet meadows, where protective measures are not assured of implementation or enforcement, where livestock cannot be prevented from entering off-limits riparian areas and where access cannot be eliminated during spawning and rearing. NMFS, USFWS, EPA, "Early submission" Aquatic Conservation Strategy (November 11, 1995).

⁶¹ B-45.

for Management of Landslide-Prone Terrain in the Pacific Northwest (Chatwin et. al. 1994) provides good assistance in both field-identifying landslide prone areas and developing site-specific management practices and mitigation on LSP areas."⁶² There is inadequate specificity regarding what practices are considered to fit each category, although a list of factors contributing to landslides is provided.⁶³ "Limited practices" and "restricted practices" are described as follows:

"Limited Practices – (In Moderate Hazard Areas with Low to Moderate Relative Risk) Management actions are designed with review and guidance of appropriate resource specialists. Limited practices may included but are not limited to: reducing yield or basal area removal of forested vegetation, increased rotation lengths, selective harvest with full suspension yarding, relocating existing or proposed road alignment, improving road drainage design, etc.

Restricted Practices – (In High Hazard or Moderate Hazard Areas with High Relative Risks). Management actions are severely restricted or eliminated so as to minimize initiation of landslides and effects to other resources.⁶⁴

In addition to the dubitable status of this direction as a Standard (it appears only in an Appendix), it is not specific enough to ensure there is no management induced increase of mass wasting on those sites most likely to affect aquatic resources.

Furthermore, there is no standard or guidance with respect to the assignment of risk categories to particular areas or sites, so we have no assurance as to what part of the landscape will be protected with which practices. Although there is reference to Dixon et. al. 1999 in association with the coarse filter hazard rating, the protocol for this hazard rating scheme is not clear from the decision documents and does not appear, but should appear, as a par of the management standards.⁶⁵

If these Plans are to retain a naturally functioning sediment regime, as they purport to do and as NMFA requires, then LSP areas should not be harvested at all, as human modification of such slopes will increase the probability of slope failure above the natural background level – a proposition supported by landslide inventories that document increased landslide frequency after clearcutting, laboratory experiments on rooted, artificially reinforced soils, slope stability analysis of field data and numerical modeling analyses.⁶⁶ The assumption behind the language pertaining to limited and restricted practices is that there is a safe way to harvest in landslide prone areas, even though this has not been shown to be the case in any study of which we are aware. Prohibiting

⁶² Id.

⁶³ B-45 (listing vegetation alteration, root strength, soil depth, contributing basin size and roads).

⁶⁴ Appendix B-47.

⁶⁵ B-43 (referencing Dixon et. al. and LSP hazard ratings).

⁶⁶ See. e.g. Burroughs and Thomas, 1977; Waldron, 1977; Ziemer and Swanson, 1977, Gray and Megahan, 1981; Waldron and Dakessian, 1981; O'Loughlin and Ziemer, 1982; Burroughs, 1985; Buchanon & Savigny, 1990; Sidle, 1991; Reistenberg, 1994; Montgomery, Schmidt, Greenberg, and Dietrich, 2000 as cited in Declaration of William Dietrich filed in the United States District Court for the District of Oregon Civ. No. 02-00243-BR (PRC v. Brown).

forest clearing is the most effective way to reduce logging-induced slope failures on landslide prone terrain; yarding mitigation practices do not address the loss of root strength and are therefore unlikely to reduce the increased occurrence of landslides resulting from the loss of root strength.⁶⁷

In sum, the NMFA's mandate to insure against irreversible detrimental changes in soil, slope and watershed conditions has not been met.

B. Management standards that allow for degradation, even if "short term" or "temporary" degradation do not protect water bodies from "detrimental changes in temperature and sediment" through harvest, salvage and thinning operations that "are likely to seriously and adversely affect water conditions or fish habitat."

The Services correctly recognize that the environmental baseline is "jeopardy" and that further management-caused aquatic degradation cannot lawfully be allowed:

"Generally, combined effects of past and present land management actions and facilities are contributing to degraded watershed conditions and a functioning at risk condition. Past riparian disturbance has occurred in association with land use activities in most subbasins. Overall watershed conditions are a result of mostly past activities (prior to P/I), and existing facilities (most notably roads) that degraded overall conditions, primarily in riparian areas."⁶⁸

"Since the habitat biological requirements of the listed species are not being met under the environmental baseline, baseline conditions in the action area would have to improve to meet those biological requirements not presently met. Any further degradation or delay in improving of these conditions would increase the amount of risk the listed species presently face under the environmental baseline."⁶⁹

1. Short-Term/Long-Term Tradeoff Decisions Vulnerable to Abuse. Despite the above-quoted finding about the environmental baseline, actions are allowed that may have temporary or short-term adverse effects on fish habitat as long as these are outweighed by demonstrable benefits to fish habitat over the long term. We agree with NMFS that there are serious doubts about whether long-term benefits would actually be demonstrable due to the high possibility of error in estimates of long-term benefit. For example, "[p]rojects that build road to allow thinning of trees to reduce the risk of uncharacteristic wildfire .. may produce the adverse effects related to road construction but less benefit than projected," while road obliteration benefits would be easier to show. This standard clearly "puts the onus on project level planning and consultation to allow risks to listed

⁶⁷ See e.g. Declaration of Dr. David R. Montgomery and sources cited therein, filed in the United States District Court for the District of Oregon Civ. No. 02-00243-BR (PRC v. Brown)(stating that mitigation methods other than vegetation retention are not known to be effective at maintaining background levels of risk for mass wasting).

⁶⁸ NMFS BO at 47.

⁶⁹ Id at 48-49.

fish, based on benefits that are very difficult to project accurately and that can be overestimated."⁷⁰ These standards do not adequately protect either listed fish, unlisted aquatic species or water conditions as required by NFMA.

2. The plans' definition of "maintain" actually allows for degradation. Degradation is allowed as long as condition remains in the "functioning appropriately range" as defined in the Matrix. Areas "functioning appropriately" may therefore be degraded so long as the action does not kick the area into next lower category (functioning at risk).⁷¹ Although the consulting agencies called for identification of effects on specific WCIs, no new specific decision constraints as a result of these impacts is required in areas deemed "functioning appropriately," implying that degradation of one or more indicator is allowed .

3. Degradation allowed in Temporary Time Period. Management Prescription Categories 3.1 (Passive restoration emphasis) and 3.2 (Active restoration emphasis) standards are applicable to riparian areas. These MPCs are problematic in that they allow degradation of aquatic, terrestrial, and watershed resource conditions in "the temporary time period" which is defined as "up to 3 years." Not only does this create the potential for activities which could jeopardize listed species, the allowance of up to a 3 year decrease in water quality conflicts with Clean Water Act mandates. (See pp. ___ infra).

When NMFS addressed the problem of the temporary and short-term impacts being allowed under the standards, it stated the approach it intends to use in project-level consultation and in so doing confirmed that additional standards establishing a presumption against all impacts that are not extremely temporary or seasonal is needed:

" . . .NOAA Fisheries finds that, when applying the SWIE Matrix at the project level, it would generally not be appropriate to allow adverse effects on a listed fish species (through action-related reductions in water quality, streambank condition, etc) that extended beyond even a seasonal time-frame (e.g. hours to days, or an in-water work window etc.).

"Although the time periods defined in the Appendix B glossary allow for degradation of fish habitat for up to four life-cycles, NOAA Fisheries finds SWIE Matrix implementation guidance provides the necessary clarifications for applying SWRA Standard 4 during project-level implementation, and thereby identifying and minimizing effects on listed fish through project planning and implementation."⁷²

These statements support the inclusion of additional management direction which clarifies exactly what "application of the matrix" means and explicitly prohibits impacts that extend beyond hours or

⁷⁰ NMFS BO at 61.

⁷¹ See BO at 60-61 and Terms and Conditions, discussed above.

⁷² NMFS BO at 53.

days, as indicated is appropriate in the BO.

We further note that the NMFS BO requires the FS to clarify the definitions of "maintain" and "duration of effects" in project-level application of the SWIE matrix, thereby acknowledging the tension between direction to avoid degradation and the loose definition of maintain in the LRMPs. The BO calls for identification of "any measurable change in WCIs (including reductions within the functioning appropriately category, which the LRMPs classify as maintain)" as well as evaluation of adverse effects on listed species and habitats. However, it does not say what management implications flow from identification of WCI degradation. It does require projects to avoid or minimize adverse effects, such as "incremental reduction of high quality habitats."⁷³

C. This Action Violates the Clean Water Act and the Administrative Procedures Act

The overriding goal of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. See CWA § 101, 33 U.S.C. § 1251. The Forest Service must comply with Idaho's water quality standards pursuant to CWA § 313, 33 U.S.C. § 1323.⁷⁴

A significant proportion of the stream listed as impaired under Section 303(d) of the Clean Water Act in Idaho are on federal lands, including those of the Southwest Idaho Ecogroup. Therefore, in many watersheds of the SWIE, sediment levels exist which will or are likely to render water bodies harmful, detrimental, or injurious to fish and aquatic life, as demonstrated by the listing multiple water quality limited segments.

On listed streams without TMDLs, until a TMDL is developed the Forest Service lacks sufficient information to proceeding with this activity to fulfill its duties to protect fish, water quality, and aquatic habitat. The Forest Service's decision is not in accordance with the Clean Water Act and its implementing regulations, and it is arbitrary and capricious in violation of 5 U.S.C. § 706(2)(A).

Compliance with water quality standards means not only meeting ambient standards, but also comporting with the antidegradation policy.

The proposed plans explicitly allow projects to proceed that would result in further degradation to listed streams. The LRMP management standards conflict with the Clean Water Act in that near-term water quality degradation is allowed where longer-term purposes are served. Two standards

⁷³ NMFS BO at 90.

⁷⁴ The Clean Water Act applies directly to federal agencies. Federal agencies:

- ...having jurisdiction over any property or facility, or engaged in any activity resulting, or which may result, in the **discharge or runoff** of pollutants ... shall be subject to, and comply with, all Federal, State, interstate and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution in the same manner, and to the same extent as any nongovernmental entity ... the preceding requirement shall apply to any requirement, whether substantive or procedural. 33 U.S.C. § 1323
- (a).

exemplify this tradeoff:

> **SWRA Standard 4. SWST04, Hydrology and Watershed Processes**, read in relevant part: "Management actions will neither degrade nor retard attainment of properly functioning soil, water, riparian, and aquatic desired conditions, except . . . [w]here outweighed by demonstrable short- or long-term benefits to watershed resource conditions."

> **SWST07** reads: "Within legal authorities, ensure that new proposed management activities within watersheds containing 303(d) listed water bodies improve or maintain **overall** progress toward beneficial use attainment for pollutants that led to the listing. [emphasis added]."

Both standards run afoul of CWA requirements due to their focus on benefits to "watershed resource conditions" over longer timeframes and "overall" progress, without regard for short-term degradation that does not comport with antidegradation requirements. Particularly on streams where water quality is impaired under Section 303 of the CWA, the Forest Service's duty is clear: no action that further impairs the stream for parameters already not being met is lawful, unless and until such impact can be demonstrated to comply with a load allocation set as part of a watershed specific TMDL.⁷⁵ This mandate should be translated into a clear management standard that explicitly prohibits management impacts that impair already-impaired streams.

Under the LRMPs, "degrade" is defined as follows: "To degrade is to measurably change a resource condition for the worse within an identified scale and time frame. Where existing conditions are within the range of desired conditions, "degrade" means to move the existing condition outside of the desired range. Where existing conditions are already outside the range of desired conditions, "degrade" means to change the existing condition to anything measurably worse. The term "degrade" can apply to any condition or condition indicator at any scale of size or time, but those scales need to be identified. This definition of "degrade" is not intended to define degradation for the State of Idaho as it applies to their Antidegradation Policy (IDAPA 16.01.02.051)."

The plans' definition of "maintain" actually allows for degradation. Degradation is allowed as long as condition remains in the "functioning appropriately range" as defined with reference to the Matrix. So, areas "functioning appropriately" may be degraded so long as the action does not kick the area into next lower category (functioning at risk).⁷⁶ Although the consulting agencies called for identification of effects on specific WCIs, no new specific decision constraints as a result of these impacts is required by the Plans. Again, this direction does not comport with legal duties on impaired streams for water quality parameters that led to 303(d) listings nor does it comport with

⁷⁵ See *Sierra Club v. Austin*, CV 03-22-M-DWM, Slip Opinion at 18 (supporting injunction on timber harvest in the Lolo National Forest where additional sedimentation would enter a stream listed as impaired for sediment and for which no TMDL has been developed).

⁷⁶ See BO at 60-61 and Terms and Conditions, discussed above.

the antidegradation policy generally.

D. "High Risk" Management Prescription Categories do not comport with the requirements of NMFA to "insure" against adverse impacts related to water conditions, fish etc.

The consultation record concedes that certain types of "active" restoration focused on silvicultural manipulation is risky for aquatic resources.⁷⁷ For example, NMFS weighed risks from mechanical vegetation treatments against those of wildfire.

"Where strongholds for ESA-listed anadromous fish species overlapped with a rating of high uncharacteristic wildfire risk, NOAA Fisheries has determined that the risk of adverse effects from fuels reduction treatments may pose a higher risk of adversely affecting listed fish than a wildlife in those subwatersheds. Subwatersheds at high risk of uncharacteristic wildfire that are also considered strongholds for listed salmon and steelhead occur only in the Little Salmon Rivers and the South Fork Salmon River subbasins."⁷⁸

This is supported by the work done during ICBEMP which evaluated the comparative risks to aquatic resources from fire and from the silvicultural treatments being proposed to reduce fire risk.⁷⁹ It concluded that the risk to the integrity of aquatic ecosystems from fire was considerably less than the risk inherent in silvicultural/forest health treatments. It resulted in the observation that, from an aquatics perspective, restoration efforts aimed at "correcting" forest health through manipulation of stand structure, density, and composition will have harmful watershed effects unless done "perfectly" and without land disturbance – in which case such efforts will, at best, have a neutral effects on aquatic integrity. Moreover, such silvicultural treatments do not address the restoration priority items for native fishes of restoring connectivity and increasing the total amount of good habitat available that was the key finding of the Aquatics SIT report.

The clear restoration priority for the lands covered by these plans is to increase available habitat, which can largely be accomplished by decreasing sedimentation, especially by stabilizing or obliterating roads and by otherwise improving forest and rangeland practices to eliminate negative impacts affecting riparian areas and otherwise improving riparian condition. Fragmentation can best be addressed by minimizing or eliminating physical barriers such as those posed by small dams and diversions and inadequate road crossings, as well as barriers posed by high water temperatures in migratory corridors.

Fire has played an important role in the development of aquatic and riparian systems, particularly in the western United States. There is plentiful evidence of resilience of native fishes in the face of fire impacts, even intense burns (Beschta et al. 1995). Additionally, comparisons of certain known

⁷⁷ See e.g. NMFS BO at 66.

⁷⁸ BO at 71.

⁷⁹ Clayton et. al.

harmful effects of logging against effects of wildfire (which can be neutral or even beneficial to aquatic systems) suggest that tactical logging (i.e., mechanical thinning) intended to reduce fire risk poses more risk to aquatic and riparian ecosystems than the fire itself. (Beschta et al. 1995; Erman 1996; Rieman and Clayton, 1997). Studies have shown that while fire often has an immediate, measurable effect on stream ecology and aquatic species the intermediate and long-term effects are negligible. (Albin et al. 1979; Novak and White 1990; Minshall et al. 1991; Rieman et al. 1995; Roby and Azuma 1995; Michuc et al. 1996; Gresswell 1999).

Fire, in fact, has less impact than clearcutting, especially with regard to water temperature, because, unlike clearcutting, wildfire tends to burn less frequently in riparian areas (Skinner 1997) and results in standing dead vegetation which helps minimize temperature increases. (Amaranthus et al. 1989). Fire also is less harmful to fish populations than management efforts designed to mitigate fires and restore forest production and aquatic habitats (i.e., fuels reduction). (Rieman and Clayton 1997). Indeed, fire has been shown to have no significant effect on North American salmonids, which evolved with frequently occurring wildland fires (10 to 100 year intervals). (Gresswell 1999).

A central strategy of the National Fire Plan and the Healthy Forests Initiative is fuel reduction through small-diameter logging ("thinning") and underbrush removal. The motivation is to reduce the potential risk of catastrophic fire, yet fuels treatment can cause "considerable disturbance and must be weighed against the risk of fire damage to watersheds and riparian areas. An accelerated salvage logging program with little oversight could pose a serious threat." (Kattelman and Embury 1996; see also Rhodes et al.). Many studies have shown that forest thinning further degrades watershed functions (see e.g., Rhodes and Purser 1998) and that post-fire treatments often substantially delay recovery (Beschta et al. 1995; Kattelman and Embury 1996). Yet even an occasional high severity fire will not permanently harm aquatic systems. The most recent literature review of fire impacts on aquatic habitat and biota suggests that even in the case of extensive high-severity fires that result from decades of fire suppression, local extirpation of fishes is patchy and recolonization is rapid. (Gresswell 1999). Lasting detrimental effects on fish populations generally are limited to areas where native fish populations have declined and become increasingly isolated due to anthropogenic activities. (Gresswell 1999). Even sensitive species that require cold water of the highest quality (such as bull trout and redband trout) can dramatically rebound within one to three years after large moderate- to high-intensity fires. (Rieman et al. 1995). Aquatic macroinvertebrates also quickly rebound after fire. (Roby and Azuma 1995; Michuc et al. 1996). Natural recovery provides the greatest protection against chronic watershed and riparian disturbance.

In sum, as acknowledged by the consulting agencies, under these plans some management prescription categories (MPCs) are "high risk" to aquatic resources, with others being moderate or low.⁸⁰ Analysis relied on an assessment of risks based on a projected level of activity in a

⁸⁰ "Based on the management emphasis provided by each MPC assignment, the types/patterns of activities allowed under that MPC, and the varying levels of protective direction provided for ESA-listed fish species and their habitat

Management Prescription Category.⁸¹ Although the idea of attributing different levels of risk to these standards seems reasonable on its face if the concern is only with listed species, this analysis does not address the question of impacts to water and fish where listed fish are not at issue. Overall, it appears that risks were only acknowledged to be a concern if the risky standard would allow risky treatments (such as active restoration) in a stronghold subwatershed.

There is nothing in NFMA or in the Clean Water Act that justifies management direction that provides anything but a high probability of protecting aquatic resources. NMFA standards use the term "insure" and CWA programs are generally evaluated in terms of "reasonable assurance" that water quality standards will be met. How is having any area subject to "high risk" to aquatic species compatible with either the ESA, NMFA or the CWA? A "high risk" management regime cannot be justified in any location on these federal lands, particularly given the low environmental baseline. We refer back to the general finding about the conditions of watersheds in the ecogroup:

"Since the habitat biological requirements of the listed species are not being met under the environmental baseline, baseline conditions in the action area would have to improve to meet those biological requirements not presently met. Any further degradation or delay in improving of these conditions would increase the amount of risk the listed species presently face under the environmental baseline."⁸² NMFS BO at 48-49.

Furthermore, in focusing primarily on risks to priority and stronghold subwatersheds, the consulting agencies downplayed risks to protected species and water quality generally in other watersheds. Thus, despite the possibility that, as NMFS concluded "a large portion of the SWIE occupied by ESA-listed salmon and steelhead will be managed such that risks to ESA-listed fish are low or moderate," there is inadequate assurance that aquatic resources will be protected in other watersheds. We therefore suggest that at least the additional direction deemed appropriate by NMFS in the Little Salmon, the Upper Salmon and the South Fork Salmon (which were found to have high risk management incompatible with the protection of listed fish) is appropriate in other watersheds simply to meet NFMA mandates.

E. Important standards in the interim direction have been converted to objectives or guidance, and all triggers for Watershed Analysis have been removed.

The NMFS Biological Opinion concedes that this is a potential problem, but did not find jeopardy, saying only that implementation "may be less consistent than if they were standards." An example is the direction for roads and fire management, where establishment of a rehab team went from a standard (PACFISH FM 5) to a guideline. Likewise, interim standard FR-2-a-f regarding road construction is now manual and handbook direction, which direction is subject to change without

under those MPCs, NOAA Fisheries has grouped each MPC into one of three general levels of risk to listed fish species and their habitat." MPC risk level, BO Table 9 at 66.

⁸¹ See e.g. NMFS BO Attachment #8 listing examples of MPC standards that were deemed low, moderate and high.

⁸² NMFS BO at 48-49.

NOAA Fisheries review.⁸³

It is acknowledged that removal of triggers for watershed analysis could lead to "an increased frequency of, and less well-informed and designed implementation of activities such as road construction and timber salvage in riparian areas."⁸⁴

Watershed analysis was a mandatory condition for a number of activities in Pacfish and the subsequent BO direction, including: non-de minimis salvage in Priority riparian areas; all timber sales outside riparian areas where ECA exceeded 15%; reduction of riparian widths in priority watersheds; mining Likely to Adversely Affect (LAA) salmon, critical habitat or ecological goals, and for all riparian roads, landings and recreational facilities. Watershed analysis was a necessary part of the planning process because it shifted important analysis away from the project level -- acknowledged to be inadequate for attaining species viability and recovery rangewide. These reasons for making such analysis a mandatory part of planning still are valid.

NMFS concedes that elimination of the watershed analysis is a problem for listed salmon, but made an unfounded assumption that the objectives of watershed analysis can be met through other analytical approaches during plan implementation.⁸⁵ Nonetheless, the agency was not content to rely entirely on this assumption because it added Reasonable and Prudent Measure #2, which requires the FS to minimize take by "maintaining the necessary linkages between the SWIE LRMP and broad-scale restoration/recovery strategies." The terms and conditions for this measure requires the forests to provide an oversight and accountability body which will work with the Interagency Implementation Team overseeing implementation of P/I and the Biological Opinions. This RPMs, do not, however, address the problem of range-wide needs for unlisted fishes, such as native redband and cutthroat, nor is does it adequately link watershed analysis to decision processes.

NMFS added specific direction is added for the Upper Salmon, South Fork Salmon and Little Salmon Rivers that directs the FS to prohibit actions likely to adversely affect ESA-listed species or habitat for three years or longer unless the appropriate consultation framework document has been completed or unless "informed or driven by recommendations from existing or new subbasin assessments or watershed analyses."⁸⁶ This kind of direction is clearly needed in all watersheds within the ecogroup with respect to all aquatic species on the forest.

Under the proposed plan and associated decision analysis, the "Consultation Implementation Framework" is considered necessary to make up for the elimination of ecosystem analysis at the watershed scale (watershed analysis). However, this framework has yet to be developed and is

⁸³ BO at 64.

⁸⁴ BO at 63.

⁸⁵ See e.g. NMFS BO at 35, specifically citing the Implementation Framework, which is still in development.

⁸⁶ NMFS BO at 91.

anticipated to be completed in the next year or two.⁸⁷ As stated above, this framework was considered important enough that in its Terms and Conditions for the Upper Salmon, South Fork Salmon and Little Salmon Rivers that directs the FS to prohibit actions likely to adversely affect ESA-listed species or habitat for three years or longer unless the appropriate consultation framework is completed.

F. Forest Service Issues Analysis Based on Misunderstanding of the Relationship Between Fire, Management and Adverse Impacts on Soils and Hydrology

In its Biological Assessment and in the FEIS, the Forests state a key issue that frames the impacts analysis as follows:

"Issue Statement 1: Forest Plan management strategies may affect the loss of soil-hydrologic function and long-term soil productivity from uncharacteristically lethal wildfire within highly vulnerable subwatersheds.

Background to Issue 1 - New information from the Interior Columbia Basin Ecosystem Management Project, and additional research (Rieman and Clayton 1997, Benda and Dunne 1997) has linked accelerated soil erosion, loss of nutrient base, and triggering of landslides uncharacteristic of their normal pattern and frequency, to large uncharacteristic wildfire. This is especially a concern in subwatersheds that have high to extreme uncharacteristic vegetation hazards and high inherent vulnerability ratings. Management strategies that reduce extreme or high vegetation hazards, thus lowering risk to uncharacteristic or lethal fires, help reduce the potential for accelerated soil erosion, loss of nutrient base, and triggering of landslides."

These statements are not consistent with best available science. The Benda & Dunne and the Rieman and Clay sources do not adequately support the proffered conclusions. Those papers linked landslides and episodic soil loss to fire as a natural disturbance regime. These papers did not answer or even ask the question whether a recent change in fire regime has occurred that in turn changes the incidence of landslides or soil loss.

Benda and Dunne considered how forest management alters the landslide regime relative to the natural fire-driven landslide pattern. They did not consider fire suppression except in the sense that they assumed (as they readily note, without evidence or citation) that management may effectively reduce the frequency of occurrence of fire. They did not assume or discuss any changes in fire regime such as those the offending paragraph posits. They presented no evidence to support even their assumption that management reduced fire occurrence, and explained that this was only a simplified premise of convenience for running their model.

⁸⁷ M. Scurlock, Personal Communication with Bill Lind, NMFS (intended to function like an upgraded Section 7 watershed BA, using an interdisciplinary approach with each forest to come up with restoration strategies).

The Rieman et. al paper is a largely conjectural look at natural disturbance regimes associate with fire and the possible consequences of their alteration by primary human disturbances, including logging, roads, grazing. It does not provide evidence that fire suppression either decreases or increases the severity and magnitude of fire-related landslides and soil loss.

The cited and other relevant literature does show that "catastrophic wildfire" is only an extinction risk to natural fish populations if they have been artificially reduced to tiny, isolated populations. This risk can be significantly aggravated where the watershed's vulnerability to erosion is increased due to bad roads and pre-or post-fire ground disturbance, but we know of no studies pointing directly to fire-suppression-related stand conditions having a measurable influence on the fish response (there may be a small effect on average over many cases, but it is clearly dwarfed by the other two factors and by climatic drivers that affect many disturbances).

The Rieman et. al paper alone does not support the conclusion that high fire risk and hot burns are always bad for fish. The senior authors have done most of the studies themselves, and the only fire-related extinctions they have documented (in print, or that we know of) were trout populations in the more arid southwest that had been artificially and very recently established above natural barriers, in tiny, short streams, debris-flow-prone where no natural trout populations had occurred. As far as catastrophes go, wildfires are not that bad for native trout, and in the medium and long term can be beneficial (Minshall et al. 1989a, 1989b, 1997, 2001, Rieman et al. review), and this also remains true where the "risk of catastrophic wildfire is high" as a function of lack of recent burning and of past fire suppression.

Key relevant sources in the literature are not relied upon, such as those by Dr. Grant Meyer and colleagues, all of which validate that intense, large fires were always a natural element of the disturbance regime on interior west forests, and that these were historically often accompanied or followed by large mudflows and other sediment-depositing events.⁸⁸ We are aware of no evidence to substantiate that historical fire suppression has increased fire intensity and spatial extent outside of natural variation in most of the relevant, medium-to-high-elevation forest types on these national forests (patterns of burning are clearly climate-related at long-term and short-term scales), and to our knowledge there is no scientific literature that links landslide incidence or magnitude directly or indirectly to historical fire suppression.⁸⁹

⁸⁸Meyer, Grant A., Wells, Stephen G. and Hull, A.J. Timothy. Fire and alluvial chronology in Yellowstone National Park: Climatic and intrinsic controls on Holocene geomorphic processes. *GSA Bulletin*; October 1995; v. 107; no. 10; p. 1211–1230; 9 figures; 2 tables. (interpreting the history of forest fire-related sedimentation and overall alluvial activity in northeastern Yellowstone National Park)

⁸⁹ Overall references for the preceding section include: 1997. Postfire responses of lotic ecosystems in Yellowstone National Park, U. S. A. *Canadian Journal Fisheries Aquatic Sciences* 54:2509-2525. (G. W. Minshall, C. T. Robinson, and D. E. Lawrence); 1989a. Wildfires and Yellowstone's Stream Ecosystems: A temporal perspective shows that aquatic recovery parallels forest succession. *BioScience*. 39:707-722. (Minshall, G. W., J. T. Brock and J. D. Varley); 1989b. Changes in wild trout habitat following forest fire. Pages 111-119. In: F. Richardson and R.H. Hamre (eds.). *Wild Trout IV: Proceedings of the Symposium*. U.S. Government Printing Office 1990, 774-173/25-37. (Minshall, G. W., D. A. Andrews, J. T. Brock, C. T. Robinson, and D. E. Lawrence); 2001. Response of the Cache Creek

on).

G. Meaningful Analysis of Cumulative Watershed Effects is not possible due to the lack of clear management standards, and absent a defensible cumulative effects analysis, there is no basis for making a defensible NFMA viability call

According to the Forests:

Forest vegetation management direction and associated management actions (mechanical harvest, fire use and road related activities) were analyzed using a Cumulative Watershed Effects methodology adapted from that described in Modeling Aquatic and Riparian Systems, Addressing Cumulative Watershed Effects and Limiting Watershed Disturbance (Menning et al. 1996) for each subbasin to determine their feasibility/compatibility with the associated values of aquatic resources and water quality beneficial uses. Biological Assessment, Chapter VI, Fisheries, at 149.

However, given the lack of prescriptive direction, the analytical basis for the cumulative effects analysis is highly questionable. It is highly speculative to establish any "Threshold of Concern" or other types of predictions for range, ground disturbing activities, forest management treatments in fish strongholds, risk of noxious weed treatment, recreation risk and minerals risk. Yet, the Forests apparently employed a cumulative watershed effects method that estimated overall watershed response and the potential for concentrated forest management activities and associated risks to listed fish, which method produced a "threshold of concern." Threshold ratings were in turn translated into high, moderate or low risk at the subbasin level.

Habitat Conditions were assessed by making calls on whether watersheds area Functioning Appropriately (FA), Functioning at Risk (FR) or Functioning at Unacceptable Risk (FUR). As the FWS stated, "These ratings are made at an extremely coarse scale and do not adequately reflect the range of variability of conditions across subbasins."⁹⁰

We note that while the FWS concluded no jeopardy for bull trout, it emphasized that it is not possible to make a "no jeopardy" call for all actions tiered to the plan direction, specifically stating that its opinion does not exempt project level take of protected species. As the NMFS BO notes, "other than objectives broadly setting allowable sale quantity (ASQ) targets by Forest, specific information on the extent, duration, location and duration of individual projects was not available at this scale of the analysis."⁹¹ Because of these limitations and baseless assumptions about the ability of project analysis to prevent resource harm, the cumulative effects analysis is without a rational basis.⁹²

This position is amply supported by the attached expert statement of Dr. Chris Frissell in which he

macroinvertebrates during the first 10 years following disturbance by the 1988 Yellowstone wildfires. Canadian Journal Fisheries Aquatic Sciences 58:1077-1088. (G. W. Minshall, T. V. Royer, and Christopher T. Robins

⁹⁰ See e.g. FWS BO at 112.

⁹¹ Id at 68.

⁹² Rhodes, Attachment ___ .

finds that the cumulative risk of harm to aquatic resources is not adequately described or evaluated. He specifically finds that the preferred assessment is narrowly limited to the "terrestrial vegetative state of the catchment area, and fails to account for numerous other effects that interact to influence fish populations and their habitat" and fails "to provide specific, measurable, and validated criteria for the selection of threshold levels of activity and disturbance" that are supposed to lead to "acceptable conditions." A practicable alternative approach to cumulative effects analysis is outlined and assumptions regarding the effects of wildfire on aquatic species are specifically found to lack a defensible scientific basis.⁹³

H. Cumulative Watershed Effects are not adequately limited

By and large, the plans assume that adverse impacts on water quality and fish habitat will be adequately limited by applying the Matrix in project-level decision. However, it is clear that these standards are not adequate to control cumulative watershed effects that have adverse impacts on water and habitat from the NMFS Biological Opinion. This opinion found it necessary to impose additional direction in the Upper Salmon River basin to add a 15% ECA limitation. By implication, then, these effects are not adequately limited without such an explicit threshold in these and other basins.

Specifically, the "reasonable and prudent measures" (RPMs) in the NMFS Biological Opinion concede that existing standards alone do not prevent cumulative watershed impacts that can cause jeopardy, which translates to viability concerns under NFMA. *RMP #3* requires the FS to minimize take by implementing subbasin-specific direction as outlined for the Upper Salmon River and South Fork Salmon Rivers. NMFS added specific management direction for these basins, calling for no increase of ECA values in the Upper Salmon River "unless supported by hydrologic analysis," with consultation on this analysis for projects where Section 7 is triggered. In the South Fork Salmon River it requires that : a. WCIs must be revised in 2 years; b. Current sampling, analysis and reporting of sediment levels must continued for the duration of the plans, and c. For "Likely to Adversely Affect" projects requiring consultation, ensure that:

1. if project is upstream of main spawning areas OR involves road construction, opening closed roads, or activities on high or moderate landslide risk areas, the Forest Service "must demonstrate .. during planning or consultation that similar projects have been implemented and sediment delivery to streams was avoided or minimized."
2. A rationale using best available information is supplied to support a finding that sediment delivery is likely to be avoided or minimized, and;
3. Where sediment is a contributing factor to the LAA finding, monitor and evaluate effectiveness of mitigation measures. (Notes some NLAA projects could require monitoring if found warranted during consultation).

At least each of these additional terms and conditions are necessary in ALL watersheds in the plan

⁹³ Frissell, Attachment 1 at pages 3-4.

areas, because the deficiencies they target exist and are significant in all watersheds.

I. There is not adequate assurance that refuge watersheds acknowledged to be of critical importance for conservation of native salmon and trout (Priority Watersheds) will not be degraded.

45 Priority watersheds were identified as "focal areas of aquatic restoration for the duration of the LRMPs." Since the inception of Pacfish and Infish, it has been a basic assumption of the Services that a comprehensive restoration and management strategy for watershed with anadromous fish "that includes protective and conservation direction, as well as restoration is essential to the recovery of listed anadromous fish."⁹⁴ The Scientific Assessment documents severe declines in the population and distribution of salmon, steelhead, and native trout in the Columbia Basin, finding the remaining healthy fish populations tend to be in watersheds with the fewest roads and other land management impacts. The scientists identified watersheds still supporting strong fish populations as "aquatic strongholds" and recommended a conservative management approach in these areas.⁹⁵

The 1995 EPA, FWS, NMFS early submission Aquatic Conservation Strategy likewise called for conservative management of these areas, calling for the same standards as apply to riparian areas in these watersheds, and for removal from the timber base. We support this approach. (Under these plans, that would mean MPC 3.1 and 3.2 apply to these areas in todo). Management was required to have a neutral or beneficial effect.⁹⁶

Yet Priority Watersheds are still at risk under proposed management. The FWS states that: "Management area direction for each ACS priority subwatershed is intended to address conservation needs of aquatic species and includes specific direction for management of those species."⁹⁷ However, priority subwatersheds seem to be recognized only through Management Area Direction related to restoration priority⁹⁸ and not through specific low-risk management prescriptions.

Although most priority/special emphasis watersheds were assigned MPCs with something of a restoration or conservation theme (1.1, 1.2, 3.1, 3.2, 4.1a, etc), where road development was either not allowed or severely restricted, there are also areas of Priority Watersheds that are subject to MPCs where road development is likely to occur – such as MPC's 4.2, 5.1, 5.2, 6.1 and 6.2. Although additional forest-specific direction is also applied to restrict or limit future road

⁹⁴ 1998 LRMP; SWIE BO at 34.

⁹⁵ Assessment at 68.

⁹⁶ NMFS, FWS, EPA, 1995 "early submission" ACS at TM-1.

⁹⁷ FWS BiOp at 92.

⁹⁸ "Restoration priority" is defined as "A means used in this Forest Plan revision to prioritize water quality and aquatic restoration using beneficial uses, current condition, imperiled fish species, 303(d) listed water bodies, and TMDL-assigned subbasins. This process also includes whether restoration should be active or passive based upon district-level properly functioning condition analyses for 6th level hydrologic units (subwatersheds)." (Glossary)

development in those Management Areas, the operative standard in these cases seems to be "no net increase" in road density – with no assurance that unacceptably high road densities will be reduced.

For example, although road construction is generally allowed in MPCs with a 5.1 designation (see page III-87 PNF Plan), road construction can only occur where it also complies with Road Standard 1017 in the Fall Creek/Warren Creek Management Area of the Payette National Forest (page III-223 of PNF plan) (applicable to road development). This standard raises several concerns. First, "no net increase" in road density implies there will be a problematic tradeoff between the impacts of new roads and the closure and removal of older roads, despite the likelihood that the new roads will inflict far greater damage than the closure or obliteration of the existing road could possibly mitigate for.

Secondly, the additional direction for Priority Watershed values represented by road standard 1017 allows exceptions to the "no net increase in road densities" where degradation is "outweighed by demonstrable short- or long- term benefits." Other standards that are intended to mitigate for higher risk management direction in priority watersheds include MA standards 1924, 1925, and 1926. These add some restrictions on road construction in MPC 4.2 (Roaded Recreation Emphasis) for Priority Watershed areas downstream of Warm Lake (BNF plan, p III-325) and are in addition to standards generically applied to MPC 4.2 in non-priority watersheds (BNF plan, page III-88). These standards do create a presumption against new roads and landings in RCAs (1924), new roads (1925) and reopening of classified roads in Level 1 maintenance of Level 2 impassable status (1926) unless certain tradeoffs are demonstrated during NEPA analysis and a Biological Analysis.⁹⁹

The above referenced additional standards for priority watersheds have the same problems as the other forest-wide standards that use the same language regarding allowable degradation, and these standards do not add up to a low risk management approach for priority watersheds which, by their definition, are of disproportionate importance for aquatic species. The exceptions that exist to these standards allow degradation where outweighed by demonstrable short or long term benefits to resources or TEPC habitats and species (or where other exigencies exist), vesting a degree of discretion in project-level decisions that is not consistent with a low-risk approach to management of aquatic resources.

Although where "higher risk MPCs overlay high fish and water quality values" additional direction is applied, it is not clear that this "additional direction" actually will prevent additional road building or land disturbance in priority watersheds.¹⁰⁰ While there appears to be a solid basis for designation of the chosen watersheds as "priority," there is inadequate assurance that these watersheds will be managed such that watershed functions and processes are not further degraded, but maintained and restored.

⁹⁹ We note that there is no simple way to see exactly what direction applies to each priority watershed on the forest and suggest that something be developed that allows all applicable direction in each priority area to be examined together – as was done in the BA for certain types of land uses, e.g. Rangeland etc.

¹⁰⁰NMFS BO.

Moreover, under the proposed plans there will not actually be as much restoration as necessary or as promised in Priority Watersheds, calling viability for listed and unlisted aquatic species into question.

"NOAA Fisheries understood through early consultation on the Revised LRMPs that restoration would be implemented in each of the ACS Priority Watersheds during this planning period. The objective addressing implementation of restoration, however, appears to set a lower base expectation for how widely aquatic restoration will be implemented."¹⁰¹

"The implementation, however, appears to be less aggressive than may be needed for the identified ACS priority subwatersheds, and mechanisms are not proposed to ensure efficiency and coordination of funding and projects across administrative boundaries to maximize instream improvements for listed fish."¹⁰²

In sum, there is inadequate institutional commitment even to the promised level of restoration in priority watersheds, as well as inadequate assurance that Priority Watersheds will not be subject to harmful activities.

J. Watershed Condition Indicators Are Not Adequately Integrated into Management Standards

In the Matrix, there are eight "Pathways" and subsidiary Watershed Condition Indicators. The WCIs replace the RMOs in the interim direction.¹⁰³ But it still is unclear how the WCIs are actually used as decision constraints and how are they set or modified, although "use" of WCIs is considered mandatory.¹⁰⁴

Watershed condition indicators have replaced the Riparian Management Objectives, but their status appears at least one step removed from their prior role as the indicators that are used when determining whether an action's impacts are allowable. The identification of the WCI values is not

¹⁰¹ Id at 58 (citing TEPC Objective 10, indicating that the minimum restoration may be accomplished in only 16/45 priority subwatersheds).

¹⁰² Id at 59.

¹⁰³ **1. Bull trout local populations characteristics within core areas.** WCIs for this pathway are: Local Population Size; Growth and Survival; Life History, Diversity and Isolation; Persistence and Genetic Integrity **2. Water Quality** indicators are: Temperature; Sediment/Turbidity; Chemical Contamination/Excess Nutrients. **3. Habitat Access** indicator is Physical Barriers; **4. Habitat Elements** indicators are Substrate Embeddedness; Large Woody Debris; Pool Frequency and Quality; Large Pools and Off-Channel Habitat; **5. Channel Conditions and Dynamics** indicators are: Average Width/Maximum Depth Ratio; Streambank Condition and Floodplain Connectivity. **6. Flow/Hydrology** indicators are Change in Peak or Base Flows and Changes in Drainage Network. **7. Watershed Conditions** overall indicators are: Road Density and Location; Disturbance History; Riparian Conservation Areas and Disturbance Regime. **8. Integration of Species and Habitat Conditions** have no default indicators.

¹⁰⁴ See NMFS BO at 52 ("use of WCIs is required through TEPC Standard 6 and SWRA Standards 1 and 4).

a NEPA decision, but to change these the forests would have to document during a project why the existing value was not used. Apparently, the fish agencies would have to concur in a Level 1 arena pursuant to interagency agreement. (Pers. Comm. Bill Lind, September 2003). This and other protocols should be clear from the management standards.

K. The Plans do not fully address the weaknesses of the interim direction

The consulting agencies attribute the new plans with the addition of elements missing from P/I, including an "ecosystem management foundation," restoration prioritizations and an adaptable approach that includes passive, active and "conservation" management strategies to achieve restoration of habitat and water quality. The agencies say: "The ACS acknowledges that long-term restoration may require incurrence of short-term effects that were not acceptable under interim strategies." The Forests believe that "[t]he biological assessments supporting the revised plans account for the relationship of these short-term effects to the risk to species viability." *See e.g.* SWIE Plans Hot Topics at 3.

However, there are key shortcomings of the interim directions which are not fully addressed by these plans, including but not limited to:

- * Roadless and lowly roaded areas, which correspond to areas of higher aquatic integrity, still are susceptible to new disturbances. Specific road density objectives and standards should be added to direction relating to roads analysis.
- * Riparian areas still are open to salvage logging as under the interim direction, but are not also susceptible to thinning and road building.
- * Under the interim direction, riparian grazing in spawning and incubation areas was permitted and no measurable standards and guidelines existed for grazing in other riparian areas. The proposed standards do not adequately address these concerns.
- * Effectiveness and implementation monitoring and independent funding were inadequately addressed in the interim direction. Similar uncertainties remain under the new plans, especially given the heavy reliance on consultation.
- * Adverse effects of upland activities on salmonids not addressed. Aquatic conservation remains primarily a riparian rather than a landscape approach. We note that only one watershed enjoys even qualified ECA limitations, and this was imposed through consultation rather than the LRMPs themselves.

In conclusion, the proposed plan amendments do not comply with NFMA's diversity and watershed protection mandates. Programmatic findings of no jeopardy cannot be relied upon to support a finding of species viability, nor do management standards that rely on continual no jeopardy calls at the project level provide adequate assurance that management will "get ahead" of the current extinction curve to provide for viable populations of aquatic species.¹⁰⁵

¹⁰⁵ The FS would be closer to the mark if it had followed the advice for clearer management standards contained in the NMFS, FWS, EPA "Interagency Aquatic Conservation Strategy," November 11, 1995 (responding to need for more

RELIEF REQUESTED

To remedy the deficiencies of the FEIS, RODs, and RFPs, Appellants request that the Chief direct the Regional Forester to withdraw the Boise, Payette, and Sawtooth National Forest RFPs and revise them so that they are in compliance with NEPA, the NFMA, and their implementing regulations. Below, Appellants set forth the modifications that must be made in the RFPs and FEIS to correct its principal deficiencies.

Roadless Area Conservation Rule

The RODs and RFPs must be revised in a manner to preclude any activities in roadless areas that are inconsistent with the Roadless Area Conservation Rule. The Roadless Area Conservation Rule is now in effect, and therefore, management of IRAs on the SWIE NFs must now comply with the RACR. However, as we have stated in Section I of this appeal, IRAs have been placed in various management prescriptions that allow management activities that would be in violation of the RACR. This is unlawful and must be changed.

Management Indicator Species

The National Forest Management Act (NFMA) imposes a substantive duty on the Forest Service to provide for diversity of plant and animal communities.¹⁰⁶ The NFMA implementing regulations require the FS to select management indicator species to help fulfill the requirement to provide for biological diversity. As Appellants point out in Section II of this appeal, the SWIE NFs have failed to abide by the NFMA in respect to this requirement by failing to select sufficient or adequate MISs. The Chief should direct the Regional Forester to require the SWIE NFs to reassess their MIS selections and include MIS for all habitat types, in particular aquatic and riparian habitats and non-forested areas that do not provide habitat for sage grouse. The Forest Service should also identify amphibian species within the planning and (1) conduct a thorough viability analysis of identified species, (2) adequately identify and assess management related impacts and develop objectives, standards, and guidelines to avoid these impacts; and (3) designate MIS amphibian species and appropriate monitoring and assessment protocols.

Recreation Management

The three forests need to close agency recommended wilderness areas to mechanized uses. The three forests need to commit to initiating forest-wide, comprehensive NEPA planning processes within one year to complete travel plans that evaluate and resolve such issues as ATV and snowmobile-caused impacts to forest resources and recreational conflicts on each forest. This travel planning process will address the issues identified in the Executive Orders and the FS planning regulations regarding motorized use on National Forest lands. The three forests within the next year identify and close all user-created, or non-system, trails and routes. The Recreational Opportunity Spectrum must be consistent with wilderness-recommended areas such that activities are not

prescriptive management in the face of continued activities harmful to aquatic ecosystems under Pacfish and Infish and acknowledging that discretionary policies are not always implemented as intended or adopted)

¹⁰⁶ 16 U.S.C. §1604 (g)(3)(B).

allowed that may disqualify this area from congressional Wilderness designation.

SNRA and substantial impairment

The new Forest Plan needs to include quantitative definitions for substantial impairment that meet or exceed previous Forest Plan standards. The new Forest Plan needs to reflect the current legal status of wolves and give wolves and other wildlife precedence over livestock.

Bighorn sheep

The Payette National Forest, within one year, will close all domestic sheep allotments where the potential exists for domestic sheep to come into contact with bighorn sheep. Priority will be those allotments where bighorn sheep from Hells Canyon could come into contact with domestic sheep.

Transportation Management Policy

The RODs and RFPs must be revised in a manner that fully complies with the Transportation Management Rule. The Forest Service needs to revisit the Roads Analysis documentation and identify unneeded roads, as well as devise forest level standards that reflect a scientifically-supported minimum road system determination and identification of unneeded roads. There must be forest-wise priorities and standards created for reducing the road system in a manner that limits ecological impacts and falls within realistic funding expectations as identified in the Roads Analysis. It is appropriate and resource efficient to create forest-level standards that prioritizes road removal in priority watersheds, riparian areas and critical travel corridors for terrestrial species of concern, in order to strengthen current guidance to limit new road construction in these areas.

A schedule for the creation of transportation management plans should be made. Until a comprehensive transportation plan that accounts for information in the Roads Analysis is completed, no new road construction or reconstruction should go forward until at least a watershed scale roads analysis and plan for reducing transportation impacts by watershed are created. ATV trails and usage should be included in the transportation plans.

NFMA and Clean Water Act consistency

The Forest Service should develop and implement prescriptive forest-wide management standards that ensure a low risk of impairment from timber harvest of all types, roadbuilding and mining for all affected water bodies and which apply equally low-risk protective standards to both riparian areas and Priority Watersheds. Such standards should include but are not limited to the exclusion of livestock from riparian areas in systems with high water temperatures, degraded riparian vegetation, unstable banks, elevated sedimentation, attributes rendering them susceptible livestock damage, and/or where stream and riparian conditions are unknown. Such standards should include explicit limitations on cumulative watershed effects and significant reductions in road mileage in all watersheds.

Dated and signed this /12/ day of November, 2003

_____ /s/

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Review of Federal Agency Consultations on the Viability and Recovery of Native Salmon and Trout: Revision of the Boise, Payette, and Sawtooth National Forest Land and Resource Management Plans

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10 November 2003

Purpose and Scope of Review

This is a review of the scientific content of the federal consultations pertaining to the status and potential for recovery of endangered native fish species affected by the proposed Revision of the Boise, Payette, and Sawtooth National Forest Land and Resource Management Plans. To examine the substance and adequacy of the federal agencies' consultation process, I examined the Biological Assessment prepared by the US Forest Service for the Revision of the Boise, Payette, and Sawtooth Land and Resource Management Plans, (document undated), the Biological Opinion (BO) issued by the Snake River Fish and Wildlife Office of the US Fish and Wildlife Service (10 May 2003) and the Biological Opinion by the Northwest Regional Office of NOAA Fisheries (9 June 2003). The NOAA Fisheries BO pertains to listed populations or Evolutionarily Significant Units (ESUs) of steelhead trout (*Oncorhynchus mykiss*) and Chinook salmon (*O. tshawytscha*) in the planning area. The USFWS BO concerns the Columbia River Distinct Population Segment (DPS) of the bull trout or bull charr (*Salvelinus confluentus*). All three of these salmonid fish species were recognized in federal status reviews and listing determinations as being historically impacted by, and remaining vulnerable to, forest management activities. Much the same ecological issues pertain to other unprotected fish species in the study area, such as the westslope cutthroat trout (*O. clarki lewisi*), which has suffered widespread population decline, hybridization with introduced species, and loss of range. Westslope cutthroat trout is not subject to ESA consultations at the present time, although species viability requirements under the National Forest Management Act are the same, hence presumably a similar analytic burden exists to establish that the proposed plan revisions will ensure the viability this species. The shortcomings documented below for the analysis of the three listed fish species extend also to the westslope cutthroat trout and other sensitive fish species in the planning area, i.e. the Plan has not provided an adequate basis of fact, nor have sufficient logical analyses been conducted, to conclude that viability if these species will be sustained or restored.

In both BOs the Services determined that the proposed forest plan revisions poses "no jeopardy" to

the listed salmon and trout species. My review describes several reasons why I found the Biological Assessment and BO's inadequate to justify such a determination. The problems include:

- 1) Fundamentally inadequate proscription of the location, schedule, and specific nature of the actions authorized in the plan.
- 2) Opaque, undocumented, and not clearly defensible assumptions about the likely harm associated with the actions authorized by the plan.
- 3) Inadequate biological detail in the assessment, i.e., the failure to offer even a rudimentary explicit model of population structure, viability and persistence and hence the quantitative response of the fish to the authorized actions.
- 4) Reliance on a monitoring protocol that is essentially undefined, and unlikely to provide relevant and precise information of the type required accurate even if it were effectively implemented.

The author's scientific qualifications are documented in the CV, attached as Appendix A.

1) Management Standards, Guidelines, and the Schedule and Location of Activities are Inadequately Specified to Justify the Conclusion of No Harm; the Allowable Slate of Activity Includes, and Fails to Exclude, Many Potentially Harmful Actions

The BA and BOs do document a wide variety of activity allowed under the Plan and recognize the potential for harm associated with each of these activities, the assessment never places in perspective the net outcome in terms of harm or impact to populations of these actions. Harmful actions are allowed under the plan, but the schedule and locations of such actions are never specified by the Forest Service to a degree that would allow meaningful assessment of their consequences for native fish populations. The consequence is that there is little one can conclude from this management "shell game," except that it remains possible that such activities could or might be conducted with only limited and "acceptable" harm to fish. This is the essence of the decisions in the BiOps. But in fact it remains equally plausible, and probably more likely, that the under the terms of the plan, the slate of authorized activities will be conducted in a way in which substantial and significant harm occurs. The insistence of the Forest Service that the BA and BOs recognize what are essentially unquantifiable statements of goal and intent as "standards" in fact undermines the capability to make a scientifically sound assessment of its outcome, or to provide any reasonable assurance that viability and recovery standards will be met. The documents assert that such uncertainties will be resolved in project-level review, but they provide no evidence that a tractable and defensible analytic procedure exists that they will use to accomplish this. The purpose of a programmatic EIS is to establish the scope and parameters of activity that are desirable and legal under the prevailing regulatory conditions. This intent is subverted in this plan by deliberate avoidance of specification, and unprecedented vagueness of standards, guidelines, and slate of project-level activity. The BOs provide approval to a plan that remains, for all biological

conservation purposes, largely a black box.

Programmatic plans should provide a reasonable assurance that the projects to be pursued under the plan are effective, desirable in their outcome, and legally tenable. This should reduce the burden of environmental review for projects pursued under the aegis of the plan. This plan utterly fails to do this, and in my assessment, amounts to a tragic waste of public resources. The plan creates a visionless, untenable, and almost certainly litigious future for managers trying to implement it.

2) Cumulative Risk of Harm from Multiple Past, Present and Future Actions by the Forest Service is not Adequately Described or Evaluated

The method employed to assess cumulative watershed effects in the Biological Assessment is limited to accounting for the terrestrial vegetative state of the catchment area, and fails to account for numerous other effects that interact to influence fish populations and their habitat. Notably, roads and grazing impacts are only partially correlated with stand conditions, and yet they have direct, indirect, large, and measurable effects on stream hydrology, stream habitat, and fish population abundance. These multiple kinds of impacts occur in the same catchments, and the aggregate impact on fish populations is an interaction of these overlapping activities and disturbances. As one simple example, empirical evidence from a number of studies suggests that hybridization between native westslope cutthroat trout and introduced rainbow trout may be determined in part by habitat condition. A management disturbance that creates a small-magnitude shift in habitat conditions may be easily tolerated by the native trout in the absence of a hybridizing competitor, but in the presence of the introduced species, even a small habitat disruption or shift may trigger the loss of the native species. This is a critical example, as both bull trout and native cutthroat trout are jeopardized by ongoing hybridization across their ranges.

A second problem is the failure of the agencies to provide specific, measurable, and validated criteria for the selection of threshold levels of activity and disturbance that they suppose lead to “properly functioning” or acceptable conditions. Both the CWE and PFC matrix methods create a veneer of analytic appearance for an exercise that at its core is qualitative and relies on assumptions about the correspondence of fish population status to environmental criteria that remain entirely unjustified and unverified in this record, or anywhere else, to my knowledge. The list of relevant environmental factors and the general direction of the relationships, positive or negative, are probably correct, but threshold parameters that are invoked to justify “acceptable” levels of activity are unjustified and many seem highly questionable given the existing highly degraded or highly sensitive condition of the streams in the planning area.

A rational approach to assessing cumulative effects for this analysis requires taking a more biologically-defined perspective. This would entail 1) defining the full suite of environmental and management factors that influence or potentially influence fish survival in the streams of the planning area, 2) identifying mechanisms of effect and possible interaction among these factors in affecting fish population status and trend, 3) identifying reliable and useful metrics for each of the more significant prevailing factors and interactions, and 4) developing, through empirical studies,

quantitative associations between measured environmental conditions and fish population status and trend. This would provide a robust and quantitative model that is based on explicit and verified relationships, and would generate predictions that are themselves testable through field monitoring and assessment. The quantitative predictions resulting from this approach could be then directly used in traditional and simple demographic models to develop quantitative estimates of population trend and probability of persistence and recovery. Existing scientific knowledge is sufficient to support such a quantitative approach to assessing viability and recovery potential of populations under future scenarios.

While it is laudable that the CWE and PFC matrix approaches employed in the BA and BOs attempt to account for both active restoration and the failure to engage active restoration in analyzing the effects of the proposed plan, these analyses nevertheless tend to obscure the nature and diversity of threats arrayed against these fish populations, downplay the degree to which these threats are affected adversely by management actions, and fail entirely to account for the collective and cumulative effect of the proposed slate of actions on the viability and recovery potential of native fish.

Finally, I should note that some assumptions that the BA and BOs make about the effects of particular disturbances on fish populations are highly suspect, and in my opinion, are not scientifically credible or defensible. In particular, undocumented assertions that wildfire is a significant and severe threat to native fish species do not accord with published empirical studies, nor with the unpublished work that I am aware of. The degree of threat that fire imposes on fish and fish habitat is, as a rule, directly correlated and determined by the impacts of pre-and post-fire ground disturbance (including roads, grazing, and yarding and hauling damage to soils) and the removal of large trees from natural riparian stands and erosion-prone slopes. These pre-and post-fire management factors grossly outweigh any evident effect of historical fire suppression on fire severity and the adversity of its effects on instream biota. The sources referred to by the agencies to substantiate their position are not appropriately cited, nor are they based on any field evidence or real empirical study, and it is clear that the main body of science pertinent to this issue has been overlooked. In my view this failure substantially distorts the assessment and analyses, sets up unjustified and unnecessary oppositions in the management practice and standards, and misleads the public about what we know about fire and its ecological effects. The documents create or perpetuate a fiction that implies we know how to actively manage forest stand conditions across the landscape to produce a specific and desirable outcome in terms of stream habitat conditions and recovery of native fishes. It equally implies that the failure to engage such active management will lead inexorably to loss of habitat quality and harm to fish populations. Both are false.

3) Population Structure and Population Response are Not Adequately Described, Undermining any Possibility of a Reliable and Quantitatively Informed Assessment of Viability and Recovery.

The Biological Assessment discusses in a cursory way the distribution of listed Evolutionarily Significant Units (ESU) of anadromous fish within the planning area, but does not discuss the critical issue of population structure within these ESUs. An ESU consists of multiple, largely demographically independent breeding populations across the planning area, each inhabiting a spawning and rearing tributary or reach. There may be occasional successful migrants between such populations, but, at least under contemporary conditions, rarely is immigration large enough to offset or overwhelm the influence of local conditions on breeding population demographics. Local reproductive success, growth, and survival dictate the success of populations within each such population. The viability and potential for recovery of the Species or ESU is in fact determined by the status and trend of the aggregate of this collective of breeding populations.

It is equally important to recognize that colonization of new habitat and re-establishment of populations of native salmonids is apparently very rare under contemporary habitat, climatic and demographic conditions. Assuming no imminent reversal of any of these 3 factors, the loss or extinction of any single stream-specific breeding populations must be considered an irreversible loss and irretrievable commitment of resources. The long-term viability and potential for recovery of the species can only be maintained, therefore, if the persistence of each extant population can be assured, i.e., that the range-wide distribution of the species is not further diminished through loss of local breeding populations.

This need to assume that each population loss would constitute an irreversible loss of the species' viability and ability to recover is true unless a model were developed and applied to quantify the status of individual breeding populations, and then, based on their status, location, connectivity, genetic integrity, and other factors, predict their contribution to maintaining or restoring the future spatial distribution and life history diversity of the species or ESU within the planning area. Such a model would then have to make spatially explicit and testable predictions about the contribution of each population to the status and future recovery potential of the species or ESU within the planning area, and then establish through such an analysis that certain populations are expendable because they are spatially redundant, or that they are diminished numerically or compromised genetically beyond any capability of local recovery, and hence contribute in only a severely limited way to viability and future recovery of the overall ESU. While it may be possible to do such an analysis within the scope of existing knowledge and biological data pertinent to the study area, this clearly has not been done in the BA.

I would be happy to provide a more detailed and fully-cited version of these comments upon request.

CHRISTOPHER A. FRISSELL

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The Pacific Rivers Council

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Birth: 1 December 1960, Chehalis, Washington

Education: Ph.D. in Fisheries Science, Oregon State University, 1992
M.S. in Fisheries Science, Oregon State University, 1986
B.A. with High Honors in Zoology, University of Montana, 1982

Academic Appointments:

Senior Staff Scientist, The Pacific Rivers Council, 2000-present.
Research Associate Professor, The University of Montana, Flathead Lake Biological Station, 1998-2000 (presently Affiliate Faculty status)
Research Assistant Professor, The University of Montana, Flathead Lake Biological Station, 1993-1998
Research Assistant Professor, Department of Fisheries and Wildlife, Oregon State University, 1994-1997
Postdoctoral Research Associate (Faculty), Department of Fisheries and Wildlife, Oregon State University, 1992-1994
Research Assistant (Faculty), Oak Creek Laboratory of Biology, Department of Fisheries and Wildlife, Oregon State University, 1985-1992

Fields of Interest:

Cumulative impacts of human activities and natural processes on stream habitat and stream biota
Ecology, biogeography, and conservation biology of fishes and aquatic biota in relation to landscape change
Aquatic ecosystem conservation and restoration strategies
Geomorphology and landscape ecology in design of integrated conservation reserves
Natural resources planning and policy

Honors:

Nominee, Pew Scholars Program in Science and the Environment, 1995
Western Division of the American Fisheries Society Outstanding Student Award, 1988
Outstanding Publication Award, Oregon State University Graduate School, 1987
Watkins Scholarship for Senior Thesis Research, University of Montana, 1981-1982

*ICL, TWS, PRC and IRU Appeal of SWIE FEIS and RODs for
The Boise, Payette, and Sawtooth LRMPs, page 78 of 105.*

Duniway Book Award, Department of Zoology, University of Montana, 1982

Graduate Students Mentored

Cavallo, B.J. M.S. in Organismal Biology and Ecology, The University of Montana, 1997.

Thesis title: Floodplain habitat heterogeneity and the distribution, abundance, and behavior of fishes and amphibians in the Middle Fork Flathead River Basin, Montana.

Adams, S. B. Ph.D. in Organismal Biology and Ecology, The University of Montana, 1999.

Dissertation title: Mechanisms Limiting a Vertebrate Invasion: Brook Trout in Mountain Streams of the Northwestern USA. Presently a post-doc in my lab.

Carnefix, G. M.S. student in O.B.E., U. of MT. Thesis topic: Movements and ecology of bull trout in Rock Creek, MT.

Hastings, K. Ph.D. student in O.B.E., U. of MT. Thesis topic: Determinants of fish distribution and assemblage structure in headwater streams of southeast Alaska.

Wyrick, A. Ph.D. student in O.B.E., U. of MT. Thesis topic: Fish-amphibian relationships in high-elevation lakes of the Beartooth Plateau, MT.

Hitt, N.P., M.S. student in O.B.E., U. of MT, Distribution and potential invasion of introduced rainbow trout in the upper Flathead River drainage.

Appointments to Peer Review Panels and Scientific Advisory Committees:

Science Advisory Panel, Westside. Governor's Salmon Restoration Funding Board, Washington State, February 2000.

Ecological Work Group, Multi-species Framework Process and Subbasin Assessment Process, Northwest Power Planning Council 1998-2000.

Peer review panelist for U.S. Environmental Protection Agency/National Science Foundation Water and Watersheds Grants Program for 1997. 7-9 May 1997.

Scientific Group for the Governor's Bull Trout Restoration Team, State of Montana, 1994-present

Oregon Department of Environmental Quality, 1992-95: Temperature Standards Review Subcommittee of the Technical Advisory Committee, Triennial Water Quality Standards Review

Scientific Assessment Panel for amphibian species, Eastside Oregon-Washington and Upper Columbia Basin EIS, US BLM and US Forest Service, 1994

Oregon Department of Forestry, 1990-93: Technical Advisory Group for the Forest Practices Monitoring Program; Wetlands Technical Group; Stream Protection Advisory Panel

Theses and Dissertations:

Frissell, C.A. 1992. Cumulative effects of land use on salmon habitat in southwest Oregon coastal streams. Doctoral dissertation, Oregon State University, Corvallis.

Frissell, C. A. 1986. A hierarchical stream habitat classification system: development and

*ICL, TWS, PRC and IRU Appeal of SWIE FEIS and RODs for
The Boise, Payette, and Sawtooth LRMPs, page 79 of 105.*

demonstration. M.S. thesis, Oregon State University, Corvallis.
Frissell, C. A. 1982. Colonization and development of community structure in coexisting Ephemereid mayflies (Ephemeroptera, Ephemerellidae). Senior Thesis, Watkins Scholarship Program, The University of Montana, Missoula.

Professional Societies:

Society for Conservation Biology, 1991-present
American Fisheries Society, 1985-present
Ecological Society of America, 1987-present
North American Benthological Society, 1983-present

Member of Board of Editors for Journals:

Conservation Biology, 1996-2000

Reviewer for Journals and Agency Publications:

Canadian Journal of Fisheries and Aquatic Sciences, Conservation Biology, Ecological Applications, Environmental Management, Fisheries, Freshwater Biology, North American Journal of Fisheries Management, Oikos, Transactions of the American Fisheries Society, USDA Forest Service General Technical Reports

Articles Published in Scientific Journals:

Adams, S.B., and C.A. Frissell. In press. Thermal habitat use and evidence of seasonal migration by tailed frogs, *Ascaphus truei*, in Montana. *Canadian Field-Naturalist*.
Adams, S.B., and C.A. Frissell. 2002. Changes in distribution of nonnative brook trout in an Idaho drainage over two decades. *Transactions of the American Fisheries Society*, 131:561-568.

Adams, S.B., C.A. Frissell, and B.E. Rieman. 2001. Geography of invasion in mountain streams: consequences of headwater lake fish introductions. *Ecosystems* 296-307.

Ebersole, J.L., W.J. Liss, and C. A. Frissell. 2001. Relationship between stream temperature, thermal refugia, and rainbow trout *Oncorhynchus mykiss* abundance in arid-land streams in the northwestern United States. *Ecology of Freshwater Fish* 10:1-10.

Adams, S.A., C.A. Frissell, and B.E. Rieman. 2000. Movements of non-native brook trout in relation to stream channel slope. *Transactions of the American Fisheries Society* 129:623-638

Articles Published in Scientific Journals, continued

Trombulak, S.C., and C.A. Frissell. 2000. Review of ecological effects of roads on terrestrial and aquatic communities. *Conservation Biology* 14:18-30.

*ICL, TWS, PRC and IRU Appeal of SWIE FEIS and RODs for
The Boise, Payette, and Sawtooth LRMPs, page 80 of 105.*

- Baxter, C.V., C.A. Frissell, and F.R. Hauer. 1999. Geomorphology, logging roads and the distribution of bull trout (*Salvelinus confluentus*) spawning in a forested river basin: implications for management and conservation. *Transactions of the American Fisheries Society*, 128:854-867.
- Independent Scientific Group. 1999. Scientific issues in the restoration of salmonid fishes in the Columbia River. *Fisheries* 24(3):10-19.
- Currens, K.P., F.W. Allendorf, D. Bayles, D.L. Bottom, C.A. Frissell, D. Hankin, J.A. Lichatowich, P.C. Trotter, and T.A. Williams. 1998. Conservation of Pacific salmon: response to Wainwright and Waples. *Conservation Biology* 12:1148-1149.
- Poole, G.C., C.A. Frissell, and S.C. Ralph. 1997. In-stream habitat unit classification: inadequacies for monitoring and some consequences for management. *Journal of the American Water Resources Association* 33:879-896.
- Ebersole, J.L., W.J. Liss, and C.A. Frissell. 1997. Restoration of stream habitats in the western United States: restoration as re-expression of habitat capacity. *Environmental Management*. 21:1-14.
- Allendorf, F.W., D. Bayles, D.L. Bottom, K.P. Currens, C.A. Frissell, D. Hankin, J.A. Lichatowich, W. Nehlsen, P.C. Trotter, and T.H. Williams. 1997. Prioritizing Pacific salmon stocks for conservation. *Conservation Biology* 11:140-152.
- Frissell, C.A., and D. Bayles. 1996. Ecosystem management and the conservation of aquatic biodiversity and ecological integrity. *Water Resources Bulletin* 32:229-240.
- Stanford, J.A., J.V. Ward, W.J. Liss, C.A. Frissell, R.N. Williams, J.A. Lichatowich, and C.C. Coutant. 1996. A general protocol for restoration of regulated rivers. *Regulated Rivers: Research and Management* 12:391-413.
- Nawa, R., and C.A. Frissell. 1994. Measuring scour and fill of gravel streambeds with scour chains and sliding bead monitors. *North American Journal of Fisheries Management* 13:634-639.
- Frissell, C.A. 1993. Topology of extinction and endangerment of native fishes in the Pacific Northwest and California, USA. *Conservation Biology* 7:342-354.
- Frissell, C.A., R.K. Nawa, and R. Noss. 1992. Is there any conservation biology in "New Perspectives?" A response to Salwasser. *Conservation Biology* 6:461-464.
- Frissell, C.A., and R.K. Nawa. 1992. Incidence and causes of failure of artificial habitat structures in streams of western Oregon and Washington. *North American Journal of Fisheries Management* 12:182-197.
- Frissell, C.A., W.J. Liss, C.E. Warren, and M.D. Hurley. 1986. A hierarchical framework for stream habitat classification: viewing streams in a watershed context. *Environmental Management* 10:199-214.

Symposium Articles Published:

- Poole, G.C., J.A. Stanford, S.W. Running, and C.A. Frissell. 2000. A Linked GIS/modeling approach to assessing the influence of flood-plain structure on surface- and ground-water routing in rivers. *Proceedings of the 4th International Conference on Integrating Geographic Information Systems (GIS) and Environmental Modeling*. Held 2-8 September 2000, Banff,

- Alberta. B. Parks, editor.
- Clancy, C., C. Frissell, and T. Weaver. 1998. Removal or suppression of introduced fish to aid bull trout recovery. *Proceedings of the Wild Trout XI Conference*, held August, 1997 in Bozeman, MT.
- Li, H.W., K. Currens, D. Bottom, S. Clarke, J. Dambacher, C. Frissell, P. Harris, R.M. Hughes, D. McCullough, A. McGie, K. Moore, R. Nawa, and S. Thiele. 1995. Safe havens: refuges and evolutionarily significant units. *American Fisheries Society Symposium* 17:371-380.
- Frissell, C.A., W.J. Liss, and D. Bayles. 1993. An integrated, biophysical strategy for ecological restoration of large watersheds. In D.F. Potts ed., *Changing Roles in Water Resources Management and Policy*. Proceedings of a symposium of the American Water Resources Association, held 27-30 June, 1993, Bellevue, WA.
- Frissell, C.A., and R.K. Nawa. 1989. Cumulative impacts of timber harvest on fisheries: "All the King's horses and all the King's men..." In C. Toole, (ed.), *Proceedings of the Seventh California Salmon, Steelhead and Trout Restoration Conference*. February 24-26, Arcata, CA. California Sea Grant Publication UCSGEP-89-02.
- Frissell, C.A., and T. Hirai. 1988. Life history patterns, habitat change, and productivity of fall chinook stocks of southwest Oregon. In B. Sheperd (ed.) *Proceedings of the Northeast Pacific Chinook and Coho Workshop*, Bellingham, Washington, 3-4 October 1988. North Pacific International Chapter, American Fisheries Society.

Books and Book Chapters Published:

- Frissell, C.A., N.L. Poff, and M.E. Jensen. 2001. Assessment of biotic patterns in freshwater ecosystems. Chapter 27 in Bourgeron, P., M. Jensen, and G. Lessard (eds.) *A Guidebook for Integrated Ecological Assessments*. Springer-Verlag, NY.
- Jensen, M.E., I. Goodman, and C.A. Frissell. 2001. Design and use of aquatic biophysical classifications and maps. Chapter 26 in Bourgeron, P., M. Jensen, and G. Lessard (eds.) *A Guidebook for Integrated Ecological Assessments*. Springer-Verlag, NY.
- Welsh, H.H., T.D. Roelofs, and C.A. Frissell. 2000. Aquatic ecosystems of the redwood region. Pages 165-199 in R. Noss (ed.) *The Redwood Forest: History, Ecology, and Conservation of the Coast Redwoods*. Island Press, Washington, DC.
- Frissell, C.A., and S.C. Ralph. 1998. Stream and watershed restoration. Pages 599-624 in R.J. Naiman and R.E. Bilby (eds.) *Ecology and Management of Streams and Rivers in the Pacific Northwest Coastal Ecoregion*. Springer-Verlag, NY.

Books and Book Chapters Published (continued):

- Frissell, C.A. 1997. Ecological principles. Pages 96-115 in J.E. Williams, M.P. Dombeck, and C.A. Wood (eds.) *Watershed Restoration: Principles and Practices*. The American Fisheries Society, Bethesda, MD.
- Frissell, C.A., W.J. Liss, R.K. Nawa, R.E. Gresswell, and J.L. Ebersole. 1997. Measuring the failure of salmon management. Pages 411-444 in D.J. Stouder, P.A. Bisson, and R.J. Naiman (eds.) *Pacific Salmon and their Ecosystems: Status and Future Options*. Chapman and Hall,

New York, NY.

Frissell, C.A. 1996. A new strategy for watershed protection, restoration and recovery of wild native fish in the Pacific Northwest. Pages 1-24 in B. Doppelt (ed.) *Healing the Watershed: A Guide to the Restoration of Watersheds and Native Fish in the West*. The Pacific Rivers Council, Eugene, OR.

Frissell, C.A., and D.G. Lonzarich. 1996. Habitat use and competition among stream fishes. Pages 493-510 in F.R. Hauer and G.A. Lamberti (eds.) *Methods in Stream Ecology*. Academic Press, San Diego, CA.

Doppelt, B., M. Scurlock, C. Frissell, and J. Karr. 1993. *Entering the Watershed: A New Approach to Save America's River Ecosystems*. Island Press, Washington, DC.

Final Research Reports and Miscellaneous Publications since 1993:

Frissell, C.A. 1999. An ecosystem approach for habitat conservation for bull trout: groundwater and surface water protection. Flathead Lake Biological Station, Open File Report 156-99, The Univ. of Montana, Polson, MT.

Hitt, N.P. and C.A. Frissell. 1999. Wilderness in a landscape context: a quantitative approach to ranking aquatic diversity areas in western Montana. Paper presented at the Wilderness Science Conference, 23-27 May, Missoula, MT.

Montana Bull Trout Scientific Group. 1998. The relationship between land management activities and habitat requirements of bull trout. Report prepared for the Montana Bull Trout Restoration Team, Office of the Governor, Helena, MT.

Frissell, C.A. 1998. Landscape refugia for conservation of Pacific salmon in selected river basins of the Olympic Peninsula and Hood Canal, Washington. Flathead Lake Biological Station, Open File Report 147-98, The Univ. of Montana, Polson, MT.

Frissell, C.A. 1997. Ecological benefits of wildland reserves: The proposed Copper Salmon Wilderness in southwest Oregon. Flathead Lake Biological Station, Open File Report 150-97, The University of Montana, Polson, MT.

Huntington, C.W., and C.A. Frissell. 1997. Aquatic conservation and salmon recovery in the North Coast Basin of Oregon: A crucial role for the Tillamook and Clatsop State Forests. Report prepared for Oregon Trout, Portland, OR.

Final Research Reports and Miscellaneous Publications since 1993 (continued):

Williams, R.N., L.D. Calvin, C.C. Coutant, M.W. Erho, Jr., J.A. Lichatowich, W.J. Liss, W. E. McConnaha, P.R. Mundy, J.A. Stanford, R.R. Whitney, D.L. Bottom, and C.A. Frissell. In press. *Return to the River: Restoration of Salmonid Fishes in the Columbia River Ecosystem*. Independent Scientific Group, Northwest Power Planning Council, Portland, OR.

C.A. Frissell, J.L. Ebersole, W.J. Liss, B.J. Cavallo, and G.C. Poole. 1996. Potential effects of climate change on thermal complexity and biotic integrity of streams: seasonal intrusion of non-native fishes. Final Report for USEPA Environmental Research Laboratory, Duluth, MN. Oak Creek Laboratory of Biology, Department of Fisheries and Wildlife, Oregon State

- University, Corvallis, OR.
- Bottom, D.L., J.A. Lichatowich, and C.A. Frissell. 1996. Variability of marine ecosystems and relation to salmon production. Report prepared for Theme 2 of the Pacific Northwest Coastal Ecosystem Region Study Workshop, Troutdale, OR, 12-14 August.
- Clancy, C., C. Frissell, and T. Weaver. 1996. Assessment of methods for removal or suppression of introduced fish to aid bull trout recovery. Report prepared by the Montana Bull Trout Scientific Group for the Montana Bull Trout Restoration Team. Montana Fish, Wildlife and Parks, Helena, MT.
- Frissell, C.A., J. Duskocil, J. Gangemi, and J. Stanford. 1995. Identifying priority areas for protection and restoration of riverine biodiversity: a case study in the Swan River basin, Montana, USA. Flathead Lake Biological Station, Open File Report 136-95, The University of Montana, Polson, MT.
- Beschta, R.L., C.A. Frissell, R. Gresswell, R. Hauer, J.R. Karr, G.W. Minshall, D.A. Perry, and J.J. Rhodes. 1995. Wildfire and salvage logging: recommendations for ecologically sound post-fire salvage logging and other post-fire treatments on federal lands in the West. The Pacific Rivers Council, Eugene, OR.
- Frissell, C.A. 1993. The shrinking range of the Pacific Salmon. Report and status and range maps prepared for the Pacific Northwest Salmon Study, The Wilderness Society, Washington, DC.
- Frissell, C.A., and W.J. Liss. 1993. Valley segment classification for the streams of Great Basin National Park, Nevada. Report prepared for the Cooperative Park Studies Unit, College of Forestry, Oregon State University, Corvallis, OR.
- Frissell, C.A. 1993. Panacea or placebo? An ecologist's view of captive breeding. *Wild Fish* July/August 1993:7-12. The Wilderness Society, Portland, OR.
- Frissell, C.A. 1993. A new strategy for watershed restoration and recovery of Pacific salmon in the Pacific Northwest. Report prepared for The Pacific Rivers Council, Eugene, Oregon. Oak Creek Laboratory of Biology, Department of Fisheries and Wildlife, Oregon State University, Corvallis, OR.

Selected Papers and Seminars Presented Since 1993 (___=presenter):

- Frissell, C.A. 2001. What to do first with limited time, money, and staff. Watershed Restoration Workshop: Integrating Practical Approaches. Oregon Chapter of the American Fisheries Society, 13-15 November, 2001 in Eugene, OR.
- Ebersole, J.L., Colden V. Baxter, Hiram W. Li, and William J. Liss, and Frissell, C.A. 2001. Detecting temporal dynamics and ecological effects of smallmouth bass invasion in northeast Oregon streams. Presented at the symposium, Practical Approaches for Conserving Native Inland Fishes of the West. Montana Chapter and Western Division of the American Fisheries Society, June 6-8, 2001, The University of Montana, Missoula, MT.
- Frissell, C.A. 1999. Groundwater processes and stream classification in the montane West (abstract). Invited paper, Symposium #7: Aquatic Classification Schemes for Ecosystem Management: Making the Transition from Methods Development to Application and Validation. Annual Meeting of the Ecological Society of America 7-12 August 1999,

- Spokane, WA.
- Frissell, C.A. 1999. Fisheries and watershed processes: strategies for protection and restoration. Invited paper, Annual Meeting of the Cal-Neva Chapter of the American Fisheries Society, 24-27 March 1999, Redding, CA.
- Frissell, C.A. 1999. Surface-subsurface flow linkages in rivers and their importance for river flow conservation. Invited paper, Symposium on Water Quality and Hydropower Re-licensing, Annual Meeting of the Cal-Neva Chapter of the American Fisheries Society, 24-27 March 1999, Redding, CA.
- Frissell, C.A. 1999. Dams, uncertainty, and the salmon ecosystem. Keynote Address, Annual Meeting of the Idaho Chapter of the American Fisheries Society and The Wildlife Society, 4-6 March, Boise, ID
- Frissell, C.A. 1998. Climate forcing of thermal habitat in Pacific Northwest rivers: Buffering effects of floodplain forests and hyporheic processes. (Abstract) Symposium on Climate Change Impacts to Freshwater Fish Habitats, Annual Meeting of the American Fisheries Society, 23-27 August, 1998 Hartford, CT.
- Frissell, C.A. 1998. Ecosystem concepts in large-scale restoration. (Abstract). Montana Chapter of the American Fisheries Society, 3-5 February, Helena, MT.
- Frissell, C.A. and B.J. Cavallo 1997. Aquatic habitats used by larval western toads (*Bufo boreas*) on an intermontane river floodplain and some landscape conservation implications (Abstract). Annual Meeting of the Ecological Society of America, 10-14 August, Albuquerque, NM.
- Stanford, J.A. (presented by C.A. Frissell). 1997. Conservation and enhancement of alluvial rivers: the importance of hyporheic linkages. (Abstract). Symposium on Ecological Effects of Roads, Society for Conservation Biology, 7-10 June, Victoria, British Columbia, Canada.
- Frissell, C.A., and G.C. Poole . 1997 Management of Riparian Zones in Western Montana: Present Issues and Emerging Challenges. (Abstract). Annual Meeting of the American Fisheries Society, 23-28 August, Monterey, CA.

Selected Papers and Seminars Presented Since 1993, continued:

- Frissell, C.A., and J.T. Gangemi. 1997. Roads and the conservation of aquatic biodiversity and ecological integrity. (Abstract). Society for Conservation Biology, Victoria, British Columbia, Canada, 7-10 June.
- Frissell, C.A. 1997. Spatial assessment of biological status and biodiversity loss. Invited seminar, National Research Center for Statistics and the Environment, University of Washington, Seattle, WA, 14 January.
- Frissell, C.A., and B.J. Cavallo 1996. Thermal and hydrologic diversity of aquatic habitats mediated by floodplain complexity and hyporheic flow exchange in an alluvial segment of the Middle Fork Flathead River, Montana, USA. (Abstract). Annual Meeting of the N. Am. Benthological Society, Kalispell, MT, 3-8 June.
- Frissell, C.A. 1995. Ecological principles for watershed restoration. (Abstract). Invited paper for Workshop on Watershed Restoration: Principles and Practices, Annual Meeting of the American Fisheries Society, Tampa, FL, 27-31 August.

Frissell, C.A. 1995. Managing native fish and their ecosystems: let's get (spatially) explicit! (Abstract). Invited panel presentation at Montana Chapter of the American Fisheries Society, Chico Hot Springs, MT, 6-10 February.

Frissell, C.A. 1995. Birth in the fast lane: sediment transport, human disturbance, and reproductive strategies of salmonid fishes in Pacific Northwest streams. (Abstract). Invited paper for Symposium on Influence of Geomorphic Processes on Terrestrial and Aquatic Ecosystem patterns and Processes, Annual meeting of the Ecological Society of America, Snowbird, UT, 31 July-3 August .

Frissell, C.A. 1995. Resource management impacts on bull trout populations. Invited panel presentation for Searching for Solutions: Solving the Bull Trout Puzzle Science and Policy Conference, Andrus Center for Public Policy, Boise State University, Boise, ID, 1-2 June.

Frissell, C.A. 1995. Watershed dynamics: natural pattern and process and some consequences for ecosystem management. Invited presentations at Managing Terrestrial Ecosystems Relative to Past and Present Disturbances: A Workshop Integrating Fire, Range, Fish and Wildlife Habitat and the Practice of Silviculture in the Northern Region. U.S. Forest Service, Missoula, MT, 14-16 March.

Ebersole, J.L., C.A. Frissell, and W.J. Liss (Ebersole and Frissell, co-presenters). 1995. Invasion of non-native fishes in northeast Oregon and western Montana streams: potential impacts of climate change. (Abstract). Oregon Chapter of the American Fisheries Society, Ashland, OR, 15-17 February.

Frissell, C.A. 1994. Watershed restoration strategies. (Invited presenter and session convenor) Watersheds '94 Expo, US Environmental Protection Agency and Center for Streamside Studies, University of Washington. Bellevue, WA, 27-30 September .

Frissell, C.A. 1994. A hierarchical approach to restoration of riverine ecosystems. Invited paper at Symposium on Aquatic Habitat Restoration in Northern Ecosystems, Alaska Chapter of the American Fisheries Society, Girdwood, AK, 20-22 September.

Selected Papers and Seminars Presented Since 1993, continued:

Frissell, C.A. 1994. An integrated, biophysical strategy for ecological restoration of large watersheds (Abstract). Annual Conference of The Universities Council on Water Resources, Big Sky, MT, 3-5 August .

Frissell, C.A., and J. A. Stanford. 1994. Designing a watershed reserve network to protect and restore aquatic biodiversity in the northern Rocky Mountains (Abstract). Annual meeting of the Montana Chapter of the American Fisheries Society, Billings, Montana, Billings, MT, 9 February.

Frissell, C.A. 1994. The Endangered Species Act: principles for the protection and recovery of fishes. Invited panel presentation, annual meeting of the Idaho Chapter of the American Fisheries Society, McCall, ID, 24-26 February.

Frissell, C.A., W.J. Liss, B. Doppelt, and D. Bayles. 1993. A new, ecologically based restoration strategy for Pacific salmon in the Pacific Northwest (Abstract). Annual meeting of the American Fisheries Society, Portland, OR, 29 August-2 September.

Technical Workshops Organized:

Organizer and coordinator of the 1997 Biodiversity Workshop, Consortium for the Study of North Temperate Montane Ecosystems. 4 February 1997, Missoula, MT. A cooperative research venture of The University of Montana and Montana State University, supported by the NSF EPSCoR program.

Scientific Workshop on Large Basin Restoration: South Umpqua River. 16-18 September 1992, Roseburg, Oregon. Sponsored by The Pacific Rivers Council.

Scientific Workshop on Large Basin Restoration: Lower Rogue River. 21-23 October 1992, Gold Beach, OR. Sponsored by The Pacific Rivers Council.

(With E. Bishop) Scientific Workshop on Large Basin Restoration: Grande Ronde River (co-organizer). 21-22 March 1993, La Grande, OR. Sponsored by The Pacific Rivers Council.

(With W.J. Liss and R.K. Nawa) Stream Classification Workshop for staff of Oregon Department of Fish and Wildlife, 6-7 February 1990, Portland, OR.

Other Workshops Attended by Invitation (since 1994):

Invited Review Panelist, Workshop on Linking Habitat Characteristics to Salmon Data. 29-30 September 1999, National Marine Fisheries Service, Northwest Fisheries Science Center, Seattle, WA.

Invited participant, Yellowstone to Yukon Aquatic Conservation Science Workshop. 20-22 August 1999, Flathead Lake Biological Station, The University of Montana, Polson, MT.

Invited Panelist, Workshop on Options for Restoring Salmon Habitat in the Mainstem Snake and Columbia Rivers. Pacific Northwest National Laboratory-Batelle, 19 August 1999, Kennewick, WA

Other Workshops Attended (since 1994), continued:

Panelist at State of Oregon/National Marine Fisheries Service Memorandum of Agreement Committee Workshop: Cumulative Effects of State and Private Forest Practices on Salmon Habitat. 21 April 1998, Salem, OR.

Invited participant in a scientific workshop, Multiple Stressors in Ecological Risk Management. Sponsored by the Society for Environmental Chemistry and Toxicology and the USEPA, 13-18 September 1997, Pellston, MI.

Society for Conservation Biology Workshop: Communicating with the Media (panel member). 9 June 1997, Victoria, British Columbia, Canada.

Invited speaker for a workshop, Continuing Education in Ecosystem Management. Sponsored by the University of Idaho. Catchment scale processes and linkages between landscape and stream conditions. 31 January 1997, Moscow, ID.

The Nature Conservancy, Aquatic Classification Workshop (invited presenter). 9-11 April 1996,

Cedar Creek Farm, MO.
Kenai River Community Forum (keynote speaker and panelist). The Nature Conservancy of Alaska, USEPA and USFWS, 19-21 April, Soldotna, AK.
Conservation Biology and Management of Interior Salmonids (invited presenter and session co-moderator). USDA Forest Service Intermountain Research Station and Utah State University, 4-5 October 1995, Logan, UT.
Eastside Ecosystem Planning Workshop. Sierra Club Legal Defense Fund, 16 December 1994, Portland, OR.
Co-instructor at workshop series on Watershed Restoration and the "Rapid Biotic Response Strategy" for Riverine Ecosystem Restoration, sponsored by The Pacific Rivers Council, 1993-95, California, Oregon, and Washington.
Fire/Salvage and Aquatic Ecosystems Policy Workshop. The Pacific Rivers Council, 15 December 1994, Portland, OR.
Panel on Forest Health Issues, Native Forest Network annual conference, 13 November 1994, Missoula, MT.
Workshop on Watershed/Fisheries Cumulative Effects Analysis, sponsored by Headwaters, The Pacific Rivers Council, USDA Forest Service, and Bureau of Land Management. 29 September-2 October, 1994, Ruch, OR.
Boise Funders' Scoping Meeting, sponsored by Bullit, Harder, and Lazar Foundations, 30-31 August 1994, Boise, Idaho. Workshop for a statewide process to prioritize restoration of watersheds and salmon populations, by invitation of Oregon Senate President Bill Bradbury, 18 May 1994, Salem, OR.
Scientific Task Force on Conservation Strategies for Protection of Proposed Wild and Scenic Rivers in California, The Pacific Rivers Council, 22 Feb. 1994, Davis, CA

Other Presentations:

Invited testimony on federal land management and the future of salmon and aquatic biodiversity in the Pacific Northwest, to the U.S. House of Representatives, Subcommittee on National Parks and Public Lands, Washington, D.C., 11 March 1993.
Briefing for Congressional representatives and staff on federal lands management and conservation and recovery of salmonid fishes and riverine ecosystems, Washington, D.C., 22 January 1993.
Invited testimony to the 1991 Oregon State Legislature, on panel representing the Oregon Chapter of the American Fisheries Society, on the status of native fishes, impacts of forest practices on fish habitat, and the need or changes in environmental regulation.
Invited testimony to the Oregon Board of Forestry Forest Issues Forum, December 1990, on cumulative impacts of forest practices on native aquatic species and the need for changes in forest management.
Worked with Oregon Public Broadcasting to describe our research project and its significance in a 15-minute segment of the television program, Oregon Field Guide, first aired in June 1990.
Presented seminars, informal presentations, lectures, and discussions at research review meetings, as guest speaker in classrooms and public interest groups.

Standards needed in LRMPs as part of vital protection for imperiled native salmonids

By Jonathan J. Rhodes

November 2003

Introduction

Complete protection of the habitats for remaining populations of native salmonids is necessary to provide some likelihood of their persistence. Native salmonids are highly imperiled (USFS and USBLM, 1997a; USFWS, 1998; NMFS, 1998; Kessler et al., 2001). Their habitats are pervasively degraded. Populations are severely depressed and highly fragmented, primarily due to habitat degradation (USFS and USBLM, 1997a; USFWS, 1998; NMFS, 1998; Kessler et al., 2001). These combined conditions convey a high risk of extirpation of native salmonid populations under existing conditions (USFS and USBLM, 1997a; USFWS, 1998; NMFS, 1998). Maintenance of these existing degraded conditions and population fragmentation is inimical to the recovery of native salmonid populations (USFWS, 1998; NMFS, 1998). Additional degradation increases population fragmentation and associated risks of local extirpations and extinction (USFS and USBLM, 1997a; c; USFWS, 1998; NMFS, 1998).

The prospects for improvement in salmonid habitats are limited by the on-going effects of existing impacts in watersheds with a history land-disturbing activities, including, logging, roads, grazing, and mining (Rhodes et al., 1994; Espinosa et al., 1997; USFWS, 1998; NMFS, 1998). The effects of this legacy continue to significantly forestall habitat recovery, and in many areas, preclude it. This situation is compounded by the continued implementation of activities that contribute to the cumulative degradation of salmonid habitats via a host of mechanisms, including elevated temperatures, sedimentation, peakflows, and reductions in lowflows, bank stability, riparian vegetation, and natural watershed functions. These activities are most typically, are the very ones that caused the initial degradation: mining, logging, roads, and grazing.

The overarching negative effects of federal land management on native salmonids are clearly and strongly illustrated by three lines of evidence: a) the best remaining salmonid habitats are largely confined to unroaded watersheds without much land-disturbance (Rhodes et al., 1994; NMFS, 1998; Kessler et al., 2001); b) the majority of the healthiest remaining native salmonid assemblages are found in unroaded watersheds or watersheds where logging, mining and other watershed insults have been very limited (Kessler et al., 2001); c) native salmonids are extirpated or at extremely depressed levels watersheds with high levels of logging, roads, mining, and grazing (Rhodes et al., 1994; USFS and USBLM, 1997a; c; USFWS, 1998; Kessler et al., 2001)

Since at least the early 1990s, these activities have continued under the conceit that with more analysis and sophisticated execution, they would have insignificant effects on habitat conditions or recovery. However, this has not been the case. Predictably enough, the result has been increased habitat degradation in many watersheds and a continued stunting of habitat recovery in the rest, by grazing, roads, and logging.

Notably, there is no good evidence that land-disturbing activities can be made compatible with the full protection and unimpeded recovery of salmonid habitats. Although the design, location, and implementation of grazing, logging and road construction can provide some slight reduction in soil loss, hydrologic disruption, compaction, and sedimentation caused by the activities, there is no good field evidence that it can reduce these effects to biologically and environmentally insignificant levels (Ziemer and Lisle, 1993; Rhodes et al., 1994; ISG, 1996; Espinosa, et al., 1997). Megahan et al. (1992) concluded that increased sedimentation from logging and road construction on granitic soils on the Boise and Payette National Forests is inevitable regardless of how carefully it was implemented. Based on extensive review of case-histories and literature, USFS and USBLM (1997a; c) came to similar conclusions. USFS et al. (p. V-76, 1993) concluded: “Management activities in roadless areas will increase the risk of riparian and habitat damage...”

Ziemer and Lisle (1993) noted that Best Management Practices (BMPs) may not eliminate cumulative effects. Espinosa, et al. (1997) documented that sedimentation continued to damage fish habitat even with application of a wide variety of BMPs. Espinosa et al. (1997) concluded that reliance on BMPs and consistent over-estimation of their effectiveness fostered habitat degradation from land management activities, despite standards that required improvement in these conditions. One of the primary contributing causes of this situation was the belief in the conceit that activities that cause watershed and habitat degradation could be implemented in ways that result in insignificant impacts (Espinosa et al., 1997). NMFS (1998) found that from 1995 to 1998 grazing, roads, mining, and logging had continued to degrade salmonid habitats in a variety of ways, in spite of standards that prohibited such degradation. Platts (1991) concluded that the only grazing management strategy that is completely compatible with the protection and restoration of fish habitat is one of no grazing. Together, these assessments and data provide compelling evidence that the adverse effects of grazing, logging, mining, and road construction cannot be reduced to biologically and ecologically negligible levels.

There is a growing recognition that a vital component of the protection and restoration of aquatic systems is to eliminate or severely curtail activities that contribute to degradation. The proactive avoidance of degradation is a far more effective, efficient, and tractable than trying to the typical reactionary myopia of management aimed at rehabilitating degraded conditions after they have occurred and/or while additional degradation is ongoing (Rhodes et al., 1994; Henjum et al., 1994; Kattleman 1996; Kauffman et al., 1997; Buffington 2002). In many circumstances, the cessation of degrading activities is all that is required for degraded systems to recover (Rhodes et al., 1994; Kauffman et al., 1997). Similarly, active rehabilitation efforts often have little or diminished results if the root causes of degradation are allowed to continue¹⁰⁷ (Espinosa et al., 1997). Simply enough, when one walks into a room flooded because a faucet has been left on, the clear priority is to turn the faucet off before grabbing a mop.

The need for unambiguous, activity-specific standards

Within the aegis of a Land Resource Management Plan (LRMP) a comprehensive set of clear standards that completely prohibit all actions that cause significant and persistent damage to aquatic systems is necessary to eliminate additional watershed and salmonid habitat degradation. While all

¹⁰⁷ Espinosa et al. (1997) called the supremely incorrect assumption of watershed recovery despite continued land management insults the myth of “immaculate recovery.”

possible activities and situations cannot be completely anticipated, there are many routinely implemented activities that consistently contribute to cumulative degradation. Standards that unambiguously eliminate such activities and their predictable results provide a robust foundation for ensuring that additional degradation does not occur. The following are some of the most important activities to prohibit in order to protect and restore salmonid habitat because they convey a high risk of causing additional degradation:

- road construction (Rhodes et al., 1994; Espinosa et al., 1997)
- riparian grazing in systems with high water temperatures, degraded riparian vegetation, unstable banks, elevated sedimentation, with attributes rendering them susceptible livestock damage,¹⁰⁸ and/or where stream and riparian conditions are unknown (Anderson et al., 1993; Henjum et al., 1994; Rhodes et al., 1994; USFS, 2000)
- road construction, logging, and mining in unroaded areas or watersheds where fish protection is emphasized (Anderson et al., 1993; USFS et al., 1993; Henjum et al., 1994; Rhodes et al., 1994; NMFS, 1995; Espinosa et al., 1997; NMFS, 1998)
- road construction, logging, mining within several hundred feet of all perennial and non-perennial channels (USFS et al., 1993; Henjum et al., 1994; Rhodes et al., 1994; NMFS, 1995; Erman et al., 1996; USFS and USBLM, 1997a; Espinosa et al., 1997a)
- road construction, logging, or mining in watersheds where sedimentation or elevated peakflows are a problem or of concern (Rhodes et al., 1994; Espinosa et al., 1997a; NMFS, 1998)
- additional water withdrawals in watersheds where low flows are a problem or of concern (Rhodes et al., 1997a).

There is also one additional overarching management need that should be required:

- significant reductions in road mileage in all watersheds through obliteration, decommissioning, and abandonment (Rhodes et al., 1994; NMFS, 1998; USFWS, 1998)

It is essential to set unambiguous standards that establish the above as concrete, mandatory, management requirements, if continued habitat and watershed degradation is to be avoided.

¹⁰⁸ Stream types that are highly vulnerable to grazing damage include all streams with banks comprised of non-cohesive fine-grained soils, perennially saturated banks, or lacking deep-rooted vegetation.

Ambiguous standards or those that provide general guidance are not a surrogate for specific standards that eliminate activities contributing to habitat degradation. Examples of the former are standards that direct that activities will be designed to avoid degradation and maintain and restore aquatic conditions. Such general standards have several interrelated fatal flaws.

First, they don't work, as recent history amply attests. Such ambiguous and general standards have been part of most LRMPs for Columbia River basin national forests for more than a decade. Despite these general requirements, degradation has continued (Espinosa, 1997; NMFS, 1998). Part of the reason is that such "do not degrade" standards ultimately hinge on subsequent analyses that are not only thoroughly prone to error and abuse, but designed to be so. Virtually all of the many hundreds of activities on national forests in the Columbia River basin that have significantly degraded watersheds and salmonid habitats, have been incorrectly forecast to have negligible negative effects on aquatic resources in environmental analyses by these national forests. There is absolutely no evidence indicating that this propensity for error is likely to abate, as long as the discrepancy exists to make such rotely incorrect determinations of likely impacts.

Both the USFWS (1998) and NMFS (1998) stated that national forest grazing, logging, mining and road construction within the range of bull trout and steelhead had continued to degrade habitats for these fish, despite LRMP and amendment provisions that required that such degradation be avoided. Both USFWS (1998) and NMFS (1998) noted that part of the reason that such standards were effectively violated is because they were open to varying interpretation. These determinations of the USFS's failure to protect habitats for endangered salmonids was not unilateral; Williams (1997), on behalf of the USFS and USBLM, conceded that many federal land management activities had caused degradation despite standards that required that degradation be avoided, partially because the standards were subject to interpretation. Therefore, such approaches are not a viable surrogate for land management standards that unambiguously prohibit activities in situations that routinely increase damage to aquatic resources. Notably, this is completely tractable, involving far less effort than identifying tentatively suitable forest land.

Second, standards that rely on subsequent analysis to screen out damaging activities thoroughly prevent accurate assessment of the likely cumulative effects of an LRMP. This is because the success of the analysis is typically assumed, despite the evidence that the failure of subsequent analyses is a far more common occurrence and, hence, more accurate assumption. These related defects synergistically fully thwart credible analyses and disclosure of the cumulative effects of LRMPs on aquatic resources, including native salmonids and their habitats.

Third, the reliance on subsequent analysis to screen out damaging activities also effectively sabotages reasonable assessment of the future viability of aquatic populations, including native salmonids. Again, this is partially because successful screening of damaging activities is assumed to occur, albeit, most unreasonably.

Fourth, this approach fails to ensure that an LRMP will fully meet applicable legal and policy requirements. This is because how and where activities are implemented is deferred to subsequent

and ambiguous analyses that lack accountability, transparency, rigor, and specifics. This is an inverted approach. Reasonable, specific, and adequately protective standards need to be set at the LRMP level to provide guidance for subsequent analyses of site-specific activities in order to meet legal mandates, instead of using deferred analysis as a smokescreen for continued resource damage.

It is also critical to set performance standards for aquatic habitats and fish populations. Without these, LRMPs have no yardstick for assessing progress, determining cumulative compliance with aim, or ensuring that beneficial uses and species are restored and protected. This is a relatively simple exercise since the habitat requirements of most native salmonids have already been identified. At a minimum, protective performance standards need to be set for all habitat attributes known to be essential for fish survival including: bank stability, water temperature, large wood, pools, and fine sediment levels in substrate. Again, it should be stressed that none of this is onerous. In fact, it is far more efficient biologically and logistically than the continuation of the present course of convoluted analysis resulting in the predictable rubber-stamping of damaging projects at great public fiscal and ecological expense. A blue ribbon panel of gifted misanthropes could not design a more cumbersome, expensive, demonstrably flawed, and ecologically malignant process than that proposed under the current LRMPs for the Boise, Payette, and Sawtooth National Forests.

Forage utilization vs. standards that adequately reduce damage from grazing.

Grazing management is one of the greatest threats to the persistence of native salmonids on federal lands. This is due to its: a) pervasiveness; b) consistent concentration in riparian areas; c) innately destructive effects on watershed functions, soils, streams, and riparian vegetation; d) the intransigently derelict character of grazing management on federal lands. For these reasons, it is absolutely essential to develop standards that provide robust protection for native salmonids and their habitats from the effects of grazing. Such standards include eliminating grazing in the riparian areas of streams that are innately susceptible to grazing damage. Such streams include those with the following attributes: banks composed of fine-grained, non-cohesive soils, perennially saturated banks, streams lacking deep-rooted vegetation, or in a degraded condition with respect to vegetation, shade, water temperature, overhanging banks, bank stability, pools, or fine sediment levels in channel substrate. It is well-established that degraded systems require at least several years of complete rest if recovery is to occur (e.g., Platts, 1991).

Forage utilization standards are thoroughly inadequate to protect riparian areas and streams from damage, unless they are set at levels less than 5% in areas that are not innately susceptible to grazing damage, with the utilization levels strictly enforced. However, as a rule, forage utilization standards are not rigorously enforced and there is neither the budget nor the inclination to do so on federal lands.

Beyond the logistical management issues, there are also several other reasons that forage utilization standards are an ineffective approach to restoration and protection of streams, meadows, riparian areas, seeps, and springs. First, forage utilization standards do not prevent damage to soils, streambanks, and

soil hydrology caused by trampling or damage to trout habitat from elevated sedimentation from the combined impacts of grazing. These are not trivial impacts to native salmonids. Livestock damage to banks from trampling causes more damage to stream habitats than even changes in riparian vegetation (Clary, 1999). In a three-year study in Montana, Marlow and Poganick (1985) found that bank damage from trampling was uncorrelated with forage utilization levels ($R^2 = 0.06$), but was strongly correlated with soil moisture content in soils ($R^2=0.85$). Livestock can cause significant bank damage, including bank destabilization and destruction of overhanging banks forage levels well below 25%. These impacts underscore the lack of utility of forage utilization standards as a protection measure, because overhanging banks are critical to all lifestages of all native salmonids. Unstable banks greatly increase sedimentation which severely reduces salmonid survival and causes pool loss (Buffington et al, 2002). Pools are also a critical element for the survival and production of native salmonids (USFS and USBLM, 1997a).

Henjum et al. (1994) concluded that forage utilization standards have little merit as a protection measure because they are ecologically irrelevant to the effects of grazing on aquatic resources. Based on a review of available scientific literature, Rhodes et al. (1994) came to similar conclusions. Field reviews indicate that forage utilization standards are an ineffective approach to restoration and protection in degraded reaches, wet meadows, seeps, and travel corridors because much of the habitat damage is caused by trampling and chiseling of banks and vegetation by livestock rather than forage utilization. The most effective way to protect such aquatic features is to eliminate grazing in these areas.

Assessments have repeatedly noted that alternative approaches have far greater merit than continued grazing with forage utilization standards. Henjum et al. (1994) recommended that grazing be eliminated until the conditions of affected streams were determined **and** ecologically sound protection measures and stream status indicators were adopted. USFS and USBLM (1997c) noted that the elimination of grazing was likely to result in far greater benefits for native trout than focusing on management strategies. Platts (1991) concluded that grazing elimination is the only management strategy completely consistent with the protection and restoration of salmonid habitats.

Reliance on forage utilization standards also causes other impacts, which are the most important with respect to the survival of native salmonids, to be completely ignored. As mentioned, these include elevated sedimentation, bank damage, channel widening, etc. This renders forage utilization standards without much merit as a protection measure.

Reliance on standards that require that grazing “does not degrade/does not retard recovery” is inadequate for the reasons previously described. These approaches inexorably involve shoddy analysis that consistently results in erroneous determinations that grazing will not degrade or retard recovery of salmonid habitat, regardless of the actual chronic and acute damage that inevitably occurs. NMFS (1998) and USFWS (1998) found, and the USFS conceded (Williams, 1997) that grazing damage to listed salmonid species continued to occur despite standards that required such damage be avoided. The primary cause was believed to be interpretation and application of these general standards to avoid degradation (Williams, 1997; NMFS, 1998; USFWS, 1998). Notably,

almost all of the grazing involved had forage utilization capped at <45%.

A forage utilization standard of 45% condemns affected riparian areas and salmonids to continued degradation. Clary (1999) documented on the Sawtooth NF that grazing with forage utilization levels of even 20-25% significantly retarded the recovery of width-depth ratio, fine sediment levels, willow growth, and streambank stability relative to ungrazed areas. Grazing with utilization of 35-50% of forage retarded the recovery still more. This plainly indicates that a forage utilization standard of 45% allows continued harm to native salmonid habitats and retards the needed recovery of habitats for these imperiled fish.

Conclusion

Recent land management history amply indicates that it is critical to have and enforce performance standards for habitat features needed by native fish to survive. It is just as important to couple these standards with standards that prohibit damaging activities from being implemented. The latter include:

- road construction (Rhodes et al., 1994; Espinosa et al., 1997)
- riparian grazing in systems with high water temperatures, degraded riparian vegetation, unstable banks, elevated sedimentation, with attributes rendering them susceptible livestock damage,¹⁰⁹ and/or where stream and riparian conditions are unknown (Anderson et al., 1993; Henjum et al., 1994; Rhodes et al., 1994; USFS, 2000)
- road construction, logging, and mining in unroaded areas or watersheds where fish protection is emphasized (Anderson et al., 1993; USFS et al., 1993; Henjum et al., 1994; Rhodes et al., 1994; NMFS, 1995; Espinosa et al., 1997; NMFS, 1998)
- road construction, logging, mining within several hundred feet of all perennial and non-perennial channels (USFS et al., 1993; Henjum et al., 1994; Rhodes et al., 1994; NMFS, 1995; Erman et al., 1996; USFS and USBLM, 1997a; Espinosa et al., 1997a)
- road construction, logging, or mining in watersheds where sedimentation or elevated peakflows are a problem or of concern (Rhodes et al., 1994; Espinosa et al., 1997a; NMFS, 1998)
- additional water withdrawals in watersheds where low flows are a problem or of concern (Rhodes et al., 1997a).

¹⁰⁹ Stream types that are highly vulnerable to grazing damage include all streams with banks comprised of non-cohesive fine-grained soils, perennially saturated banks, or lacking deep-rooted vegetation.

One additional overarching management need that should be required as a standard is:

- significant reductions in road mileage annually in all watersheds through obliteration, decommissioning, and abandonment (Rhodes et al., 1994; NMFS, 1998; USFWS, 1998).

As the USFS's past track record clearly indicates, the current surrogate standards offered up in the LRMPs for the Boise, Payette, Sawtooth National Forests ensure that plan implementation will result in continued aquatic resource damage at great fiscal and ecological expense.

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EDUCATION

1989: Doctoral candidacy degree in forest hydrology at the Univ. of Wash. Completed all requirements but dissertation.

1985: M.S. in Hydrology and Hydrogeology at the Univ. of Nev.-Reno. Thesis topic: The influence of seasonal stream runoff patterns on water quality.

1981: B.S. in Hydrology and Water Resources at the Univ. of Ariz.

RECENT PROFESSIONAL HISTORY

Sept. 2001 – present. Senior Conservation Hydrologist. Main duties: Analysis of effects of water and land use on streams and other aquatic resources, including native salmonids and their habitats; diagnosis of watershed and stream conditions; stream monitoring; development of programmatic and site-specific watershed and stream protection measures; project management. Recent projects (and clients): Analysis of potential effects of groundwater pumping on streamflow (Conf. Tribes of the Umatilla Indian Reservation, OR); diagnosis of watershed and stream conditions in an urbanized watershed (West Multnomah Soil and Water Conservation District, OR); diagnosis of effects of grazing on watershed and stream conditions in forested watersheds in N. California (Center for Biological Diversity (CBD)) and Oregon (Or. Natural Desert Assoc.); Coordinator and Aquatic Scientist for the Western Native Trout Campaign (CBD, Pacific Rivers Council (PRC), Biodiversity Conservation Alliance, Trout Unlimited).

Aug. 1990 – Sept. 2001. Consulting hydrologist for non-profit organizations. Past projects (and clients):

*ICL, TWS, PRC and IRU Appeal of SWIE FEIS and RODs for
The Boise, Payette, and Sawtooth LRMPs, page 98 of 105.*

hydrologic characterization of remnant marsh proposed as urban wildlife refuge/greenspace (Multnomah County Parks Department, OR); review of aquatic effects of: quarry expansion (Friends of Forest Park, OR), urban construction (homeowners consortium, W. Linn, OR); forest manipulations on streamflow (PRC).

Apr. 1989 – Sept. 2001. Senior Scientist-Hydrologist, Columbia River Inter-Tribal Fish Commission. Main duties: Administration and implementation of projects monitoring channel change from land management in Columbia River basin; development of programmatic and site-specific land management plans to ensure protection of watershed integrity, water quality and aquatic resources; development of restoration plans for watersheds degraded by grazing, roads, logging and mining; design of plans for monitoring watershed and stream erosion, sedimentation, water quality, and habitat conditions; review of land management plans for adequacy of protection of aquatic resources; field evaluation of watershed and channel conditions throughout the Columbia Basin; expert witness testimony; development of technical recommendations for policy staff for protection of natal habitat for anadromous fish; review of state and federal aquatic resource monitoring plans; report and proposal writing; and, participation in various state and federal technical work groups.

Aug. '84 -- Apr. '89. Research assistant, College of Forestry, Univ. of Wash. Main duties: analysis and interpretation of water quality-quantity data; technical report writing; design and maintenance of water chemistry and quantity monitoring network in a coastal forested watershed; training in data acquisition techniques; public presentation of findings.

Professional History (cont'd)

July -- Oct. 1987 and May -- Oct. 1988. Consulting hydrologist, Tahoe Regional Planning Association, CA and NV. Main duties: field delineation and mapping of riparian zones, wetlands, and erosion-prone areas.

June -- Sept. 1985 and July 1986. Research assistant, Dept. of Geophysics, Univ of Wash. Main duties: operation of field station for glacier research on Mt. Olympus, Wash.; measurement of snow and glacier melt rates; mapping of supra- and extra- glacial streams contributing to basal sub-glacial flow rates on surging and non-surging glaciers in the Alaska Range, Alaska.

Jan. 1984. Consultant with C.M. Skau, Reno, NV. Main duties: field evaluation of logging roads for erosion potential and sedimentation risk; recommendations for placement of future roads to minimize erosion and sediment delivery to fish-bearing streams in coastal Northern California; report preparation.

Oct. 1983 -- June 1984. Hydrologic Tech., USGS, Carson City, NV. Main duties: aid in development and calibration of predictive water quality model for the Truckee River; statistical analysis of water quality data; identification and quantification of non-point sources of nutrients to Truckee River, NV.

Aug. 1981 -- Sept. 1983. Research Assistant, Univ. of Nev.-Reno. Main duties: design and installation of instrument network to monitor water chemistry and quantity in a small, forested alpine watershed in the Sierra Nevada; water quality sampling; data interpretation and management; preparation of reports, grant proposals, and publications, computer programming for data reduction and storage; mapping of geology, soils and runoff-producing areas; and, training of field technicians.

Feb. -- May 1981. Water Quality Intern, Pima Assoc. of Gov'ts., Tucson, AZ. Main duties: water quality sampling of agricultural production wells; mapping of groundwater levels; and, coordination of sampling efforts.

PROFESSIONAL SERVICE

April 2002. Invited Panelist Speaker, Restoring Public Lands: Reclaiming the Concept of Forest Restoration, "Watersheds and Fisheries: Restoration Needs for Trout Habitats," Univ. of Colo., Boulder, CO

Mar 2002. Invited Panelist Speaker, International Environmental Law Conference: "Soils Impacts and Effects on Trout Habitat," Univ. of Ore, Eugene, OR

Mar. 2001. Invited Panelist Speaker, International Environmental Law Conference: "NFMA and Salmon Habitat Protection," Univ. of Ore., Eugene, OR.

May 2000. Invited speaker, 5th National Tribal Conf. on Environmental Management: "Federal Land Management's Effects on Critical Habitat for Endangered Salmon," Lincoln City, OR

July 1998-2000. Peer Reviewer for N. Amer. J. Fish for papers related to the sedimentation of fish habitat in response to erosion from land uses.

Feb. 1998. Invited Speaker, Oregon AFS Annual meeting: "Adaptive management: Is it really adaptive?" Sunriver, OR

May 1996-2000. Guest lecturer, OSU graduate course on riparian and wetland ecology, Corvallis, OR

Curriculum Vitae: J.J. Rhodes

page 3

Professional Service (cont'd)

Apr. 1995. Invited speaker, Pacific Rivers Council Workshop on Watershed Analysis and Salvage Logging, Wenatchee, Wash.

Apr. 1995. Invited speaker, Oregon State Univ. Dept of Fisheries and Wildlife Seminar, Corvallis, OR

Apr. 1995. Invited speaker, American Fisheries Society North Pacific International Chapter, Annual Meeting, Vancouver B.C., Can.

Mar. 1995. Invited speaker, American Fisheries Society Idaho Chapter Annual Meeting, Boise, ID.

Nov. 1994. Invited speaker, President's Council on Sustainable Development Workshop, Yakima, WA.

Sept. 1994. Invited speaker, Oregon Water Resources Research Institute Streambank Protection and Restoration Conference: "Biological Methods to Stabilize Streambanks--From Theory to Practice," Portland, OR.

Mar.-April, 1994. Peer-reviewer for Henjum et al., 1994. Interim Protection for Late Successional Forests, Fisheries, and Watersheds: National Forests East of The Cascade Crest, Oregon and Washington. The Wildlife Soc., Bethesda, MD.

Jan. 1993-Sept. 1995. Member, Oregon Department of Environmental Quality's Technical Advisory Committee for Triennial Review of the State Water Temperature Standard.

Mar. 1993. Invited speaker, Northwest Scientific Association Symposium: "Cumulative Effects of Land Management Practices on Anadromous Salmonids," La Grande, OR.

Aug. 1992 -- Sept. 1992. Member, Ad Hoc Consultant Selection Committee for Portland Water Bureau Study of Future Water Supply Needs.

May 1992. Invited Speaker, US Forest Service, Pacific Northwest Region, Regional Workshop on Monitoring Soil and Water Resources, Bend, OR.

May 1992. Invited Speaker, Northern Arizona University, School of Forestry, Graduate Seminar Series, Flagstaff, AZ.

Jan. 1991 -- Mar. 1995. Member, Technical Work Group: Upper Grande Ronde River Anadromous Fish Habitat Protection, Restoration and Monitoring Plan.

Aug. 1989 -- Feb. 1990. Member, Technical Advisory Committee to Oregon Department of Environmental Quality for development of definitions for level of beneficial use impairment by nonpoint sources.

May 1989 -- Jan. 1991. Member, Nonpoint Source Technical Advisory Committee to Idaho Department of Environmental Quality: Coordinated Nonpoint Source Monitoring Program For Idaho.

PUBLICATIONS

Peer-Reviewed:

Rhodes, J.J., C.M. Skau, and W.M. Melgin, 1984. Nitrate-nitrogen flux in a forested watershed -- Lake Tahoe, USA. In: Recent Investigations in the Zone of Aeration, Proc. of Inter. Symp., Munich, West Germany, 1984, P. Udluft, B. Merkel, and K. Prosl (Editors), pp. 671-680.

Rhodes, J.J., 1985. A Reconnaissance of Hydrologic Transport of Nitrate in An Undisturbed Forested Watershed Near Lake Tahoe. M.S. thesis, Univ. of Nev. Reno, 254 pp.

Rhodes, J.J., C.M. Skau, and J.C. Brown, 1985. An areally intensive approach to hydrologic nutrient transport in forested watersheds. In: The Forest-Atmosphere Interaction, B.A. Hutchison and B.B. Hicks (Editors), pp. 255-270.

Rhodes, J.J., C.M. Skau, D. Greenlee, and D.L. Brown, 1985. Quantification of nitrate uptake by riparian forests and wetlands in an undisturbed headwaters watershed. US Forest Service Gen. Tech. Rept. RM-120.

Rhodes, J.J., C.M. Skau, and D. Greenlee, 1986. The role of snowcover on diurnal nitrate concentration patterns in streamflow from a forested watershed in the Sierra Nevada, Nevada, USA. In: Proc. of AWRA Symposium: Cold Regions Hydrology, Fairbanks Alaska, 1986, D.L. Kane (Editor), pp. 157-166.

Rhodes, J.J., R.L. Armstrong, and S.G. Warren, 1987. Mode of formation of "ablation hollows" controlled by dirt content of snow, J. Glaciology, **33**: 135-139.

R.L. Edmonds, T.B. Thomas, and J.J. Rhodes, 1991. Canopy and soil modification of precipitation chemistry in a temperate rain forest. Soil Soc. of Amer. J., **55**: 1685-1693.

Rhodes, J.J., McCullough, D.A., and Espinosa Jr., F.A., 1994. A Coarse Screening Process for Evaluation of the Effects of Land Management Activities on Salmon Spawning and Rearing Habitat in ESA Consultations. CRITFC Tech. Rept. 94-4, Portland, OR

Rhodes, J.J. 1995. A Comparison and Evaluation of Existing Land Management Plans Affecting Spawning and Rearing Habitat of Snake River Basin Salmon Species Listed Under the Endangered Species Act, CRITFC, Portland, OR

Rhodes, J.J. 1996. Description and Evaluation of Some Available Models for Estimating the Effects of Land Management Plans on Sediment Delivery, Channel Substrate, and Water Temperature, CRITFC, Portland, OR

Espinosa, F.A., Rhodes, J.J., and McCullough, D. A. 1997. The failure of existing plans to protect salmon habitat on the Clearwater National Forest in Idaho. J. Env. Management **49**: 205-230.

Rhodes, J.J., and Purser, M.D., 1998. Overwinter sedimentation of clean gravels in simulated redds in the upper Grande Ronde River and nearby streams in northeastern Oregon, USA: Implications for the survival of threatened spring chinook salmon, Forest-Fish Conference: Land Management Affecting Aquatic Ecosystems, Proc. Forest-Fish Conf., May 1-4, 1996, Calgary, Alberta, Canada. Nat. Resour. Can., Can. For. Serv. Nort. For. Cent., Edmonton, Alberta. Inf. Rep. NOR-X-356, pp: 403-412.

Technical Reports:

1986. Annual Report on Watershed Studies at Olympic National Park. College of Forestry, Univ. of Wash., Seattle, Wash. (Co-authors: R.L. Edmonds, T.B. Thomas, T.W. Cundy)

1987. Annual Report on Watershed Studies at Olympic National Park. College of Forestry, Univ. of Wash., Seattle, Wash. (Co-authors: R.L. Edmonds, T.B. Thomas, T.W. Cundy)

1988. Annual Report on Watershed Studies at Olympic National Park. College of Forestry, Univ. of Wash., Seattle, Wash. (Co-authors: R.L. Edmonds, T.B. Thomas, T.W. Cundy)

1989. Annual Report on Watershed Studies at Olympic National Park. College of Forestry, Univ. of Wash., Seattle, Wash. (Co-authors: R.L. Edmonds, T.B. Thomas, T.W. Cundy)

1990. Coordinated Nonpoint Source Monitoring Program For Idaho. Idaho Dept. of Environmental Quality, Boise, Idaho. (Co-authors: B. Clark, D. McGreer, W. Reid, T. Burton, W. Low, I. Urnovitz, D. McCullough, T. Litke)

1992. The Upper Grande Ronde River Anadromous Fish Habitat Protection, Restoration and Monitoring Plan. Wallowa-Whitman National Forest, Baker, OR (Co-authors: M. Purser, P. Boehne, R.E. Gill, R.L. Beschta, J.R. Sedell, B. McIntosh, J. Zakel, J.W. Anderson, D. Bryson, S. Howes, R. George).

1992. Salmon Recovery Program for the Columbia River Basin: An Advisory Report for the US Congress, Col. Riv. Inter-Tribal Fish Comm., Portland, OR (Co-authors: P.R. Mundy, D.A. McCullough, M.L. Cuenco, T.W. Backman, D. Dompier, P. O'Toole, S. Whitman, E. Larson, B. Watson, G. James).

1993. A comprehensive approach to restoring habitat conditions needed to protect threatened salmon species in a severely degraded river--The Upper Grande Ronde River Anadromous Fish Habitat Protection, Restoration and Monitoring Plan. USFS Gen. Tech. Rept RM-226, pp. 175-179. (Co-authors: J.W. Anderson, R.L. Beschta, P. Boehne, D. Bryson, R.E. Gill, S. Howes, B. McIntosh, M.D. Purser and J. Zakel).

1993. Dante's Video Guide to Habitat Conditions for Wild Spring Chinook Salmon, Steelhead and Bull Trout in the John Day Basin, Oregon. (Video) Presented at AFS National Meeting, Portland, Or, Aug. 29-31. (Co-authors: R. Taylor and M. Purser).

1995. Wildfire and Salvage Logging: Recommendations for Ecologically Sound Post-Fire Salvage Logging and Other Post-Fire Treatments on Federal Lands in the West. Pacific Rivers Council, Portland, OR (Co-authors: R. Beschta, C. Frissell, R. Gresswell, R. Hauer, J. Karr, G. Minshall, D. Perry).

1998. Adaptive management: Is it really adaptive? Abstracts: Oregon AFS Annual Meeting, Feb. 11-13, 1998, p. 31.

1998. Thinning For Increased Water Yield in the Sierra Nevada: Free Lunch or Pie in the Sky? Pacific Rivers Council, Portland, OR. (Co-author: M. Purser)

1999. Annual Project Report: Watershed Evaluation and Aquatic Habitat Response to Recent Storms. Bonneville Power Administration (BPA), Portland, OR. (Co-author: C. Huntington)

Curriculum Vitae: J.J. Rhodes

page 6

Publications (cont'd)

1999. Annual Project Report: Monitoring Fine Sediment in Salmon Habitat in John Day and Grande Ronde Rivers. BPA, Portland, OR (Co-author: M. Purser)

2000. Annual Project Report: Watershed Evaluation and Aquatic Habitat Response to Recent Storms. BPA, Portland, OR. (Co-author: C. Huntington)

2000. Annual Project Report: Monitoring Fine Sediment in Salmon Habitat in John Day and Grande Ronde Rivers. (Co-author: M. J. Greene)

2001. Annual Project Report: Monitoring Fine Sediment in Salmon Habitat in John Day and Grande Ronde Rivers. BPA, Portland, OR. (Co-author: M. J. Greene)

2001. Imperiled Western Trout and the Importance of Roadless Areas. Western Native Trout Campaign, Center for Biological Diversity, Tucson, Az. (Co-authors: J. Kessler, C. Bradley, and J. Wood)

2002. Tryon Creek Watershed: Overview of Existing Conditions, Data Gaps, and Recommendations for the Protection and Restoration of Aquatic Resources. West Multnomah Soil and Water Conservation District, Portland, OR

2002. An Analysis of Trout and Salmon Status and Conservation Values of Potential Wilderness Candidates in Idaho and Eastern Washington. Western Native Trout Campaign, Center for Biological Diversity, Tucson, AZ. (Co-authors: C. Bradley, J. Kessler, C. Frissell)

In press. Stream and Fish Habitat Conditions in Tryon Creek: Their Likely Causes and Ramifications for Salmonids. Proceedings of Urban Ecology and Conservation Symposium, January 24, 2003, Portland, OR. Portland State University, Environmental Sciences and Resources, Portland, OR

Semi-Technical Publications:

1993. Dam the analysis--heal streams instead. The Assoc. of Forest Service Employees for Env. Ethics Inner Voice, 5(6): 1, 4-5.

1994. Invited Preface to Northwest Science Special Issue--Environmental History of River Basins in Eastern Oregon and Washington. Northwest Sci., 68.

PROJECT MANAGEMENT

1993-1996. Technical Assistance Contract with NMFS to produce technical guidance for ESA consultations for effects of land management on critical habitat for listed Columbia basin salmon. Primary duties: Co-Primary Investigator; primary author of peer-reviewed reports including proposed ESA consultation guidelines for effects on salmon habitat (Rhodes et al., 1994), evaluation and comparison of compatibility of land management plans with protection of critical salmon habitat (Rhodes, 1995), and evaluation of models for estimating land management effects on salmon habitat (Rhodes, 1996); review and synthesis of available scientific literature; budget preparation and tracking; coordination with subcontractors and grantor

*ICL, TWS, PRC and IRU Appeal of SWIE FEIS and RODs for
The Boise, Payette, and Sawtooth LRMPs, page 104 of 105.*

representatives. Total budget: \$230,000

Curriculum Vitae: **J.J. Rhodes**

page 7

Project Management (cont'd)

1998-2000. Watershed Evaluation and Aquatic Habitat Response to Recent Storms. Main duties: Primary Investigator; design and implementation of monitoring methods (erosion, runoff, etc.), coordination with subcontracting fish biologists in 10 watersheds with differing levels of grazing and logging within 3 subbasins in Idaho, Washington, and Oregon; training of field technicians; data analysis and synthesis; subcontract administration; proposal development; technical and progress report preparation; budget development and tracking; coordination with grantor representatives. Total budget: \$164,000.

1998-2000. Evaluation of Effects of Grazing on Rate of Salmon Habitat Recovery. Main duties: Primary Investigator; design and implementation of monitoring methods, training of field technician; data analysis and synthesis; proposal development; preparation of progress reports; budget development and tracking; coordination with grantor representatives. Total budget: \$73,000

1998-2001. Monitoring Fine Sediment Levels in Salmon Habitat in Grande Ronde and John Day Rivers. Main duties: Primary Investigator; design and implementation of methods for monitoring fine sediment levels in four rivers; field technician training; data analysis and synthesis; subcontract administration; proposal development; progress and technical report preparation; budget development and tracking; coordination with grantor representatives. Total budget: \$128,000.

2001-2002. Western Native Trout Campaign, Aquatic Scientist and Coordinator. Main duties: Provide oversight and assure scientific integrity of all reports and work products; coordinate conservation efforts among campaign member organizations; coordinate campaign efforts with other groups working to protect and restore trout habitats and populations; budget tracking; technical and progress report preparation.

HONORS AND AWARDS

1996. Leadership and Excellence. Col. River Inter-Tribal Fish Comm., Portland, OR

1991. Employee of the Year. Col. River Inter-Tribal Fish Comm., Portland, OR

1984. Academic Recruitment Scholarship for Outstanding Graduate Prospect. Univ. of Wash, Seattle, Wash.

1982. Maxey Award for Outstanding Graduate Student Paper in Hydrology. Univ. of Nev.-Reno.

1980. Winslow and Myron Reuben Scholarship for Outstanding Undergraduate in the Earth Sciences. Univ. of Ariz., Tucson, Az.

ADDITIONAL TRAINING

1993. USFWS Water Temperature Modeling via SNTMP

1991. USFWS Introduction to IFIM Investigations