BUSSEL 484
FEIS

APPENDIX I:

Comments on DEIS
and
Forest Service Responses

"Ryan Dickison"
<ryan@smgazette.com>
03/31/2008 11:02 AM

To <chudson@fs.fed.us>
cc
bcc
Subject Bussel 484

Cornie,

I am interested in making comments on upcoming projects in the St. Joe Ranger District area. I am not sure how the scoping notices work or how you can get on specific mailings so comments can be made. I feel it is important for industry personal to make comments on sales in our area. Projects like the Bussel 484 are important to the environment, wildlife, and to the local communities. It would be nice to see more sales like this get through the system in a format which allows the USFS to make money and for industry to have timber volume to operate. **1-1**

Sincerely,

Ryan Dickison

Regulus Stud Mills, Inc.
"Quality that you can build on since 1959"
P.O. Box 247
St. Maries, ID 83861

Office: 208-245-6502
Fax: 208-245-4387
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Letter #2; M. Mihelich; Kootenai Environmental Alliance; April 1, 2008

Kootenai Environmental Alliance

P.O. Box 1598 Coeur d'Alene, ID 83816-1598

April 7, 2008

Cornie Hudson
Bussel 484 Project
St. Joe Ranger District
222 S. 7th St., Suite 1
St. Maries, ID 83861

Dear Ms. Hudson:

I would like the enclosed Forest Service letter to be included as part of the Bussel 484 Project Official Record. The issue of assigned timber targets directly relates to the Bussel 484 Project. 2-1

The Official Record also need to include a copy of the IPNF FY 2007 and FY 2008 Final Budge Instructions that pertain to the assigned timber targets for the St. Joe Ranger District in order to be in compliance with public information requirements of NEPA at 40 CFR 1500.1(b).

Sincerely,

Mike Mihelich
Forest Watch Coordinator 208-667-9093

Enclosure: IPNF letter dated April 1, 2008

Cornie Hudson
Bussel 484 Project Team Leader
St. Joe Ranger District
222 S. 7th St., Suite 1
St. Maries, ID 83861

April 18, 2008

Dear Ms. Hudson:

The following comments and issues of concern are being submitted in response to the Bussel 484 Draft EIS (DEIS). On July 13, 2005 KEA submitted a comment letter in response to the Bussel 484 scoping letter. These comments are being submitted electronically to comments-northern-idpanhandle-stjoe@fs.fed.us

Both Action Alternatives described in the DEIS would log 2,239 acres and remove approximately 26 million board feet (MMBF). The very significant logging associated with each Action Alternative would result in the removal on average of over 11,000 board feet per acre. Alternative B is the proposed Action. Along with logging 2,239 acres, this Alternative would include 5.5 miles of new road construction that remain system roads, 0.3 miles of temporary road construction, and 6.7 miles of road reconstruction. Alternative C would result in no road construction but logging would occur on 2,239 acres.

1. Environmental Management Systems (EMS):

The EMS process became effective in June 2006 for the IPNF. Included as part of EMS are ISO 14001 Element 4.5.2 – evaluation of compliance, and Element 4.5.3 – nonconformity, corrective action and preventive action.

The IPNF's ISO reference 4.5.2 Evaluation of Environmental Compliance – Plan for Watershed – FY06 consists of three pages. On page one the following language is found in the Procedure section that concerns Pre-action compliance checks. "In reference to the CWA, EO11990, NEPA analyses will be reviewed for consideration of:

Direct and indirect environmental effects of ground-disturbing activities

Level of analysis commensurate with the scope and intensity of the ground-disturbing activities

The need for, and the identification of BMPs or mitigation practices to avoid or minimize environmental effects

If apparent non-compliance is found, this will be documented, reported to the Ecosystem Staff Officer and District Ranger, and corrected with documentation before the planning cycle is complete".

The DEIS does not mention EMS. The FEIS needs to address the EMS requirements that apply to the St. Joe Ranger District.

3-1

The FEIS needs to indicate whether any part of Element 4.5.2 applies to the Bussel project area and the proposed logging and road construction activities.

If EMS requirements including Element 4.5.3 apply to this project, the FEIS needs to indicate whether any Corrective/Preventive Action Request (CAR) been filed by St. Joe Ranger District personnel after June 1, 2006 relating to travel management/resource damage and/or aquatics/fisheries issues in the project area and the cumulative effects analysis (CEA) area.

3-2

In the event that the CAR form was used by Forest Service personnel and submitted to the District Ranger, a copy of each CAR needs to be included in the project files. If no action has been taken in response to the submission of one or more CAR forms, the FEIS needs to include expert agency comments that indicate why no actions were taken.

2. Best Available Science:

There is a Forest Service Washington Office (WO) Memo dated May 2, 2007, that concerns best available science. The subject of this Memo is Advice on documenting "Best Available Science". The Acting Director of Ecosystem Management Coordination signed the Memo. The file code of this Memo is: 1920/1950.

The following statement is included in the Memo. "Specifically, the NEPA document should identify methods used, reference scientific sources relied on, discuss responsible opposing views, and disclose incomplete or unavailable information, scientific uncertainty, and risk. See 40 CFR 1502.9(b), 1502.22, 1502.24."

The WO Memo and the NEPA regulations cited in the Memo directly applies to the Bussel 484 logging project. There are numerous instances in the water section of the DEIS where the National Council for Air and Stream Improvement (NCASI) technical bulletin No. 776 is cited. The NCASI document indicates the complete title is National Council of the Paper Industry for Air and Stream Improvement. The caption on the page that contains the President's Note under the words NCASI states "serving the environmental research needs of the forest products industry since 1943."

The DEIS does not mention the WO Memo. The analysis in the DEIS does not mention the NEPA regulations that apply regarding responsible opposing views. The DEIS does not include responsible opposing views concerning logging and aquatic issues, the use of computer models, impacts to fisheries and wildlife, or insects and logging activities.

3-3

Since the DEIS extensively cites a publication released by the forest products industry, the FEIS is required to also cite responsible opposing views from scientists not associated with the forest products industry. The WO Memo also needs to be included as part of the official record.

3-4

3. Fire/NEPA Issues:

The Summary page of the DEIS in the purpose and need portion includes the following sentences. "Manage the vegetative resources to maintain or improve resilience to disturbances such as insects, disease and fire:

- Reduce the potential for large, severe wildfires while promoting conditions for safe and effective fire management."

It does not appear the District used QuickBird imagery as part of the fire analysis. The Journal of Geophysical Research, Vol. 111, G04S04, 0148-0227/06/2005, in the article

"*Using object-oriented classification and high-resolution imagery to map fuel types in a Mediterranean region*", Arroyo. Lara A, et al, indicated "QuickBird is the highest-resolution commercial remote sensing satellite now operating, offering a panchromatic channel (from 0.61 m resolution) and 4 multispectral channels (2.44 m resolution) from the red, blue, green, and near-infrared (NIR) portions of the spectrum."

If the District is not using QuickBird, the FEIS needs to describe the high-resolution imagery being used by the District. The project files need to include the high-resolution imagery that is being used as part of the fire analysis for this project. The most current photos that are being used for the fire analysis also need to be included in the project files. **3-5**

3a. Fire research:

The official U.S. Forest Service website includes the fire section titled Fire and Aviation Management. Located within Fire and Aviation Management is Fire Management Today. The following statement is found in the Fire Management Today section. "Founded in 1936, Fire Management Today has served the wildland fire community for more than 60 years as clearinghouse for new techniques, technologies, and ideas." Until 1961, the publication was known as Fire Control Notes.

In 1955 Fire Control Notes published a paper by C. M. Countryman titled "Old Growth conversion also converts fire climate", Fire Control Notes 17(4): 15-19. In this paper Countryman studied wildfire behavior after logging. He found that fires in logged areas burned more severe than in stands that hadn't been logged. The paper by Countryman indicated the increase in fire severity and rate of spread is due in part to logging slash left after logging operations. **3-6**

The project files need to include the Fire Management Today publications that have been published since 2000, including Volume 61, No. 2 Spring 2001. The information in Volume 61 directly relates to fire issues in the project area. The following statements are found on page 15 of Volume 61, No.2. "Few empirical studies have tested the relationship, even on a limited basis, between thinning or other fuels treatments and fire behavior. These studies, supported by anecdotal information and the analysis of recent fires, suggest that thinning treatments have highly variable results. In some instances, thinning intended to reduce the fire hazard appeared to have the opposite effects (Huff and others 1995; van Wagtendonk 1996; Weatherspoon 1996). Thinning might reduce fuels loads, but it also allows more solar radiation and wind to reach the forest floor. The net effect is often reduced fuel moisture and increased flammability (Agee 1997; Countryman 1955)."

There is the issue of the new openings that were created by previous FS timber sales and the resulting new growth of brush, shrubs, plants, and small trees as a result of sunlight in the new openings. The fire analysis in the DEIS does not indicate whether a lack of funding has prevented FS fuels reduction activities in the project area designed to remove bushes, shrubs, and small trees that grew into the new openings that were created by the past timber sales. **3-7**

The scientific papers that examine the long-term fuel loading issues associated with the growth of brush, shrubs, plants and small trees in new openings need to be included in the project files.

3-8 If no monitoring data has been acquired regarding the current fuel loadings that exist in the logging units within and adjacent to the project area, the fire analysis in the FEIS needs to describe the methods that were used to calculate the current fuel loadings in the existing logging units in the project area.

3-9 The FEIS needs to include high quality data that indicates the yearly budget that would be necessary to conduct yearly fuel loading monitoring if this project is implemented and over 2,200 acres are logged. If this information is unknown or unavailable, the FEIS needs to indicate this information is missing.

3b. Fire model FFE-FVS:

Concerning the Fire and Fuels Extension of the Forest Vegetation Simulator (FFE-FVS) the following Forest Service information is being submitted. *USDA Forest Service Pacific Northwest Research Station General Technical Report "Guide to Fuel Treatments in Dry Forests of the Western United States: Assessing Forest Structure and Fire Hazard, April 2007,* PNW-GTR-686. This document can be found at http.www.fs.fed.us/pnw.

The discussions include pages one through 18. Included in the discussions on these pages is a section concerning limitations of FFE-FVS simulations, page eight. The following statement is found on page eight. "Discontinuous behavior is particularly evident in indicators that depend in part on canopy base height: canopy base height itself, torching index, potential tree mortality, and fire type."

The following statements on shrubs are found on page eight. "Live fuels *(*herbaceous plants) are poorly represented in FFE-FVS" and "Canopy cover, overstory composition, habitat type, and stand history influence selection of fuel models. Live fuels are not dynamically tracked and simulated in FFE-FVS.*"*

On page 16 there is a section titled FFE-FVS Output and Expert Judgment. This section begins with the following statements. "*The Guide is intended to inform decisions-not make decisions. It is generally inappropriate for users to directly apply information from the Guide to management and planning issues. In fact, doing so could sometimes cause significant errors, owing to shortcomings of the modeling approach described above, and differences between example scenarios and local stand conditions*." The second paragraph on page 16 begins with the following statement. "*Simulation models like FFE-FVS attempt to mathematically represent complex interactions for which a through understanding and adequate data do not exist.*"

3-10 It appears FFE works on a 1-year time step and in contrast, FVS works on a 5 to 10-year time step. The FEIS needs to indicate whether FFE-FVS used for any part of the fire analysis.

3c. Fire/ additional models:

On page 61 the DEIS, the BEHAVE model is mentioned. "BEHAVE, Fire Behavior Prediction and Fuel Modeling System, was used to predict fire behavior given current, post harvest, and post harvest slash treatment conditions."

Was the NEXUS model and BehavePlus used for any portion of the fire analysis? If they were, the FEIS should indicate whether these models spatial fire models and indicate if the fire models being used by the Forest Service are designed to only work at an individual stand level. 3-11

Concerning Behave Plus, is the District using BehavePlus 3.0.1? If the District is using 3.0.1, is it accurate to state that even with the addition of 42 fuels models there remains a problem with displaying some of the differences in potential fire behavior that may be present both before and after fuels treatments?

Was FARSITE 4.0.4 or FRCC used for any portion of the fire analysis?

If these models were used what are the limitations of each model as they relate to the fire analysis in the project area? 3-11

It does not appear the SIMPLLE model was used as part of the fire analysis. If this model was not used were any other fire models used as part of analysis of stand replacing fires? 3-12

On page 62 of the DEIS Fuel Model 8 and Fuel Model 10 are mentioned. It appears the fire and fuels analysis did not use the 13 fuel model or the 40 fuel model.

The fire and fuels analysis in the FEIS needs to supply expert agency comments with quality information that that indicate why the 13 and 40 fuels models were not used.

The fire and fuels analysis also needs to include high quality information that describes the differences between the 13 fuel model and the 40 fuel model, and include expert agency comments that indicate whether the 40 fuel model is superior to the 13 fuel model. 3-13

The models that are considered to be state of the art by the fire research community need to be listed in the fire section of the FEIS. The models considered to be state of the art by the FS, and that are being used by the St. Joe Ranger District need to be described in the FEIS. 3-14

Expert agency comments are required that indicate the significant limitations of each fire model being used, including Fuel Models 8 and 10. If there are one or models being used by the Forest Service that cannot be run on personal computers in order to provide scientifically accurate results, the names of the models need to be provided in the FEIS.

<u>3d. Fire/USDA Audit</u>:

Since one of the purposes of the logging project is to reduce the potential for large, severe wildfire the following information from a USDA OIG Report is directly relevant to the proposed timber sale.

U.S. Department of Agriculture, Office of Inspector General –Southeast Region, Audit Report "Implementation of the Healthy Forests Initiative" Report No. 0860-6-AT, September 2006. 28 pages [USDA/OIG-A/0860/-6-AT]

All of the following excerpts are taken from the Executive Summary.

"Our audit found the FS lacks a consistent analytical process for assessing the level of risk that communities face from wildland fire and determining if a hazardous fuels project is cost beneficial. FS has not developed specific national guidance for weighing the risks against the benefits of fuels treatment and restoration projects. This may result in FS not being able to reduce the total number of acres at risk to severe wildland fire or assure maintenance of acres improved by fuels treatment in the most efficient and cost effective manner."

"The Forest Service does not have the ability to ensure that the most important projects are funded first."

"Also, FS' controls for identifying and prioritizing hazardous fuels projects do not ensure that the highest priority fuels reduction projects are being implemented."

FS' performance measures and reporting standards are also not characterized in any qualitative format. The measures and standards do not communicate whether the treatment of an acre has resulted in changing its condition class. They do not address whether a hazardous fuels project reduces the risk from catastrophic wildland fire."

"There are no controls in place to prevent funds from being allocated to projects in order to achieve targets of acres treated instead of reducing the most risk."

"The lack of specific controls for allocating hazardous fuels reduction funds may result in Forest Service funds not being used as intended by the HFI and the Healthy Forests Restoration Act (HFRA). The Forest Service cannot clearly identify the level of risk to communities from wildfire. It cannot demonstrate to stakeholders its accomplishments in reducing those risks with the funds provided. Without this ability the Forest Service cannot adequately justify and defend increasing or decreasing funding when the need arises."

"The focus has been on achieving firm annual targets (output) that are measured in the number of acres treated. However, these acres are not homogenous. Some acres of hazardous fuels create much more risk to communities and resources than others."

"The emphasis on achieving acres treated is overriding the need to accomplish more effective and better-integrated treatments that achieve the desired fuel and restoration outcomes."

The DEIS does not indicate whether any fuels reduction targets been assigned to the Bussel 484 logging project. If fuels reduction targets have been assigned, the FEIS needs
3-15 to provide expert agency comments regarding assigned fuels reduction targets. The FEIS also needs to provide expert agency comments that indicate whether any portion of the USDA OIG Audit apply to this project.

4. Aquatics/Water Quality:

There are a number of Clean Water Act (Pub. L. 92-500) regulations that apply to the proposed logging project, including Sec. 313(a) and 40 CFR 130.3, 130.7, and 130.12(c).

Idaho Code at 39-3603 states, "The existing instream beneficial uses of each water body and the level of water quality necessary to protect those uses shall be maintained and protected."

Idaho Water Quality Standards (WQS) apply to this logging project. Idaho WQS at IDAPA 58.01.02.003.40 defines existing beneficial use or uses with the following language. "Those beneficial uses actually attained in waters on or after November 28, 1975, whether or not they are designated for those waters in Idaho Department of Environmental Quality Rules, IDAPA 58.01.02, "Water Quality Standards and Wastewater Treatment Requirements"."

IDAPA at 58.01.02.003.70 defines non point source activities and included in the list of non-point activities are 70iii, Silviculture, and 70g, runoff from storms or other weather related events.

IDAPA at 58.01.02.050.02b states, "In all cases, existing beneficial uses of the waters of the state will be protected."

The Anti-degradation Policy for the State of Idaho is found at IDAPA at 58.01.02.051.01. "The existing in stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected."

It is a violation of Idaho Water Quality Standards to discharge a pollutant from a single source or in combination with pollutants discharged from other sources in concentrations or in manner that will or can be expected to result in violation of the water quality standards applicable to a receiving water body or downstream waters, or which will injure designated beneficial uses, IDAPA at 58.01.02.080.01a and 01b.

IDAPA at 58.01.02.04.054 concerns water quality limited waters and TMDLs. For a high priority water quality limited water body, 054.04 requires that the total load in the watershed must remain constant or decrease. This requirement applies to the Bussel project area. **3-16**

IDAPA at 58.01.02.080.02 concerns Short Term Activity Exemption. If Idaho DEQ has authorized the Forest Service short-term activities that allow for violations of Water Quality Standards in any of the watersheds in the project area or CEA area, this information is required to be in the FEIS. If there is a DEQ authorization, a copy of the authorization needs to be part of the official record. **3-17**

In Chapter 2 of the DEIS, page 10, the following statement is made. “The State of Idaho has set total maximum daily loads (TMDLs) for sediment in Bear Creek and Little Bear Creek that require a reduction in sediment.” It is also stated on page 203 of the DEIS “Bussel Creek is listed on Idaho’s 2002 303(d) list of Water Quality Limited Water Bodies (SW-17).”

The FEIS needs to indicate Idaho DEQ has released a 2008 Integrated Report and include information from the 2008 Report that pertains to the water bodies within and downstream of the project area. **3-18**

On page 203 it is also stated that the TMDL requires a reduction of 14 tons/year from NFS lands and also requires an increase in shade canopy by 20-80% in Bear and Little Bear Creeks. The discussions that follow concerning the WATSED model and cumulative effects analysis relating to fisheries and water issues call into question as to whether the proposed logging and road construction activities would in fact result in compliance with Idaho WQS and Clean Water Act regulations.

The Fisheries analysis in the DEIS, page 100, states that conifers and shrubs would be planted in some portions of riparian areas, over a period of 10 to 15 years. There is no discussion on page 100 concerning the required funding over a 10 to 15-time period that would be necessary to perform the riparian planting. NEPA at 40 CFR 1500.1(b) requires expert agency comments. The FEIS needs to indicate where the required funding would come from for the riparian planting. The FEIS also needs to indicate whether the proposed riparian planting is being calculated into the shade requirements associated with the temperature requirements of the TMDL. 3-19

5. Army Corps of Engineers Regulations:

Under the CWA it is unlawful to discharge any pollutant into "waters of the U.S. from a point source without a permit. The CWA regulates forest roads as a non-point source and Section 404 of the CWA concerns water and road issues. 33 CFR 323.4 regulations describe discharges that do not require permits. 33 CFR 323.4 at (a)(6) regulations concern construction or maintenance of forest roads. There are a number of baseline provisions listed in (a)(6) including the following.

"All roads, temporary or permanent, shall be located sufficiently far from streams or other water bodies (except for portions of such roads which must cross water bodies) to minimize discharges of dredged or fill material into waters of the U.S."

"The road fill shall be bridged, culverted, or otherwise designed to prevent the restriction of expected flood flows"

"In designing, constructing, and maintaining roads, vegetative disturbance in the waters of the U.S. shall be kept to a minimum"

"The design, construction, and maintenance of the road crossing shall not disrupt the migration or other movement of those species of aquatic life inhabiting the water body"

"The discharge shall not take, or jeopardize the continued existence of, a threatened or endangered species as defined under the Endangered Species Act, or adversely modify or destroy the critical habitat of such species"

The 33 CFR 323.4 regulations also contain that following statement. "Any discharge of dredged or fill material into waters of the United States incidental to any of the activities identified in paragraphs (a) (1) through (6) of this section must have a permit if it is part of an activity whose purpose is to convert an area of the waters of the United States into a use to which it was not previously subject, where the flow or circulation of waters of the United States may be impaired or the reach of such waters reduced." [Emphasis added]

Concerning the water bodies in the project area, the DEIS does not indicate whether there has been any discharge of fill material into waters of the United States as a result of Forest Service logging activities and/or road construction/reconstruction activities.

3-20

If there has been discharge of fill material from one or more areas located in the project area into waters of the United States, the FEIS needs to include a summary of the fisheries or hydrology reports prepared by District personnel or IPNF personnel. The actual reports need to be included in the project files.

5a. Discharge of material/CWA & Idaho WQS:

If there has been one or more events in the project area that have resulted in the discharge of fill material into waters of the United States, did the District Ranger produce a report that indicates the event(s) did not result in a violation of the CWA and Idaho WQS?

If there are one or more reports prepared by District personnel or personnel from the Supervisor's Office that certified the discharge of material did not violate the CWA and Idaho WQS, the reports need to be included as part of the project files. 3-20

6. Culvert issues:

The fisheries analysis in the DEIS includes discussions relating to stream crossing and culverts. We wish to note that corrugated steel pipes (culverts) have a minimum design life of 70 years; see Corrugated Steel Pipe Institute; Canada, and The National Corrugated Steel Pipe Association, USA. Additionally, information from the American Iron and Steel Institute indicates, "With a proper coating and/or invert paving, csp can provide a service life of 50-100 years for a wide range of environmental applications."

On page 206 it is stated there are 115 road crossings in the Bussel Creek watershed. The discussion of Alternative A on page 217 does not address the issue of maintenance of these culverts under the no action Alternative. 3-21

The Fisheries analysis of the no action Alternative on page 96 also does not address the issue of maintenance of culverts under the no action alternative. The Idaho Forest Practices Act (FPA) Title 38, Chapter 13, Idaho Code includes requirements concerning culverts and road maintenance. The FPA at IDAPA 20.02.01.40.04 concerns road maintenance. For active road the FPA requires that all culverts and ditches are to be kept functional. The FPA requires for inactive roads that culverts are to be cleared, and for long-term inactive roads the FPA requires that culverts are to be maintained.

The FEIS is required to provide high quality information with expert agency comments that indicate whether the FPA required road maintenance/culvert maintenance has taken place in the project area and therefore the District has been in full compliance with the FPA requirements cited. 3-22

The road drainage structure (culverts) discussion in the DEIS apparently did not include information from the following document, *Methods for Inventory and Environmental Risk Assessment of Road Drainage Crossings* (Flanagan et al, 1998). USDA Forest Service Technology & Development Program, San Dimas Technology and Development Center, San Dimas, CA, 9877 1809- SDTDC, December 1998, revised for internet July 2003, 45 p. Available at http://fs.fed.us/t-d/pubs/html/wr_p/98771809/98771809.htm 3-23

The Flanagan et al document includes a discussion regarding calculating hydraulic capacity, page 19. The following statements are included in the discussions found on page 19.

"The hydraulic capacity of a culvert is the design flow it can accommodate at a specified headwater depth (the depth of water at the inlet with respect to the base of the culvert inlet). Capacity can be determined from nomographs presented in Normann et al. (1985) for a given headwater depth. For dented inlets, the diameter should be adjusted accordingly."

"If hydrologic data are collected for each site, flows for various recurrence intervals can be used to construct a flood frequency curve. This can be used to express culvert hydraulic capacity as an exceedence probability or a recurrence interval (T) (figures 4 and 5). This method is not applicable to cross drains or small drainages where the drainage area cannot be accurately delineated. For relatively large culverts in small drainages, calculation and extrapolation may produce unreasonably large recurrence intervals (or, improbably small exceedence probabilities. For convention, hydraulic capacity has a maximum value of T = 250 years (p = 0.004)."

"If the culvert cannot pass the design peak flow, it is likely that associated debris and sediment cannot be passed either."

3-24 There should be data in the FEIS that indicates the flood frequency curve that applies to the culvert sites in the project area watersheds.

There should be data in the FEIS that lists the hydraulic capacity of the culverts that are considered to be at risk in the project area.

3-25 There should be data in the FEIS listing the hydraulic capacity for each of the corrugated metal culverts that are known to be undersized in each of the watersheds in the project area.

Also concerning sediment risk and culverts, the following information is found on pages 21 and 22 of the Flanagan et al document. "In general, culverts are efficient conveyors of sediment because of their narrow and relatively smooth, uniform cross section. Fluvially transported sediments generally present little hazard to stream crossing installations" and "In designing and assessing culverts, thought must be given to the maximum particle sizes potentially mobilized during peak flows and ensuring sufficient diameter and slope to pass the load."

3-26 There should be high quality information in the FEIS relating to the estimated maximum particle sizes that potentially would be mobilized during peak flows in the watersheds located in the project area.

On page 29 of the Flanagan et al document there is a section titled Failed Crossing Assessments. The following sentences are found in this section. "Crossing failures provide a unique opportunity to assess design and installation procedures. Following large storm events, storm damage reports are often generated to assess the magnitude and extent of damage. Such efforts should provide the opportunity for adaptive design."

3-27 If storm damage reports associated with storm events in the project area and CEA area that occurred in calendar years 1995 and 1996 were produced by the District, these reports should be included in the project files.

<u>7. ECA</u>:

3-28 The Water section on page 207 mentions ECA and water yield estimates but the water section does not contain information pertaining to the actual ECA of the project area or the CEA area.

Due to the significant level of logging that has occurred in the project area on both NFS lands and non-NFS lands, and in order to address the NEPA requirement for best

available science when performing ECA analyses, information from the following USDA Forest Service publication is being submitted for the Bussel 484 official record. 3-29

Ager, Alan A.; Clifton, Caty. 2005. Software for Calculating Vegetation Disturbance and Recovery by Using the Equivalent Clearcut Area Model. Gen. Tech. Rep. PNW-GTR-637. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 11p. The paper can be found at www.fs.fed.us/pnw

The following statements are taken from page one of GTR-637.

"Understanding and modeling the cumulative watershed effects of management and natural disturbance is a significant challenge for land managers (U.S. Council on Environmental Quality 1997). Cumulative watershed effects can result from minor actions taking place over a period of time that collectively are thought to alter hydrologic response (FEMAT 1993). A wide variety of qualitative and quantitative methods for analyzing cumulative watershed effects have been developed over the past 25 to 30 years (Berg et al 1996, Reid 1993). One of the earliest quantitative approaches used by the Forest Service was the equivalent clearcut area (ECA) method, which accounts for past and future effects of different types of disturbances by standardizing the effects and modeling the recovery over time. It was originally developed for use in northern Idaho and Montana (King 1989, USDA FS 1974) where it was used to measure the potential impacts of alternative timber harvesting schedules. A more encompassing model, equivalent roaded area (ERA), was later developed in the Pacific Southwest Region by using the same framework, and was extensively used in the Sierra Nevada Ecosystem Project (Menning et al. 1997).

Both models assume a direct linkage between vegetation disturbance and hydrologic response (i.e., peak flows and water yield) (Bosch and Hewlett 1982, Stednick 1996). Despite conflicting literature on the existence of these linkages and other limitations (Beschta et al. 2000, Menning et al. 1997), the model is still required for consultation with the National Oceanic and Atmospheric Administration (NOAA) Fisheries Department and the U.S. Fish and Wildlife Service (USDC NMFS 1995, USDI FWS 1998) for all proposed management actions in the Blue Mountains national forests and elsewhere within the range covered by PACFISH (USDA USDI 1995a) and INFISH (USDA USDI 1995b) policies."

Also on pages one and two the following information is found. "The ECA model uses one set of coefficients to describe the proportion of the total basal area removed for different disturbance types, including harvest prescriptions, wildfire, prescribed fire, roads, and insect mortality. A second set determines how fast the treated acres recover to 100 percent of potential leaf area or canopy closure, at which point the acre is assumed to have hydrologic function the same as an untreated acre. The physical model behind ECA as a cumulative-effects measure is that vegetation removal changes water yield characteristics (peak flow, timing, total yield) in rough proportion to leaf area, or basal area removed from a site. Several studies have shown that timber harvest affects water yield by reducing water loss associated with interception and evapotranspiration, or by changing snow distribution and melt rates (Hicks et al. 1991, Scherer 2001, Stednick 1996). The hydrologic changes may lead to destabilized streams channels and other adverse ecological effects (Reid 1993). The ECA statistic (percentage of area in

equivalent clearcut condition) is typically used in conjunction with climatic data to evaluate the cumulative effects of vegetative removal on water yields and peak flows. The ECA statistic also may be used as a general guide to overall watershed condition when coupled with site-specific evaluations."

"Calculation of the ECA statistic can be a time-consuming process for watersheds that have received multiple disturbances over time. Calculations are complicated by the consideration of multiple treatment alternatives and revision of treatment intensities in the process of project development. This paper describes the program Equivalent Treatment Area Calculator (ETAC) that vastly simplifies calculation of the ECA statistic. The ETAC program is intended to provide a consistent approach to measuring harvest and other impacts to forest vegetation. This paper describes the most recent version of the program, methods for preparing data, considerations for use of the model, and includes an example analysis."

On page six of GTR-637 there is a discussion of roads and ECA. "Roads both within and outside of harvest units may be included in ECA calculations. Typically, roads are given an ECA coefficient of 1.0 and a recovery rate of 0, although other approaches have been used (Menning et al. 1997). The area of roads is best determined by querying the transportation layer for the total length in each subwatershed and assuming an average width. Roads are in some ways functionally clearcut areas, although more compacted, so infiltration is reduced and runoff rates may be more accelerated than in a true clearcut. There has been considerable discussion about the role of roads in ECA calculations. If roads are omitted from the calculations, the rationale should be documented."

The Discussion section of the paper on page six begins with the following statements. "The ECA statistic encapsulates the history of vegetative disturbance with a watershed and can provide a broad indicator of the potential for change in water yields and peak streamflow from forest management activities. However, ECA is one of many measures of watershed health and is not directly predictive of increased peak flows or impacts to streams. The ECA procedure has had many criticisms owing to inadequate explanation of the ECA analysis in environmental documentation, lack of a standard procedure for its calculations, and lack of interpretation using collateral data. A consistent relationship between the ECA statistic and hydrologic variables (peak flows and water yields) has not been established (Beschta et al. 2000, Scherer 2001). Typically, the ECA statistic for a given subwatershed is compared with an established ECA threshold (15 percent in the biological opinions in USDC NMFS 1995 and USDI FWS 1998). Supporting information from other indicators of watershed health is useful in interpreting ECA results and predicting the likelihood of adverse effects."

It appears the ETAC program was not used as part of ECA analysis. Given the significant limitations of the WATSED model it does not appear the ECA analysis in the DEIS is more accurate than ETAC model when calculating the existing ECA for the project area, and when calculating the existing ECA for the CEA area.

3-30 NEPA at 40 CFR 1502.24 requires that the supporting data that would confirm the WATSED ECA analysis is superior to the ETAC model is to be included in the FEIS.

The current ECA for NFS lands and non-NFS lands needs to be displayed in the FEIS.

The ECA analysis in the FEIS needs to indicate whether roads in the project area and CEA area are included as part of the ECA analysis. 3-30

8. WATSED model:

NEPA at 40 CFR 1500.1(b) requires accurate scientific analysis. NEPA at 40 CFR 1502.24 requires scientific integrity in NEPA documents. The discussions of the WATSED model in the DEIS include pages 204, 205, 206 and 207.

The following Forest Service information directly concerns calculations of water yields and sediment yields with the WATSED model. The Bonners Ferry Ranger District Myrtle Creek HFRA Project FEIS, March 2007, contained a discussion of WATSED on pages D-8, D-9, and D-10 of Appendix D. The following statement is made on page D-8. "On the Idaho Panhandle National Forests, sediment yield is generally modeled using the R1/R4 Sediment Guides (USDA 1981) and the WATBAL Technical User Guide (Patten 1989). The version calibrated for the Idaho Panhandle National Forests is known as WATSED."

On page D-9 the following statement was made. "The model incorporates response curves and lookup tables generated from more intensive process models (i.e., Lief and Brink) and with statistical analyses of locally derived empirical data." [It should be noted that the spelling in the citation (i.e. Lief and Brink) is incorrect. It should read (i.e. Leaf and Brink).

There are two Leaf and Brink USDA Forest Service research papers that pertain to WATSED. These are USDA Forest Service Rocky Mountain Forest and Range Experiment Station RM-99 *Computer Simulation of Snowmelt within a Colorado Subalpine Watershed*, February 1973, and RM-107 *Hydrologic Simulation Model of Colorado Subalpine Forest*, May 1973.

On page 10 of RM-99 the following statements are made. "Empirical studies have shown that various watershed management practices exert a significant effect on snowmelt rates and resultant streamflow. Because the model described here is a mechanistic representation of the snowmelt process, its careful use should enable the resource manager to better understand how a given management alternative will affect snowmelt **before** it is implemented. We believe it to be a useful tool for predicting the probably effects of land management practices on the timing and amount of snowmelt." Appendix I in RM-99 is the complete listing of Snowmelt Model.

On page one of RM-107 the following statements are made. "The hydrologic model described in this report is an expanded version of the snowmelt model. The model has been programmed for the CDC 6400 computer at Colorado State University. It is designed to simulate the total water balance on a continuous, year-round basis, and to compile the results from individual hydrologic subunits into a "composite overview" of an entire watershed. The model has been designed to simulate watershed management practices and their resultant effects on the behavior of hydrologic systems." Appendix I in RM-107 is the Routines for Water Balance Model.

The WATSED analysis sections in the DEIS does not include the specific response curves and lookup tables that are generated from the more intensive Leaf and Brink models described in RM-99 and RM-107. 3-31

3-31 The FEIS needs to include the specific response curves and lookup tables that are generated from the more intensive Leaf and Brink models described in RM-99 and RM-107.

The following analysis will show the inability of the model to accurately account for routing of sediment and the model's inability to accurately recognize stream dynamics.

On unnumbered page one of the Clearwater National Forest document "*Uses and Limitations of the WATBAL Model*" dated October 20, 2005, the CNF Forest Hydrologist makes the following statements. "Between 2001 and 2002, the model's input hydrographs were improved with the more recent discharge data. In 2005, the *WATBAL Technical Users Guide* was again updated to correct minor errors in the documentation and include a new section on the models uses and limitations.[5]"

On unnumbered page two the following statements are also found. "This same R1/R4 model, known as WATSED, is currently available to other forests in Region 1. Region 1 took the WATBAL model and "opened it" so that different forest users could add their locally derived watershed characteristics and coefficients to run the model in areas outside the Clearwater National Forest."
On unnumbered page three the following statements are made. "WATBAL uses a primitive equation based upon the slope of the channel and watershed size to route sediment through the main stem of the watershed. It is recognized that this lack of accurate stream routing, including insufficient recognition of stream dynamics, habitat responses, and beneficial uses, is the **weakest** part of the WATBAL model." [Emphasis added]
Additionally, the latest version of the *WATBAL Technical Users Guide* dated February 3, 2005, contains the following statements. On page 20 it is stated regarding sediment routing "It is recognized that this lack of accurate stream routing and insufficient recognition of stream dynamics is the weakest point in the model and is a **critical element** for future developments. This weakness should be recognized and dealt with by the professional hydrologist with whom the responsibility lies to interpret the results of the WATBAL model." [Emphasis added]

It is clear the sediment routing and stream dynamics problems associated with the WATBAL 2005 model are also found in the WATSED model.

3-32 The FEIS needs to include expert agency comments that indicate the WATSED model's inability to accurately account for the routing of the sediment loads and accurately account for stream dynamics as required by NEPA at 40 CFR 1500.1(b). The sediment routing and stream dynamics coefficients that are associated with the WATSED model need to be included in the FEIS.

3-33 It is also apparent that the WATSED model does not possess a high level of accurate scientific analysis concerning recognition of stream dynamics, as is required by 40 CFR 1502.24. The FEIS needs to include expert agency comments regarding the requirements of 40 CFR 1502.24 as they concern recognition of stream dynamics by the model.

On unnumbered pages seven and eight of the paper “Calibration of the WATBAL sediment and water yield model” dated 2005, the following statements are made. “The WATBAL-2005 user and land management decision maker should recognize that the model estimates sediment within a range of 60 percent to 130 percent of long-term measured averages for watersheds similar to the test watersheds” and We recommend that calibration re-assessments should occur every five years as data become available and test watersheds meet the calibration selection criteria.”
Concerning the WATSED model, on page 206 of the DEIS the following statement is made. “The WATSED model estimates sediment changes from management activities, but the model has not been recently calibrated for the Bussel Creek watersheds and thus the accuracy of the estimate for Bussel Creek from this model is not known.” 3-34
The FEIS needs to indicate the WATSED model may in fact substantially underestimate the amount of sediment that would be released into the waterbodies as the result of logging 2,239 acres.

The following information also directly relates to statements in the DEIS concerning the accuracy of the WATSED model. The Forest Service in a case on the Kootenai National Forest, CV-02-200-M-LBE, included the following language in their "Response to Motion for Preliminary Injunction" brief the concerned a scientific report. "Dr. Schloeder's purported 'statistical analysis' reports no confidence intervals, standard deviations or standard errors in association with its conclusions."

As has been noted in the discussion regarding best available science, the Forest Service is required to attain the same high standards that the Forest Service expects from those who disagree with their own analysis. The Forest Service's high standards require that the WATSED statistical outputs with "confidence intervals, standard deviations or standard errors in association with its conclusions" be clearly presented in the Bussel 484 FEIS.

The WATSED results shown in the DEIS did not provide any 'confidence intervals, standard deviations or standard errors in association with its conclusions' as they relate to the accuracy of the model and therefore the scientific validity of the model is uncertain, particularly in regards to sediment routing and analysis of stream dynamics. 3-35

The numerous shortcomings of the model clearly show that the water yields and sediment yields calculations and projections in Chapters 3 DEIS, do not contain the high level of accurate scientific analysis required by 40 CFR 1500.1(b) and thus the use of the model violates the accurate scientific analysis and high quality information requirements of 40 CFR 1500.1(b). 3-36

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8a. DEQ TMDL model:

The DEQ TMDL model is cited in the water section of the DEIS, including pages 205 and 206. The spreadsheet model (TMDL model) is mentioned on page 205. The discussions of the DEQ TMDL model do not mention whether the model uses any features of the WATSED model or uses any coefficients associated with the WATSED model.

3-37 The FEIS needs to provide high quality information with expert agency comments that indicate whether any feature or process found in the WATSED model is also found in the DEQ TMDL model.

9. Fish Barriers/Idaho Department of Water Resources/FPA regulations:

On page three of Chapter 1 of the DEIS it is stated there are culverts that do not allow fish to pass through the culverts. "Some culverts do not allow fish to pass through them." On page 4 the discussion regarding Decisions to be Made at #5 concerns amount of fish migration barrier removal would be implemented.

It is also stated on page 15 and page 20 there are two human-created fish passage barriers on Road 1900, as well as in the Fisheries section, including page 81.

The language in the DEIS, Chapter 2 page 11, indicates the no Action Alternative would result in the fish barriers not being removed, as does the language on page 96.

Volume 8 of Idaho Administrative Code, dated July 2004, IDAPA 37.03.7, lists and describes Stream Channel Alteration Rules. IDAPA 37.03.07.062 concerns culverts and bridges (rule 62). The following regulation is found at 062.01. "Culverts and bridges shall be capable of carrying streamflows and shall not significantly alter conditions upstream or downstream by causing flooding, turbidity, or other problems."

Regulation 062.02 contains the following statement regarding location of culverts and bridges. "Culverts and bridges should be located so that a direct line of approach exists at both the entrance and exit. Abrupt bends at the entrance or exit shall not exist unless suitable erosion protection is provided."

Regulation 062.04 includes language concerning size of culverts and fish issues. At 062.04g the following language is found. "Minimum water depth shall be approximately eight (8) inches for salmon and steelhead and at least three (3) inches in all other cases."

The following regulation is found at 062.04h. "Maximum flow velocities for streams shall not exceed those shown in Figure 17 in APPENDIX N, found at the end of this chapter, for more than a forty-eight (48) hour period. The curve used will depend on the type of fish to be passed."

Regulation 062.05 concerns construction of crossings. At 05a the following language is found. "Where fish passage must be provided, upstream drops at the entrance to a culvert **will not** be permitted and a maximum drop of one (1) foot will be permitted at the downstream end if an adequate jumping pool is maintained below the drop". (Emphasis added)

3-38 The two fish barriers located on Road 1900 in the project areas indicates the Forest Service is not in compliance with IDWR regulations cited.

The two fish barriers also indicate the Forest Service has not been, and continues to be in non compliance with Idaho Forest Practices Act regulations IDAPA 20.02.01.040.02e.i. "Culvert installations on fish bearing streams **must provide for passage**." (Emphasis added)

The FEIS is required to provide high quality information, 40 CFR 1500.1(b), indicating the number of years the two fish barriers have been located in the project area.

The FEIS is also required to provide expert agency comments, 40 CFR 1500.1(b), that describe each of the reasons why the Forest Service has not removed the fish barriers as required by IDWR regulations and Idaho FPA regulations. 3-38

9. Short Term/long term impacts:
The Fisheries and Water sections of the DEIS included statements regarding short-term and long-term effects, or short and long-term sediment, including pages 107, 206, 224 and 227.

The Courts have ruled that disregarding short-term effects and instead only evaluating effects over a time frame from 10 years to 20 years is arbitrary and capricious. In Pacific Coast Federation of Fishermen's Associations, Inc v. National Marine Fisheries Service, D.C. No. CV 99-00067-BJR, May 31, 2001, the U.S. Court of Appeals for the Ninth Circuit at 6704 included the following language. "Pacific Coast challenged NMFS's evaluation of ACS consistency over a time frame of 10 to 20 years. The district court agreed. The court found that "NMFS has failed to adequately assess the short term impacts of the timber sales and … has failed to adequately explain its assumption that passive restoration will adequately mitigate the adverse impacts of logging." The district court found that the 'NMFS could not rationally conclude, based on the evidence before it, that evaluating only long-term impacts of agency activities satisfied its mandate to ensure ACS compliance. Its failure, therefore, to evaluate the short-term impacts, (i.e. impacts that would manifest in less than a ten-year period) was also arbitrary and capricious. "The district court's order requires NMFS to evaluate ACS consistency immediately after the project action is completed."

"We find nothing in the record to authorize NMFS to assume away significant habitat degradation."
"The NMFS does not and cannot explain adequately its disregard of short-term effects."
"Given the importance of the near-term period on listed species survival it is difficult to justify NMFS's choice not to assess degradation over a time frame that takes into account the actual behavior of the species in danger."

The Fisheries and Water analysis in the FEIS is required to accurately account for the short-term impacts to fisheries and fisheries habitat, as a result of releases of sediment and bedload movement due to increased peak flows that are associated with each Action Alternative. 3-39

11. Vegetation/carbon storage:

The planned logging of over 11,000 board feet per acre clearly indicates a significant amount of large mature trees would be logged if either Action Alternative were implemented. The vegetation section of the DEIS does not address the issue of logging large mature trees and carbon storage. The FEIS needs to include expert agency comments that will indicate whether it is correct that younger forests and managed forests store less carbon due to loss of large mature trees. 3-40

11a. Vegetation/ root diseases/insects:

On page 2 of Chapter 1 the purpose and need for action discussions mention "… the risk of stand loss to insects, disease…" and "… substantial loss to disturbance from insects, disease, and fire." On page 119 the following statement is found. "Grand fir and Douglas-fir are highly susceptible to root diseases."

NEPA at 40 CFR 1500.1(b) requires accurate scientific analysis. The findings found in the following USDA Forest Service research paper directly concern the issue of accurate analysis of root disease issues in the project area. This research paper discusses root diseases in coniferous forests. [Rippy, Raini C.; Stewart, Jane E.; Zambino, Paul J.; Klopfenstein, Ned B.; Tirocke, Joanne M.; Kim, Mee-Sook; Thies, Walter G. 2005. *Root diseases in coniferous forests of the Inland West: Potential Implications of Fuels Treatments.* Gen. Tech. Rep. RMRS-GTR-141. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 32 p.] The document can be found on the following FS web site http://www.fs.fed.us/rm.

The following statements are found on page one of the Introduction. "In some situations, the change in root rot dynamics may influence forest growth and succession for centuries. Thus, careful consideration of future root disease impacts is critical before implementing any management activities, including fuels treatments" and "As forest managers implement plans for fuels treatments, their success in lowering risk of severe wildfire will depend in part on the impacts of management activities on levels of root disease that contribute to subsequent fuels accumulation."

The following statements are included in the discussions on page two of the Introduction. "Although fuels reduction has recently emerged as a national issue, there are few research studies specifically addressing fuels-treatment effects on root diseases. For this reason, much of the information applied to fuels treatments in this paper is based on general principles of plant pathology, knowledge of pathogen biology, and/or derived from studies conducted for other purposes. Because the consequences of root disease resulting from fuels treatments may not be immediately apparent but may continue for decades after treatments, there is an increased need to conduct and interpret long-term studies that examine effects of specific fuels treatment on root disease interactions. Such long-term studies would provide more precise information for understanding these complex relationships."

On page 25 of the research paper the Summary of Fuels Management Considerations is found. The following statements are found on page 25. "The interactions between trees, root pathogens, and environment are complex and vary by forest structure, stand history, habitat type, species composition, soil characteristics, bark beetle populations, and activity of other forest insects and pathogens" and "To determine the most suitable forest management practices for the Inland West, more studies are needed on the interactions among fuels treatments, fire, and root diseases."

3-41 This USDA Forest Service publication should be included as part of the root disease analysis for this project.

3-42 Concerning insect issues and the NEPA requirement for best available science and responsible opposing views, the following document needs to be included as part of

reference papers being used by the District for analysis of insect issues. Black, S.H. 2005. *Logging to Control Insects: The Science and Myths Behind Managing Forest Insect "Pests." A Synthesis of Independently Reviewed Research*. The Xerces Society for Invertebrate Conservation, Portland, OR. This document is available at www.xerces.org.

12. Cumulative Effects (CE) analysis:

The following sentence is found on page three of the June 24, 2005 CEQ Memo to heads of Federal Agencies. "The final analysis documents an agency assessment of the cumulative effects of the actions considered (including past, present, and reasonably foreseeable future actions) on the affected environment."

NEPA at 1502.16 (a) and (b) concerns direct effects and indirect effects. The impaired water bodies in the project area and CEA area due to sediment, temperature, and habitat alteration as a result of past logging and road construction activities is a significant water quality/fisheries issue.

NEPA at 40 CFR 1508.27(a) states "Both short-term and long-term effects are relevant."

The information on page 44 in Table 3-1 shows 1,741 acres of regeneration logging on NFS lands since the 1960s with the total amount of logging listed as 2,034 acres. The Table 3-2 on page 47 concerns logging on Potlatch lands. Past logging has amounted to 2,775 acres with an additional 1,067 acres of reasonably foreseeable logging on these lands. The past logging on Potlatch lands includes over a square mile of clearcuts. Planned logging includes another 474 acres of clearcuts.

In spite of the NEPA requirements and the very significant logging that has taken place on Potlatch lands, and the significant amount of planned logging, the fisheries cumulative effects analysis consists of just three sentences on page 97. On page 107 the cumulative effects area discussion also consists of just three sentences.

The water cumulative effects analysis for Alternative B, page 224, includes the following statements. "Private activities combined with proposed Forest Service activities for Bussel Creek would result in an estimated increase to the sediment budget over the short-term, but would not substantially change the estimated long-term sediment reduction."

In contrast to the statement made on page 224, the following statement was made in the St. Joe Ranger District 2002 Hidden Cedar FEIS project file SW 51 WATSED Critique. "Private land activities and the WATSED model: The FEIS identifies private land activities as disclosed by landowners with the Hidden Cedar area. For WATSED to model these activities, the activities must be located on the landscape (mapped) for determination of associated parameters necessary for the model to operate. Also the proposed year of the activity is necessary. No mapped locations or proposed year for harvest activity or road building was made available by private landowners."

The water cumulative effects analysis area discussion on page 212 consists of two sentences. "The analysis area for the water resources is the Bussel Creek watershed. Cumulative effects are discussed in Marble Creek downstream of Bussel Creek." The water section of the DEIS pages 202 through 229 does not contain any discussion of the Marble Creek watershed. The fisheries section of the DEIS contains information regarding a 8-mile stream segment of Marble Creek on page 95 and on page 96 there is a

3-43

brief discussion of Marble Creek drainage. This drainage is described as being 91,160 acres in size with 61,300 acres being NFS lands.

Also regarding cumulative effects it is noted in Table 3-15, page 73, that for every subdrainage listed except Toles Creek, the cumulative effects limiting factor is described as Highly Altered/High Risk. The fisheries analysis on page 68 also indicates westslope cutthroat trout and bull trout are identified as Management Indicator Species.

The limited fisheries and water effects analysis in the DEIS does not indicate compliance with NEPA regulations 40 CFR 1502.16(a) and (b), 40 CFR 1508.7, 40 CFR 1508.8, 40 CFR 1508.27 (a) and 40 CFR 1508.27 (b) (7). The apparent contradictory analysis relating to past and foreseeable logging and road construction activities on private lands does not indicate compliance with the NEPA regulations cited.

3-43 The FEIS is required to provide a water and fisheries cumulative effects analysis for each Action Alternative that indicates compliance with NEPA cumulative effects analysis regulations.

13. Incomplete or unavailable information:

NEPA at 40 CFR 1502.22 contains requirements that address incomplete or unavailable information in an EIS. The FEIS should indicate whether there any missing or destroyed Environmental Assessments associated with previous FS timber sales in the project area and CEA area.

3-44 If there any missing Monitoring Reports prepared by District personnel as part of Monitoring activities associated with past FS timber sales in the project area and CEA area, the FEIS needs to list the missing reports.

14. Monitoring:

The Monitoring discussion in the DEIS, page 36, includes the following statements. “The IPNF annually conducts a review of BMP implementation and effectiveness. The results of this and other monitoring are summarized in annual Monitoring and Evaluation Reports which provide information about how well the management direction of the Forest Plan is being carried out and measures the accomplishment of anticipated outputs, activities and effects.”

3-45 However, in the Bibliography section of the DEIS there are no IPNF 2005, 2006, or 2007 IPNF Monitoring and Evaluation Reports cited. There is no indication in the DEIS the IPNF has in fact performed the Monitoring that is required by NFMA and the IPNF Forest Plan for the years 2205, 2006, or 2007. If this Monitoring was not performed and no annual reports were issued to the public in 2005, 2006, or 2007 the IPNF is not in compliance with NFMA 36 CFR Part 219 regulations and not in compliance with IPNF Forest Plan Monitoring requirements.

This lack of information in the DEIS concerning Forest Plan Monitoring Reports also does not meet the NEPA requirement for expert agency comments and high quality information.

If the IPNF did in fact release a Monitoring and Evaluation Report in 2005, 2006, or 2007 what are the dates when these M&E Reports were released to the public? If these M&E

Reports were produced the Monitoring section of the FEIS is required to indicate whether any information and data in these Reports pertain to the project area and CEA area.

The Monitoring discussions in the DEIS do not address the issue of lack of funds and performing Monitoring activities required by the Forest Plan and Federal and State laws. NEPA required high quality with expert agency comments, 40 CFR 1500.1(b). Table 3-1, page 44, lists 2,034 acres of past Forest Service logging in the project area. The FEIS needs to indicate whether a lack of funding prevented any monitoring activities that were to take place as a result of timber sales that occurred after the 1987 Forest Plan was approved.

If the Bussel 484 timber sale project is implemented, the FEIS needs to describe the estimated yearly budget that will be required in order to perform all required IPNF Forest Plan monitoring, and Federal and State monitoring. 3-45

15. Transportation issues:
The proposed action would result in the construction of 5.5 miles of new roads. The DEIS in Chapter 1 page 3 mentions the new Travel Rule. In Chapter 2 page eight in the law enforcement discussion it is indicated that unauthorized vehicle use is taking place in the project area. The new Travel Rule is described in the Federal Register / Vol 70, No. 216 / Wednesday, November 9, 2005, pages 68264 through 68291. The Rule at 212.55 (b) includes the following language. "Specific criteria for designation of trails and areas. In addition to the criteria in paragraph (a) of this section, in designating National Forest System trails and areas on National Forest System lands, the responsible official shall consider effects on the following, with the objective of minimizing: (1) Damage to soils, watershed, vegetation, and other forest resources; (2) Harassment of wildlife and significant disruption of wildlife habitats:.."
The FEIS needs to indicate whether the proposed new road construction, associated road reconstruction and proposed changes for ATV use is in compliance with the new Rule at 36 CFR 212.55(a) and (b). 3-46
The FEIS also needs to indicate whether unauthorized ATV use in the project area has resulted in the property of the United States being destroyed and indicate whether there have been any arrests and convictions. [36 CFR part 262 - Subpart A at 262.1(a)(3)]

We wish to remain on the mailing list for this project. These comments are also being submitted on behalf of the following organizations. The Lands Council, Jeff Juel, 25 W. Main Ave, Suite 222, Spokane, WA 9920, 509-838-4912, WildWest Institute, Cameron Naficy, P.O. Box 7998, Missoula, MT 59807, 406-542-7343, Friends of the Clearwater, Gary Macfarlane, P.O. Box 9241, Moscow, ID 83843, 208-882-9755, and Alliance for the Wild Rockies, Michael Garrity, P.O. Box 505, Helena, MT 59624, 406-459-5936.

Sincerely,
/S/
Mike Mihelich
Forest Watch Coordinator 208-667-9093

Kootenai Environmental Alliance
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April 21, 2008

Charles A. Mark, District Ranger
St. Joe Ranger District
222 South 7th St, Suite 1
Saint Maries, ID 83861

RE: Bussel 484 Project DEIS

Dear Mr. Mark:

General Comments

The Idaho Department of Parks and Recreation (IDPR) staff reviewed the Bussel 484 Project Draft Environmental Impact Statement (DEIS). The St. Joe Ranger District proposes to harvest timber, conduct road and access management activities in the Bussel Creek watershed.

Your office or contractor sent us a copy of the DEIS on a compact disk. This compact disk was damaged during mailing or copying. We were able to successfully download the files off of the Idaho Panhandle National Forests web site.

We previously commented on this project during the scoping period in July 2005. Our biggest concern was with the access management changes and the closure of the Bussel Creek Trail to motorized use.

The IDPR is disappointed that the range of alternatives in the DEIS did not provide a range of management options for the Bussel Creek Trail. The only action option is to close the trail to motorized use. The DEIS should have analyzed an alternative that keep this trail open to single-track motorized vehicles (motorcycles) at least on a seasonal basis. 4-1

The Bussel Creek Trail provides motorcyclists with the opportunity to connect into the Marble Creek Trail System without having to travel on large amount of roads. The trail along the upper part of the drainage is starting to disappear. Our fear is that if motorcycle use is eliminated from this trail, it will eventually disappear. We encourage you to designate this trail for motorcycle use. 4-2

Alternatives B and C designate varying amounts of ATV trail opportunities. Alternative B designates 19.9 miles of ATV trail and Alternative C designates 18.5 miles of ATV trails. While this mileage is fairly insignificant there is a critical difference between alternatives. 4-1

Alternative C fails to connect the Lines Creek Trail and Norton Creek trail by closing a portion of the Norton Creek trail. ATV riders desire connecting trail opportunities. Given the limited amount of dedicated ATV opportunities in Alternative C, the IDPR encourages you to select Alternative B for designating ATV trail opportunities.

We also noticed that Alternative C requires more helicopter logging that Alternative D. Helicopter logging is more expensive than ground based or skyline based logging units. Alternative C may not be an economical alternative.

4-3 Given the increased economical costs and the decreased recreation opportunities that Alternative C offers, we believe that Alternative B combined with designated the Bussel Creek trail as a two-wheeled motorized trail offers the greatest range of recreation opportunities.

DEIS Specific Comments

The DEIS outlines ATV riding requirements on Page 151. Idaho State Law for ATV Riding Requirements is changing on July 1st. After July 1st, ATVs, UTVs and off-highway motorcycles will be required to purchase an off-highway plate and registration sticker. This plate and sticker allows these vehicles to operate on USFS roads and trails unless specifically restricted.

4-4 On roads, operators of these vehicles will have to carry a drivers license and liability insurance. Non-licensed drivers can use routes that are closed to full size vehicles (cars and trucks). The FEIS should be updated to reflect these new riding requirements.

4-5 The DEIS refers to the Idaho OHV Public Outreach Project on Page 151. The statement "More than 100,000 ATV's are registered in Idaho today and 10,000 additional ATVs are being registered each year." is incorrect. In 2006, there were 83,606 ATVs registered in Idaho. The DEIS should have used the registration figures that we provided you in our scoping response. We have attached updated registration figures for the FEIS.

Over registration records show that ATV use is increasing at the decreasing rate. This means in the near future, ATV registrations will be leveling off or declining.

The DEIS covers the Incline Railroad Grade on Page 152. The DEIS asserts that ATVs and four-wheel drives are causing damage to the old railroad grade. This railroad grade runs straight up the slope. Routes in this location will always erode because of the location.

Unless drainage control structures are installed on this old railroad grade, it will continue to erode whether motorized use is allowed on the trail or not. The railroad grade was not meant to be a long term railroad route.

4-6 We believe that a barrier will need to be installed to deter four-wheel drive and ATV use on this route.

4-7 The DEIS addresses the Bussel Creek Trail on page 153. The DEIS states that this trail is managed as a single-track trail. The topographic map shows the start of this trail as being a jeep trail. Without proper travel management designations on the trail, it isn't surprising that ATVs have been using this trail.

The DEIS states "ATV use has increased rapidly in the past five years and is expected to continue to increase." on Page 154. For the past three years, ATV registrations have been increasing at a decreasing growth rate.

This information tells us that ATV use is not increasing as fast as it has over the past ten years. We expect eventually that ATV use will most likely level off or decrease in the near future. 4-8

The direct and indirect effects of Alternative B and C are summarized on Page 155. The summary indicated the ATV trail mileage for both alternatives, but fails to analyze how loop opportunities and connecting trail systems would be affected by the two action alternatives. Alternative B connects the trail systems while Alternative C does not. From a trail system standpoint, Alternative B is a better solution than Alternative C. 4-9

The Bussel Creek Trail #258 is addressed on page 158. The DEIS maintains that this trail is being closed for other resource concerns. Most of the resource concerns associated with trails can be mitigated. If elk security is a concern, then the trail can be seasonally restricted during the hunting season. If erosion is a concern, the trail can have water control devices installed or better yet relocated. In our view, closure should be the last resort over other mitigation options. The St. Joe Ranger District has a limited number of trails. Without motorized use, the trail may very well disappear from the landscape. We encourage the district to use the DEIS to relocate the trail to alleviate those resource problems. 4-10

The DEIS references IDPR Registrations Statistics also on page 158. The DEIS uses the wrong terminology for our statistics. The figures in the DEIS show both motorcycle and ATV registrations. The FEIS should be amended to "According to Idaho motorbike and ATV (all-terrain vehicle) registration statistics, Motorbike/ATV registrations have risen from 1,053 to 1,870 registrations". 4-11

Conclusion

We are disappointed that the range of draft alternatives did not analyze different travel prescriptions for the Bussel Creek Trail #258. Alternative B seems to provide a better ATV Trail system than Alternative C. Finally, the DEIS should revise some of its statements on OHV use. 4-12

Thank you for the opportunity to review this DEIS. If you have any questions about our comments, please contact me at (208) 514-2483.

Sincerely,

Jeff Cook, Outdoor Recreation Analyst
Comprehensive Planning, Research, and Review

Enclosure

IDAHO MOTORBIKE/ATV REGISTRATION STATISTICS 2002 - 2006

County	2002 Registrations	2003 Registrations	2004 Registrations	2005 Registrations	2006 Registrations	2002-2006 % Change
North						
Benewah	1,045	1,110	1,253	1,305	1,512	44.7%
Bonner	1,401	1,731	2,135	2,560	2,940	109.9%
Boundary	204	283	372	439	544	166.7%
Kootenai	5,272	6,093	7,057	8,442	9,751	85.0%
Shoshone	1,053	1,226	1,403	1,652	1,878	78.3%
North Idaho Total	**8,975**	**10,443**	**12,220**	**14,398**	**16,625**	**85.2%**
North Central						
Clearwater	794	888	1,042	1,207	1,439	81.2%
Idaho	1,092	1,267	1,457	1,674	1,956	79.1%
Latah	1,411	1,571	1,642	1,861	2,150	52.4%
Lewis	391	488	526	551	665	70.1%
Nez Perce	2,168	2,425	2,715	2,941	3,214	48.2%
North Central Total	**5,856**	**6,639**	**7,382**	**8,234**	**9,424**	**60.9%**
Southwest						
Ada	13,755	15,385	16,636	19,239	21,028	52.9%
Adams	322	335	360	421	450	39.8%
Boise	612	635	685	820	884	44.4%
Canyon	6,734	7,875	8,756	10,169	11,916	77.0%
Elmore	1,249	1,385	1,552	1,689	1,880	50.5%
Gem	1,183	1,305	1,341	1,483	1,788	51.1%
Owyhee	531	628	677	735	853	60.6%
Payette	1,055	1,196	1,271	1,355	1,542	46.2%
Valley	756	881	981	1,126	1,268	67.7%
Washington	453	526	533	564	622	37.3%
Southwest Total	**26,650**	**30,151**	**32,792**	**37,601**	**42,231**	**58.5%**
South Central						
Blaine	924	1,117	1,125	1,315	1,366	47.8%
Camas	85	95	95	114	168	97.6%
Cassia	850	1,043	1,229	1,398	1,479	74.0%
Gooding	809	936	1,001	1,127	1,194	47.6%
Jerome	1,029	1,149	1,258	1,435	1,529	48.6%
Lincoln	245	287	331	381	407	66.1%
Minidoka	921	1,083	1,298	1,437	1,586	72.2%
Twin Falls	3,364	3,888	4,118	4,746	5,289	57.2%
South Central Total	**8,227**	**9,598**	**10,455**	**11,953**	**13,018**	**58.2%**
Southeast						
Bannock	3,510	4,036	4,430	4,937	5,466	55.7%
Bear Lake	872	981	1,047	1,028	1,100	26.1%
Bingham	2,313	2,868	3,190	3,782	4,049	75.1%
Caribou	736	800	853	879	942	28.0%
Franklin	1,015	1,101	1,294	1,407	1,585	56.2%
Oneida	264	269	313	381	402	52.3%
Power	236	308	356	416	439	86.0%
Southeast Total	**8,946**	**10,363**	**11,483**	**12,830**	**13,983**	**56.3%**
East						
Bonneville	4,383	5,115	6,002	6,906	7,813	78.3%
Butte	233	289	329	416	444	90.6%
Clark	17	28	46	64	68	300.0%
Custer	293	346	444	594	691	135.8%
Fremont	692	911	1,145	1,342	1,552	124.3%
Jefferson	1,432	1,783	2,003	2,436	2,908	103.1%
Lemhi	443	536	566	713	734	65.7%
Madison	947	1,347	1,551	1,926	2,220	134.4%
Teton	180	246	328	304	411	128.3%
East Total	**8,620**	**10,601**	**12,414**	**14,701**	**16,841**	**95.4%**
Out of State	3,486	3,601	4,291	4,410	5,445	56.2%
Grand Total	**70,760**	**81,396**	**91,037**	**104,127**	**117,567**	**66.1%**

Note: These registration numbers reflect registrations processed for the calendar sticker year. This table includes registered off-highway motorcycles and all-terrain vehicles.

Source: IDPR Recreation Registration Information System

Prepared by Jeff Cook, Outdoor Recreation Analyst

4/22/2008

IDAHO ATV REGISTRATION STATISTICS 2002 - 2006

County	2002 Registrations	2003 Registrations	2004 Registrations	2005 Registrations	2006 Registrations	2002-2006 % Change
North						
Benewah	901	955	1,094	1,128	1,306	45.0%
Bonner	1,051	1,307	1,599	1,887	2,266	115.6%
Boundary	174	243	322	380	484	178.2%
Kootenai	3,457	4,037	4,683	5,696	6,654	92.5%
Shoshone	834	972	1,132	1,336	1,528	83.2%
North Idaho Total	**6,417**	**7,514**	**8,830**	**10,427**	**12,238**	**90.7%**
North Central						
Clearwater	675	743	854	980	1,203	78.2%
Idaho	941	1,095	1,279	1,440	1,700	80.7%
Latah	1,172	1,281	1,361	1,509	1,760	50.2%
Lewis	351	432	459	489	599	70.7%
Nez Perce	1,917	2,153	2,400	2,628	2,845	48.4%
North Central Total	**5,056**	**5,704**	**6,353**	**7,046**	**8,107**	**60.3%**
Southwest						
Ada	7,245	8,188	8,998	10,377	11,583	59.9%
Adams	281	294	320	368	372	32.4%
Boise	452	482	526	606	677	49.8%
Canyon	4,672	5,396	6,049	7,018	8,409	80.0%
Elmore	665	782	902	1,041	1,267	90.5%
Gem	957	1,047	1,074	1,188	1,421	48.5%
Owyhee	427	496	552	595	693	62.3%
Payette	897	1,003	1,060	1,144	1,269	41.5%
Valley	561	661	715	828	909	62.0%
Washington	366	414	420	469	518	41.5%
Southwest Total	**16,523**	**18,763**	**20,616**	**23,634**	**27,118**	**64.1%**
South Central						
Blaine	423	483	486	586	627	48.2%
Camas	45	49	47	54	93	106.7%
Cassia	668	803	920	1,102	1,215	81.9%
Gooding	533	607	668	749	825	54.8%
Jerome	667	761	867	996	1,089	63.3%
Lincoln	192	207	231	275	294	53.1%
Minidoka	744	872	1,034	1,167	1,327	78.4%
Twin Falls	1,948	2,335	2,565	2,980	3,470	78.1%
South Central Total	**5,220**	**6,117**	**6,818**	**7,909**	**8,940**	**71.3%**
Southeast						
Bannock	2,622	2,903	3,238	3,616	4,000	52.6%
Bear Lake	782	878	929	905	969	23.9%
Bingham	1,744	2,128	2,401	2,799	3,054	75.1%
Caribou	647	691	738	742	790	22.1%
Franklin	904	983	1,120	1,222	1,387	53.4%
Oneida	209	215	244	280	349	67.0%
Power	204	248	305	342	364	78.4%
Southeast Total	**7,112**	**8,046**	**8,975**	**9,906**	**10,913**	**53.4%**
East						
Bonneville	2,973	3,441	4,002	4,714	5,361	80.3%
Butte	191	228	258	300	334	74.9%
Clark	12	23	33	41	42	250.0%
Custer	244	283	341	473	550	125.4%
Fremont	567	727	930	1,081	1,272	124.3%
Jefferson	1,018	1,237	1,440	1,716	2,077	104.0%
Lemhi	353	452	462	600	614	73.9%
Madison	733	998	1,199	1,392	1,659	126.3%
Teton	124	166	205	184	271	118.5%
East Total	**6,215**	**7,555**	**8,870**	**10,501**	**12,180**	**96.0%**
Out of State	2,364	2,444	2,958	3,211	4,110	73.9%
Grand Total	**48,907**	**56,143**	**63,420**	**72,634**	**83,606**	**70.9%**

Note: These registration numbers reflect registrations processed for the calendar sticker year. This table only includes registered off-highway all-terrain vehicles.

Source: IDPR Recreation Registration Information System

Prepared by Jeff Cook, Outdoor Recreation Analyst

4/22/2008

IDAHO MOTORBIKE REGISTRATION STATISTICS 2002 - 2006

County	2002 Registrations	2003 Registrations	2004 Registrations	2005 Registrations	2006 Registrations	2002-2006 % Change
North						
Benewah	142	155	159	177	206	45.1%
Bonner	348	424	536	673	674	93.7%
Boundary	31	40	50	59	60	93.5%
Kootenai	1,822	2,056	2,374	2,746	3,098	70.0%
Shoshone	216	254	271	316	350	62.0%
North Idaho Total	**2,559**	**2,929**	**3,390**	**3,971**	**4,388**	**71.5%**
North Central						
Clearwater	118	145	188	227	236	100.0%
Idaho	149	172	178	234	256	71.8%
Latah	240	290	281	352	390	62.5%
Lewis	40	56	67	62	66	65.0%
Nez Perce	257	272	315	313	370	44.0%
North Central Total	**804**	**935**	**1,029**	**1,188**	**1,318**	**63.9%**
Southwest						
Ada	6,516	7,199	7,641	8,865	9,446	45.0%
Adams	43	41	40	53	78	81.4%
Boise	156	153	159	215	207	32.7%
Canyon	2,078	2,480	2,708	3,153	3,507	68.8%
Elmore	584	603	650	648	613	5.0%
Gem	229	258	267	295	367	60.3%
Owyhee	105	132	125	140	160	52.4%
Payette	156	193	211	211	273	75.0%
Valley	198	220	266	298	361	82.3%
Washington	89	112	113	95	105	18.0%
Southwest Total	**10,154**	**11,391**	**12,180**	**13,973**	**15,117**	**48.9%**
South Central						
Blaine	502	634	639	729	739	47.2%
Camas	40	46	48	60	75	87.5%
Cassia	184	240	309	296	264	43.5%
Gooding	277	329	333	378	369	33.2%
Jerome	363	389	391	439	440	21.2%
Lincoln	52	80	100	106	113	117.3%
Minidoka	172	212	264	270	259	50.6%
Twin Falls	1,420	1,553	1,554	1,767	1,819	28.1%
South Central Total	**3,010**	**3,483**	**3,638**	**4,045**	**4,078**	**35.5%**
Southeast						
Bannock	887	1,133	1,192	1,321	1,467	65.4%
Bear Lake	90	104	118	123	131	45.6%
Bingham	572	740	789	983	996	74.1%
Caribou	91	109	115	137	152	67.0%
Franklin	115	118	174	185	198	72.2%
Oneida	55	54	69	101	53	-3.6%
Power	31	60	51	74	75	141.9%
Southeast Total	**1,841**	**2,318**	**2,508**	**2,924**	**3,072**	**66.9%**
East						
Bonneville	1,417	1,674	2,000	2,192	2,452	73.0%
Butte	42	61	71	116	110	161.9%
Clark	5	5	13	23	26	420.0%
Custer	46	63	103	121	141	206.5%
Fremont	131	184	215	261	280	113.7%
Jefferson	412	546	563	720	831	101.7%
Lemhi	90	84	104	113	120	33.3%
Madison	212	350	352	534	561	164.6%
Teton	59	80	123	120	140	137.3%
East Total	**2,414**	**3,047**	**3,544**	**4,200**	**4,661**	**93.1%**
Out of State	1,118	1,157	1,335	1,196	1,336	19.5%
Grand Total	**21,900**	**25,260**	**27,624**	**31,497**	**33,970**	**55.1%**

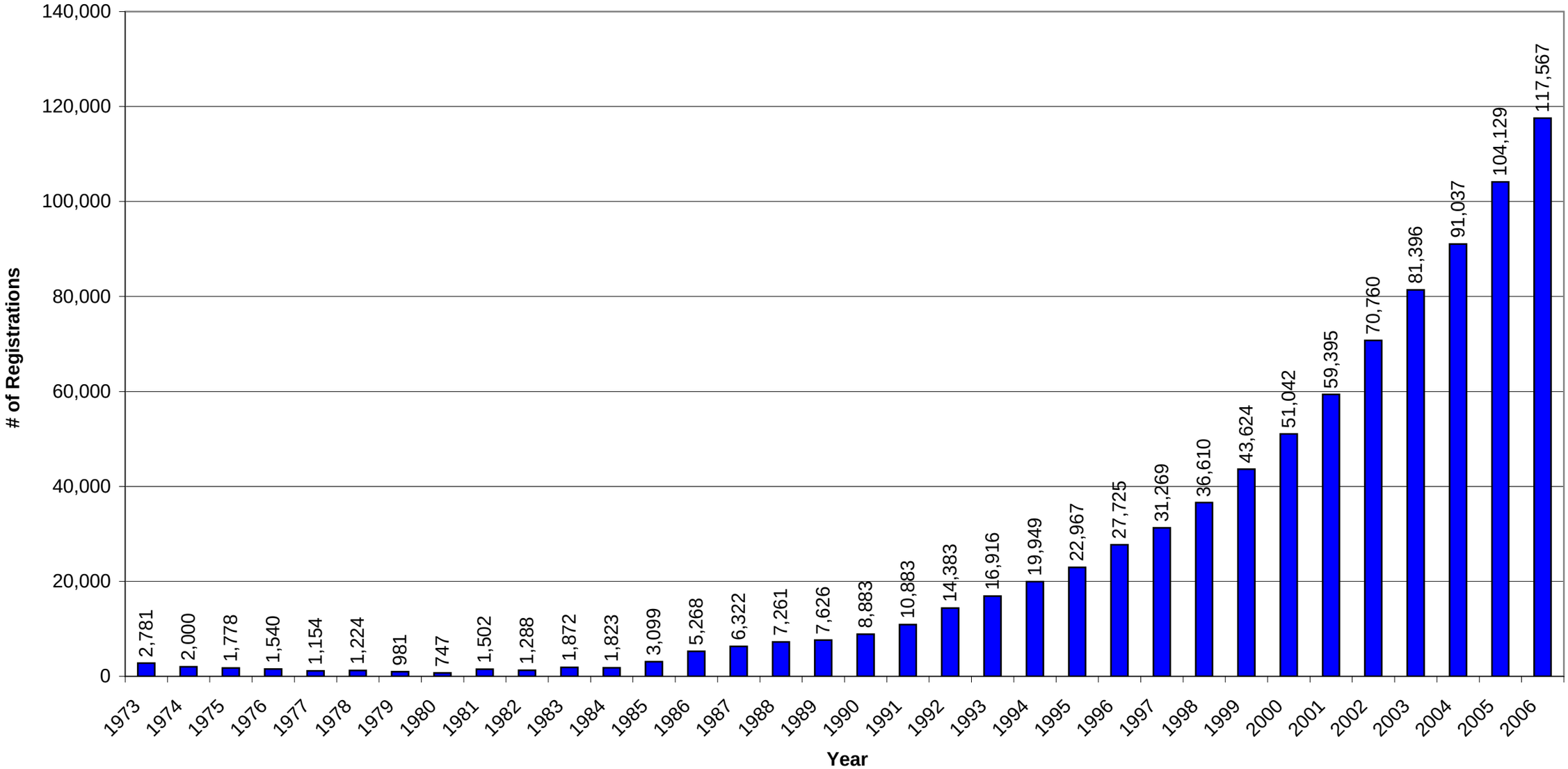
Note: These registration numbers reflect registrations processed for the calendar sticker year. This table only includes registered off-highway motorcycles.

Source: IDPR Recreation Registration Information System

Prepared by Jeff Cook, Outdoor Recreation Analyst

4/22/2008

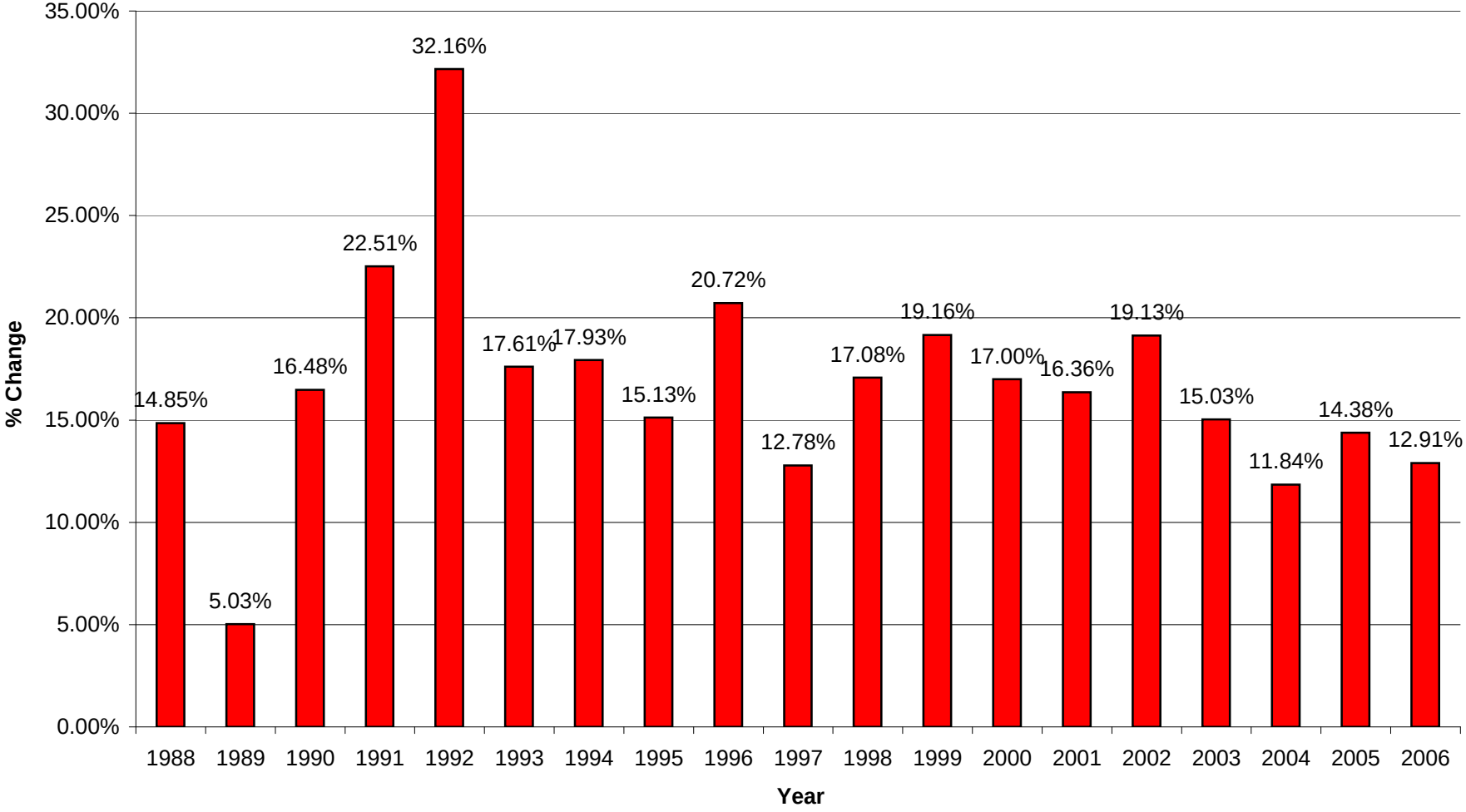
Idaho Off-Highway Motorbike/ATV Registrations 1973-2007



Source: Idaho Dept. of Parks Rec.

Note: The increase in registrations is due to both increased participation rates and increased compliance rates.

Motorbike/ATV % Change From Previous Year 1988-2007



Year	Registrations	% Change
1973	2,781	
1974	2,000	-28.08%
1975	1,778	-11.10%
1976	1,540	-13.39%
1977	1,154	-25.06%
1978	1,224	6.07%
1979	981	-19.85%
1980	747	-23.85%
1981	1,502	101.07%
1982	1,288	-14.25%
1983	1,872	45.34%
1984	1,823	-2.62%
1985	3,099	69.99%
1986	5,268	69.99%
1987	6,322	20.01%
1988	7,261	14.85%
1989	7,626	5.03%
1990	8,883	16.48%
1991	10,883	22.51%
1992	14,383	32.16%
1993	16,916	17.61%
1994	19,949	17.93%
1995	22,967	15.13%
1996	27,725	20.72%
1997	31,269	12.78%
1998	36,610	17.08%
1999	43,624	19.16%
2000	51,042	17.00%
2001	59,395	16.36%
2002	70,760	19.13%
2003	81,396	15.03%
2004	91,037	11.84%
2005	104,129	14.38%
2006	117,567	12.91%

COEUR D' ALENE TRIBE
850 A St
Plummer, ID 83851-0408

April 21, 2008
St. Joe Ranger District
Cornie Hudson, Project Team Leader
222 7th Street, Suite 1,
St. Maries, ID 83861

Subject: Bussel 484 Project

Dear Ms. Hudson:

The Coeur d'Alene Tribe concurs with the objectives of the Bussel 484 project and agrees that the proposed management actions are necessary to restore and improve the ecological resiliency of the area. Our primary concerns are:

- improving the extent and effectiveness of wildlife habitat, particularly big game winter range;
- restoring high quality aquatic habitat, particularly cutthroat trout spawning and rearing areas;
- increasing the abundance, diversity, and quality of traditional food and medicinal plants and;
- protection of the Tribe's cultural resources.

Big Game Winter Range: Bussel and Bear Creek drainages contain high quality, critical, big game winter range. The Tribe is concerned that improving motorized trails in addition to the road construction and reconstruction proposed for vegetation management in the preferred alternative will reduce the effectiveness of the winter range. The project area receives relatively high recreational vehicle use. Development of the motorized loop trails will encourage greater motorized use of the area. The Tribe believes that Alternative C would better protect critical winter range. The Tribe further recommends that regardless of the Alternative selected that the FS: 5-1 5-2

- place road 1254 into long-term storage, road prescription C, following management activities in harvest units accessed by the road. 5-3
- restrict motorized access, including over the snow machines, within the project area during late winter and spring calving season to avoid additional stress on animals. 5-4

Aquatic Habitat: It is unclear from the DEIS how soon we can expect Bear and Bussel Creeks to meet or exceed water quality standards for sediment and temperature. The riparian planting will occur over a 10-15 year period. Is this an indication of the schedule for aquatic restoration? If it is, this is not acceptable to the Tribe. The Tribe would like to see a specific explanation, with a timeline, of the actions to be taken and how those actions will result in attainment of the water quality goals. 5-5

Traditional Food and Medicine Plants: The Coeur d'Alene people utilize a variety of plants for food and medicine. Management actions that promote a diverse and healthy understory in general are likely to promote the abundance and health of plants important to Tribal members. Timber harvest, thinning, slash disposal, and fuels management all impact traditional food and medicine plants; both positive and negative impacts. We believe an analysis of the impacts on traditional food and medicine plants of the alternatives should be completed prior to issuing the FEIS. 5-6

Cultural Resources: The DEIS refers directly to the Marble Creek Historical District and the potential adverse impacts on historic sites. No mention is made of potential harm to cultural sites of the Coeur d'Alene people. We remind you of your obligation to consult with the Tribe's Cultural Resources Department prior to initiating any action within our ceded territory. 5-7

We appreciate the opportunity to comment on the proposed Bussel 484 project. If you have questions or would like clarification on the issues that the Tribe has raised, please contact Troy Merrill, Environmental Planner, (208) 686-1088, tmerrill@cdatribe-nsn.gov.

Thank you,

Alfred M. Nomee, Director
Natural Resource Department
Coeur d'Alene Tribe

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
620 SW Main Street, Suite 356
Portland, Oregon 97232-2036

9043.1
IN REPLY REFER TO:
ER08/220

Electronically Filed

April 21, 2008

Cornie Hudson
St. Joe Ranger District
222 South 7th Street, Suite 1
St. Maries, Idaho 83861

Dear Ms. Hudson:

The U.S. Department of the Interior (Department) has reviewed the Draft Environmental Impact Statement for the Bussel 484 Project for the Idaho Panhandle National Forests of Shoshone County, Idaho. The Department offers the following comments for use in developing the Final Environmental Impact Statement (FEIS) for the project.

Chapter 3, Fisheries, pages 67-116, and Wildlife, pages 230-270

The DEIS contains several statements of fact and references to field surveys without supporting scientific documentation (especially in the Fisheries section). The FEIS would be enhanced if it included citations supporting such statements of fact or documenting field surveys, and listed these citations and documents in the list of references. Examples include, but are not limited to the following: 6-1

- "Currently, bull trout are known to occupy habitat in the St. Joe River and many of its tributaries. . . . No bull trout were located during recent surveys of the streams found within the project area." (page 77)
- "Recent surveys have not located rainbow trout within any of the tributaries of the project area." (page 77)
- "During 1991 a stream survey was conducted to inventory habitat on Bussel Creek. In 2003 a field review indicated the in stream habitat had not notably changed." (page 82)
- "A single pass electrofishing survey in Bear Creek revealed current populations of cutthroat and sculpin in 2002." (page 84)
- "Fisher are considered rare through most of Idaho. They prefer....and extensively for travel." (page 262)

Chapter 3, Bussel Creek Water Quality, pages 83

6-2 Stream temperature range is a critical element for supporting fish populations (e.g. salmonid, bull trout, Westslope cutthroat trout) in the project area. The DEIS indicates that "Bussel Creek is listed on Idaho's 2002, 303(d) list of Water Quality Limited Water Bodies for temperature concerns." In several of the tributaries within the project area, current water temperatures do not support beneficial uses. For instance, in both Little Bear and Bear Creeks, (page 81) "... temperatures in both streams currently exceed federal . . . and state . . . bull trout [spawning] temperature standards (DEQ, 2003)." The Department suggests that the FEIS include an analysis supported by relevant scientific literature outlining how the proposed project activities may affect water temperatures. If mitigative measures are warranted based on the analysis, the proposed measures should likewise be included in the FEIS.

Chapter 3, Water Yield Estimate Assumptions and Limitations, page 207, second paragraph

6-3 This paragraph describes the period of record for the USGS streamflow gauging station on the St. Joe River at Calder, ID, as 1911-1912 and 1921-1965. This conflicts with the description on page 213, first paragraph in the section "Water Yield," where the period of record is described as 1911-1912 and 1921-2006. Streamflow data continue to be collected at this gauging station and are available on the Internet in near-real time at http://nwis.waterdata.usgs.gov/nwis/nwisman/?site_no=12414500&agency_cd=USGS.

Chapter 3, Water Yield, page 223, second full paragraph

This analysis does not appear to correctly apply the recurrence interval. The recurrence interval is defined as "the average interval of time within which the magnitude of a given event, such as a storm or flood, will be equaled or exceeded once." This definition and others are found in the "Water Basics Glossary" available on the Internet at http://capp.water.usgs.gov/GIP/h2o_gloss/.

6-4 If the water yield increases from a given-size storm, for example, the 10-year storm, then the recurrence interval is not lengthened, as shown in the fourth column of Table 3-75. The new yield *is* the new 10-year peak flow. That is, larger storms will occur more often. This should be corrected in the FEIS.

Thank you for the opportunity to review and comment on this DEIS. If you have any questions concerning the Department's comments, please contact Lloyd Woosley, Chief of the USGS Environmental Affairs Program, at (703) 648-5028 or at lwoosley@usgs.gov. If you have any other questions, please contact me at (503) 326-2489.

Sincerely,

Preston A. Sleeger
Regional Environmental Officer

Cornie Hudson
Bussel 484 Project Team Leader
St. Joe Ranger District
Bussel 484 EIS
222 South 7th St., Suite 1
St. Maries, ID 83861

April 21, 2008

RE: Idaho Conservation League comments on the Bussel 484 DEIS Project

Dear Cornie:

Thank you for considering our comments on the Bussel 484 DEIS. For over thirty years, the Idaho Conservation League has worked to protect Idaho's clean water, wilderness, and quality of life through citizen action, public education, and professional advocacy. As Idaho's largest state-based conservation organization we represent over 9,000 members, many of whom have a deep personal interest in protecting our water, wildlands, and wildlife from the harmful effects associated with logging and roads.

We have some significant concerns with the Bussel 484 draft environmental impact statement (DEIS), which the Forest Service should consider in the FEIS before issuing a record of decision. These include concerns over road and travel management, water quality, wildlife and fire.

In general, we are concerned that the project's purpose and need fails to adequately prioritize the restoration needs in the project area. Instead, the project emphasizes the notion that the area is "out of whack" as a result of fire suppression, and that logging will fix this problem. We do not agree with this notion.

While we do agree that fire supression in the project area may have altered some ecological components and that the introducton of white pine blister rust has altered stand composition, we disagree that the solution is to log over 3,000 acres. Given the historic level of intensive logging in the project area, more logging is unlikely to "fix the problems." Further, the DEIS itself discloses that 87% of the project area is composed of stand-replacing fire regime forests. Even with this disclosure, the proposal only includes 882 acres of prescribed fire, and only 332 acres of broadcast burning!

Instead, we encourage you to develop and consider an alternative that makes much greater use of landscape burning in the FEIS. The FEIS should consider 7-1

alternatives that incorporate free thinning and a range of silvicultural prescriptions. We recognize the desire to log commercial trees in the project area and we are not advocating for a fire-only alternative (which was previously dismissed). Instead, we encourage you to consider an alternative that includes a range of diffferent treatments. This would include areas of moderate and high severity prescribed fire implemented over several seasons. This could include pre-treatment of fuels in some areas, and none in others.

We dispute the argument from the DEIS (page 9), that "it would be irresponsible to have large prescribed fires burning in areas that require suppression when fire management resources are needed to suppress wildfires." While we certainly recognize that the implementation of lots of large scale prescribed fires in the 7-2 heat of fire season may be unpopular, the adjoining district on the Clearwater National Forest (North Fork Clearwater RD) has implemented just such a program. The notion that it would be impossible to implement a prescribed burning program in mid-summer fails to recognize the advances made in the field of fire management. Certainly with the extent of roads and clearcuts in the project area, ample fire breaks exist to stem the spread of fire.

In addition, we do not feel that the DEIS is honest in dealing with the short-term increase in fire risk associated with the project. Considering that only 882 acres out of a total of 3,060 acres will have any form of fuels treatment, the result of the 7-3 project will actually increase fire risk in the near term. How this meets the purpose and need to reduce the potential for large, severe wildfires is unclear. Further, how any project could reduce the potential for severe wildfires in an area that is adapted to severe wildfires is unclear.

We strongly support the proposal to obliterate 29.1 miles of road, however we are concerned that the placement of 19 miles into long-term storage (mgmt RxC) 7-4 may result in continued use of these roads because of inadequate barriers and ineffective monitoring. We are also concerned that the project fails to scale back any of the logging commensurate with the reduction in roads. This appears to be an attempt to limit the economical feasibility of the project. Instead, the FEIS 7-5 should consider an alternative that avoids road construction AND scales back logging in those areas in order to improve the economics of the sale.

7-6 With regards to wildlife, we are concerned about the potential impact of the project on lynx in the project area, how the Lynx Analysis Unit is identified and 7-7 managed, whether appropriate consideration was given to grizzly bear use in the 7-8 area, and whether any unallocated old growth stands will be affected.

Finally, we are concerned about the impacts of the project on 303(d) listed 7-9 streams in the project area. We are uncertain as to whether the project meets the State of Idaho Antidegradation Guidance, which prohibits the further pollution of 7-10 listed water bodies. We are also concerned tha the project fails to consider the impacts associated with road reconstruction.

Given the past and ongoing effects of active management in the Marble creek Watershed, the Forest Service should base all project activities off of existing roads. 7-11 The agency should also consider additional restoration components to improve resource conditions in Marble Creek. 7-12 Additional discussion of these issues is provided in the attached comments.

Once again we thank you for the opportunity to submit comments on this project. Please send us any subsequent analyses for this project. We look forward to continuing to work with the St. Joe Ranger District on this and other projects in the future.

Sincerely,

Jonathan Oppenheimer
Senior Conservation Associate

Idaho Conservation League comments on the Bussel 484 DEIS

Additional information requested

In our scoping comments, we specifically requested documents referenced in the scoping letter be made available on the IPNF website. These included the Bear
7-13 Bussel Area EAWS, Bussel Creek Roads Analysis, and the St. Joe Geographic Assessment. As these documents directly related to the development of the project, they would have proved useful in the development of comments.

Forest Plan Amendment

The DEIS completely fails to analyze or support the proposal to shift
7-14 Management Area 9 to Management Area 1, as part of the proposal. No information is provided except for basic disclosure and a map. The FEIS must disclose the rationale for this change and any environmental consequences associated with it.

Cumulative effects

The DEIS failed to adequately provide a detailed account of past, ongoing and foreseeable projects (private, State, and National Forest) in the area that would lead to cumulative effects as required by NEPA. The analysis did not contain
7-15 maps documenting past logging activities and existing roads, including regeneration level, cover status, and opening size. The DEIS also failed to include any photos of existing conditions within the project area, aerial photos, or any other depiction of the cumulative effects area.

It is important to note that the St. Joe Geographic Assessment indicated that
7-16 current vegetative conditions contained significantly more seedling/sapling and pole/small/medium sized trees than occurred historically. This runs counter to the heavy reliance on regeneration logging.

Riparian Habitat Conservation Areas and INFISH Buffers

We appreciate that no logging is proposed in RHCAs, however are concerned

that logging will occur on 45 acres with high sediment delivery potential. As a result, we encourage you to eliminate the portions of these units that display these characteristics. This includes portions of units 84, 110, 137, 143, 170, 182, 197, 254, and 268. 7-17

Old Growth and Snags

We encourage you to consider the addition of unallocated Old Growth Stands are being targeted for logging in the Bussel 484 EIS project. 7-18

With regards to snags, we encourage you to retain as many as possible and to meet or exceed the Regional Snag Management Guidelines. 7-19

Roads

The descriptions, provided in the scoping notice, of the proposed road management actions are confusing. It is unclear whether there will be a net gain, or net loss of roads as a result of the proposed action, and whether road decommissioning will occur as a result of abandonment or full-bench obliteration. This should be described in detail. 7-20

Previous management activities have resulted in excessive road densities throughout the project area. It is troubling that the proposed action would result in 5.6 miles of new road construction in this area, considering that the IPNF and the Forest Serivce as a whole are unable to manage the existing road network. Instead of constructing new roads, the IPNF should be seeking to obliterate and restore as many high-risk, low-value roads as possible. 7-21

According to the St. Joe River Subbasin Assessment and TMDL the road densities in the Bussel Creek and Bear Creek (including Little Bear Creek) are 4.59 and 5.3 mi/mi^2, respectively.

This density compromises the project area's ability to support wildlife and fish by increasing the potential for disturbance by humans, habitat fragmentation, 7-22

sedimentation, and encouragement of OHV use. The United States Fish and Wildlife Service's Bull Trout Interim Conservation Guidance describes the following correlation between bull trout and road density:

7-23

> Bull trout strongholds in the Interior Columbia River Basin showed a very strong negative correlation with road densities. Bull trout populations classified as 'depressed' had an average watershed road density of 1.4 mi/mi sq. and bull trout typically were absent at an average road density of 1.7 mi/mi. sq. (page 27, BTICG).

7-24

Due to existing sediment problems in the St. Joe Basin, we strongly encourage the IPNF to avoid any new road construction, even temporary ones. The potential for helicopter logging should be considered in order to eliminate the need for new road construction.

7-25

The notion that road reconstruction does not contribute to water quality concerns is unfounded. Specifically, research from the region has demonstrated that one of the most effective predictors of road erosion is how recently a road has been bladed. Where forbs, grasses, shrubs and trees have grown in on roads, the removal of these plants, and the loss of root structure (which holds soil in place) is directly relative to the amount of sediment coming off those roads. Therefore, the assumption that all road reconditioning/reconstruction will improve sediment conditions is inaccurate. Further, road reconditioning/reconstruction has the real potential to introduce sediment through sidecasting of materials into streams, either directly, or indirectly. In addition, the DEIS (based on limitations of WATSED, WEPP or other models) failed to evaluate rain-on-snow, potential peak flow, 100-year storms or other events that may occur shortly after road construction, reconstruction or reconditioning. Finally, road reconstruction and it's location should be included in the tables in the FEIS, as it is omitted in the DEIS.

7-26

7-27

Riparian Planting

Page 217 of the DEIS states that up to 1.8 miles of riparian planting may occur over numerous years. This fails to inspire confidence. Either the planting should be included as part of the project and guaranteed, or reference should be removed in the FEIS. 7-28

Soils

We are concerned that the level of soil monitoring in the project area failed to accurately evaluate the existing levels of distrubance, and that the effects of the project may in fact exceed regional and forest plan standards. Many of the units had 0 acres monitored, yet the IPNF still anticipates up to 14% detrimental disturbance. Because this is so close to the 15% standard, we encourage you at a minimum to evaluate any units where the anticipated disturbance exceeds 7.5%. 7-29

The DEIS discloses that unit 224 will have 15% detrimental distrubance. Considering that the Regional Standard is 15%, we encourage you to consider dropping this unit, or reconsidering the unit for helicopter yarding to reduce soil effects. 7-30

Off Road Vehicle Use

We are concerned that unintended Off Road Vehicle (ORV) use could expand in the project area following completion of this project. The IPNF should consider full-bench obliteration as an alternative to placing roads into long-term storage. If only the entrance to roads are barriered, monitoring has shown that extensive use continues to occur. 7-31

The FEIS needs to describe what methods will be used (berms, slash, gates, signs), the probability of success of these efforts, and how these regulations will be enforced (number and frequency of patrols). 7-32

We appreciate efforts to restrict cross-country travel, yet question the ability to effectively carry out the proposed road and trail restrictions. There is a need to 7-33

provide for adequate and appropriate enforcement, yet funding is limited and the success stories associated with enforcement is limited.

Wildlife

7-34 Given the grizzly bear that was killed in the Clearwater NF last year, the likelihood for grizzly bear use in the St. Joe Ranger District is relatively high. As a result, the FEIS and associated specialist reports should reconsider the project's impacts on grizzly bears. Specifically, the impacts associated with gopher baiting, and roads should be considered.

7-35 We are unclear as to the analysis associated with Lynx. Our understanding is that the LAUs are in a state of flux and may be altered in order for the project to meet standards. We request clarfication on this issue and how it is being addressed by the Forest Service.

April 20, 2008

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These are comments on the Bussel 484 Draft Environmental Impact Statement (DEIS), from The Lands Council, WildWest Institute, Kootenai Environmental Alliance, Alliance for the Wild Rockies, and Friends of the Clearwater.

Historic conditions

The DEIS states, "Within the St. Joe River Basin, as well as within the Bussel 484 Project Area, there has been a shift from historic conditions to a more homogeneous structure and species composition." (121.) The justification for the silvicultural treatments proposed under the action alternatives is largely based upon what is claimed or assumed to be a similar shift in the Bussel 484 project area, away from "historic conditions," also know as "reference conditions" or the "range of natural variability" or other similar terms. Frissell and Bayles, 1996 state:

> **The concept of range of natural variability … suffers from its failure to provide defensible criteria about which factors ranges should be measured.** Proponents of the concept assume that a finite set of variables can be used to define the range of ecosystem behaviors, when ecological science strongly indicates many diverse factors can control and limit biota and natural resource productivity, often in complex, interacting, surprising, and species-specific and time-variant ways. Any simple index for measuring the range of variation will likely exclude some physical and biotic dimensions important for the maintenance of ecological integrity and native species diversity. (Emphasis added.)

Critical ecological factors excluded or inadequately analyzed in the DEIS include: amount of interior mature and old-growth forest, amount and size distribution of snags, amounts and distribution of coarse woody debris, and soil conditions. The DEIS itself discloses how important these ecological factors are to wildlife and fish, watershed hydrological functioning, and soil productivity. These factors happen to be associated with the cumulative effects of past logging, Furthermore, these ecological factors will be yanked even farther away from historic conditions by the proposed intensive industrial logging operations. Yet these are factors which the DEIS largely ignores in failing to satisfy requirements under the National Environmental Policy Act (NEPA) to **analyze and disclose cumulative effects.** 8-1 8-2

Cumulative impacts is defined by NEPA regulations at 40 CFR § 1508.7:

> …the impact on the environment which results from the incremental impact of the action **when added to other past, present, and reasonably foreseeable future actions** regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. (Emphasis added.)

Hayward, 1994 states:

> Despite increased interest in historical ecology, scientific understanding of the historic abundance and distribution of montane conifer forests in the western United States is not sufficient to indicate how current patterns compare to the past. In particular, knowledge of patterns in distribution and abundance of older age classes of these forests in not available. …Current efforts to put management impacts into a historic context seem to focus almost exclusively on what amounts to a snapshot of vegetation history—a documentation of forest conditions near the time when European settlers first began to impact forest structure. …The value of the historic information lies in the perspective it can provide on the potential variation… I do not believe that historical ecology, emphasizing static conditions in recent times, say 100 years ago, will provide the complete picture needed to place present conditions in a proper historic context. Conditions immediately prior to industrial development may have been extraordinary compared to the past 1,000 years or more. Using forest conditions in the 1800s as a baseline, then, could provide a false impression if the baseline is considered a goal to strove toward.

This it really calls into question the IPNF's entire mechanical manipulation/ prescribed burning regime, as represented by the Bussel 484 proposal. The project area and IPNF have been
8-3 fundamentally changed, so the agency must consider how much native forest it has fundamentally altered compared to historic conditions forestwide before pursuing "treatments"
8-4 here. And that includes considering the effects of human-induced climate change. Essentially, this means considering new scientific information on all relevant changes away from historic
8-3 conditions— <u>and in the forestwide context of Forest Plan Revision</u>—not on a project-level basis prior to revision.

The DEIS discloses that large-scale logging has occurred in the area, but fails to disclose if the
8-5 results of that logging—much of it very much like what is now being proposed—are consistent with the objectives of the similar logging proposed for the Bussel 484 project. Such an analysis is of vital importance for the public's and decisionmaker's understanding of this proposal.

"Harvesting activities occurring since the 1960s that subsequently resulted in the regeneration of western larch and western white pine have contributed to the perpetuation of long-lived early seral species. Fire exclusion has likely interrupted nutrient cycling at the stand and landscape levels." (DEIS at 63.) Please disclose the amount of acres and location of this "regeneration of
8-6 western larch and western white pine (that has) contributed to the perpetuation of long-lived early seral species."

The DEIS states that as a result of the project, firefighters will be able to more effectively suppress fires in the future. In other places the DEIS admits continuing fire suppression actions will move conditions farther from historic conditions. The impacts of these "connected" fire suppression actions are not disclosed, as NEPA requires, at any programmatic or project scale. 8-7

From the DEIS Purpose and Need:

> Maintain or improve resilience of the vegetative resources to disturbances such as insects, disease, and fire:
> • Promote and accelerate the development of long-lived, early-seral, shade-intolerant species (western white pine and western larch):
> • Promote or maintain large-diameter trees, snags, coarse woody debris, and stands dominated by large-diameter trees:
> • Reduce stand densities to enhance and encourage resilience to insects, disease, and other disturbances:
> • Reduce the potential for large, severe wildfires while promoting conditions for safe and effective wildland fire management.

Clearly, underlying much of the DEIS's analysis is the belief that management can manipulate and natural processes to arrive at predicable outcomes as suggested in those bullet points. This notion ought to have been by now eliminated from public land managers' world view simply because the failure of the old paradigm is quite evident from the lists of threatened and endangered species and damaged watersheds, the increased fire risk and out-of-whack ecosystems from fire suppression, the invasions of exotic species, and agency budgets strained to the breaking point trying to deal with the accrued damages caused by this "manipulate and control" paradigm.

Regarding the mismanagement of fire by this "manipulate and control" paradigm (this mismanagement being identified as a driver for this Proposed Action), Wuerthner (2006a) states:

> The industrial/anthropocentric perspective believes that humans can and must control processes such as fire. It also tends to believe that natural processes are mechanical and that they respond to human tinkering much like a machine. Ultimately, the industrial/anthropocentric perspective on wildfire negatively affects the health and well-being of the environment.

Wuerthner (2006a) identifies several reasons why management based upon a world view—unfortunately still pervasive in the IPNF—is simply not sustainable.

Soil productivity

Lacy, 2001 examines the importance of soils for ecosystem functioning and points out the failure of most regulatory mechanisms to adequately address the soils issue. From the Abstract:

> Soil is a critical component to nearly every ecosystem in the world, sustaining life in a variety of ways—from production of biomass to filtering, buffering and transformation of water and nutrients. While there are dozens of federal environmental laws protecting and addressing a wide range of natural resources and issues of environmental quality, there is a significant gap in the protection of the

> soil resource. Despite the critical importance of maintaining healthy and sustaining soils, conservation of the soil resource on public lands is generally relegated to a diminished land management priority. Countless activities, including livestock grazing, recreation, road building, logging, and mining, degrade soils on public lands. This article examines the roots of soil law in the United States and the handful of soil-related provisions buried in various public land and natural resource laws, finding that the lack of a public lands soil law leaves the soil resource underprotected and exposed to significant harm. To remedy this regulatory gap, this article sketches the framework for a positive public lands soil protection law. This article concludes that because soils are critically important building blocks for nearly every ecosystem on earth, an holistic approach to natural resources protection requires that soils be protected to avoid undermining much of the legal protection afforded to other natural resources.

The article goes on:

> Countless activities, including livestock grazing, recreation, road building, logging, mining, and irrigation degrade soils on public lands. Because there are no laws that directly address and protect soils on the public lands, consideration of soils in land use planning is usually only in the form of vaguely conceived or discretionary guidelines and monitoring requirements. This is a major gap in the effort to provide ecosystem-level protection for natural resources.
>
> The rise of an "ecosystem approach" in environmental and natural resources law is one of the most significant aspects of the continuing evolution of this area of law and policy. One writer has observed that there is a
>
> > fundamental change occurring in the field of environmental protection, from a narrow focus on individual sources of harm to a more holistic focus on entire ecosystems, including the multiple human sources of harm within ecosystems, and the complex social context of laws, political boundaries, and economic institutions in which those sources exist.[1]
>
> As federal agencies focus increasingly on addressing environmental protection from an holistic perspective under the current regime of environmental laws, a significant gap remains in the federal statutory scheme: protection of soils as a discrete and important natural resource. **Because soils are essential building blocks at the core of nearly every ecosystem on earth, and because soils are critical to the health of so many other natural resources—including, at the broadest level, water, air, and vegetation—they should be protected at a level at least as significant as other natural resources.** Federal soil law (such as it is) is woefully inadequate as it currently stands. It is a missing link in the effort to protect the natural world at a meaningful and effective ecosystem level.

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[1]Michael M. Wenig, How "Total" Are "Total Maximum Daily Loads"?—Legal Issues Regarding the Scope of Watershed-Based Pollution Control Under the Clean Water Act, 12 TUL. ENVTL. L.J. 87, 89 (1998). There are, however, major questions to ask of what exactly is the focus of "ecosystem management" in some agency plans—the ecosystem or the management? See, e.g. Michael C. Blumm, Sacrificing The Salmon: A Legal And Policy History Of The Decline Of Columbia Basin Salmon (2000) (forthcoming) (manuscript at 359–63, on file with author).

> … This analysis concludes that the lack of a public lands soil law leaves the soil resource under-protected and exposed to significant harm, and emasculates the environmental protections afforded to other natural resources.

(Emphasis added.) The problems Lacy (2001) identifies of regulatory mechanisms exists in Regional and Forest-level standards and other guidance applicable for the Bussel 484 project. 8-8

The DEIS fails to include a map showing the boundaries of all previously established "activity areas" as the R-1 Soil Quality Standards (SQS) define "activity areas", and present all available 8-9 data on levels of existing detrimental disturbance within those activity areas, in either a table or map form. The DEIS's omission of not disclosing the extent to which current soil conditions due to management activities deviate from reference conditions constitutes a major failure to disclose 8-10 project area-wide cumulative effects on soil conditions. This is likely because soil-compacting machines and logging activities themselves are completely antithetical to ecological reference conditions and the DEIS's major bias toward massive industrial logging as a solution to alleged ecological problems.

Then, based on that data the IPNF will be in a better position to analyze the water yield and other hydrological implications of the various amounts of hydrologically dysfunctional soils, within each project area watershed and subwatershed, and disclose them to the public. This is also in the SQS. The models the DEIS uses do not consider compacted soils, for example, for 8-11 cumulative effects watershed analyses.

Previous noncompliance or exceeding of 15 percent may be obscured by using activity area boundaries that dilute the total percentages of existing damage within a Bussel 484 project activity area. This problem arises specifically because the DEIS does not disclose the percent of 8-12 existing detrimental disturbance within previously established activity area boundaries.

Such factors as the areal extent and depth of soil compaction, damage due to slash burning, erosion from logging and other management actions—are relevant to anyone making a decision on whether to log more of the area. Even the IPNF's own soil scientist agrees with such an approach. Kuennen et al. 2000 (a collection of Northern Region soil scientists) state:

> An emerging soils issue is the cumulative effects of past logging on soil quality. Pre-project monitoring of existing soil conditions in western Montana is revealing that, where ground-based skidding and/or dozer-piling have occurred on the logged units, soil compaction and displacement still are evident in the upper soil horizons several decades after logging. Transecting these units documents that the degree of compaction is high enough to be considered detrimental, i.e., the soils now have a greater than 15% increase in bulk density compared with undisturbed soils. Associated tests of infiltration of water into the soil confirm negative soil impacts; **the infiltration** rates on these compacted soils are several-fold slower than rates on undisturbed soil.
>
> …**The effects of extensive areas of compacted and/or displaced soil in watersheds along with impacts from roads, fire, and other activities are**

> **cumulative.** A rapid assessment technique to evaluate soil conditions related to past logging in a watershed is based on a step-wise process of aerial photo interpretation, field verification of subsamples, development of a predictive model of expected soil conditions by timber stand, application of this model to each timber stand through GIS, and finally a GIS **summarization of the predicted soil conditions in the watershed.** This information can then be combined with an assessment of road and bank erosion conditions in the watershed to **give a holistic description of watershed conditions and to help understand cause/effect relationships. The information can be related to Region 1 Soil Quality Standards to determine if, on a watershed basis, soil conditions depart from these standards.** Watersheds that do depart from Soil Quality Standards can be flagged for more accurate and intensive field study during landscape level and project level assessments. **This process is essentially the application of Soil Quality Standards at the watershed scale with the intent of maintaining healthy watershed conditions** (Kuennen et al., 2000; emphasis added).

8-13 Nothing in the DEIS's watershed analysis section specifically addresses the hydrological implications of the soil damage caused by cumulative past management nor the proposed project-induced damage.

The Ninth Circuit addressed a very analogous situation in *Lands Council v. Powell*, where the Forest Service proposed more logging in a watershed that was no longer properly functioning because of the effects of past logging. As the Court noted in that case, "[c]umulative effects analysis requires the [FEIS] to analyze the impact of a proposed project in light of that project's interaction with the effects of past, current, and reasonably foreseeable projects… [Here] there is no discussion of the connection between individual harvests and the prior environmental harms 8-14 from those harvests that the Forest Service now acknowledges." *Ibid.*, at 1027. By analogy, the same failure of analysis for soil productivity is evident for soils in the Bussel 484 DEIS.

The Bitterroot National Forest admitted that subwatersheds that have high levels of existing soil damage could indicate a potential for hydrologic and silviculture concerns. (USDA Forest 8-15 Service, 2005b, p. 3.5-11, 12.) The DEIS ignores such potential. On this subject, Booth and Jackson (1997) state:

> A variety of physical data from lowland streams in western Washington display the onset of readily observable aquatic-system degradation at a remarkably consistent level of development, typically about ten percent effective impervious area in a watershed. Even lower levels of urban development cause significant degradation in sensitive water bodies and a reduced, but less well quantified, level of function throughout the system as a whole.
>
> …The net effect of *upland changes*, occurring across the land surface of the contributing headwater catchments, is at least as important in determining overall stream function, degradation, and rehabilitation potential (National Research Council, 1992).

> …Correlations between development and aquatic-system conditions have been investigated for nearly two decades with remarkably consistent results. Klein (1979) published the first such study, where he reported a rapid decline in biotic diversity where watershed imperviousness much exceeded 10 percent.
>
> …The observations here show that observed instability is all-but ubiquitous where the contributing effective impervious area percentage exceeds a rather low level: a value of about 10 percent discriminates between observed stable and unstable reaches almost perfectly. …We emphasize that the good relationship between "instability" and "imperviousness" is not a simple causal relationship, because we recognize that EIA is but an *index* of the variety of hydrologic changes imposed by urban development. However, it is clearly a robust and easily estimated one.
>
> …These results show remarkably clear and consistent trends in aquatic-system degradation. In western Washington, and likely in other humid regions as well, approximately 10 percent effective impervious area in a watershed typically yields demonstrable, and probably irreversible, loss of aquatic system function. Even lower levels of urban development cause significant degradation in sensitive water bodies and a reduced, but less well quantified, degree of loss throughout the system as a whole. These results do not indicate a "threshold" *per se*: degradation begins at very low levels of urban development and continues well beyond the range of imperviousness emphasized in this study. But we find a noteworthy accumulation of physical and biological effects, particularly those that can be consistently observed and measured by even rather crude (but also rapid and so inexpensive) methods, once EIA's reach about 10 percent. The *changes* imposed on the natural system are a continuum, and so defining a strict "threshold" in this context would be naive; but our *perception of* and our *tolerance for* those changes appears to undergo a far more abrupt transition, one which suggests a basis for discrete levels of both impact evaluation and management response.

The point is **not** to claim the Bussel 484 area is urban. The point is that the Forest Service has **failed to establish limits** on the amount of compacted or hydrologically dysfunctional soils in any given watershed, despite clear water yield implications of cumulative compaction or hydrologically dysfunctional soils over a given watershed area. **8-16**

Booth, 1991 further explains the relationship between soil quality conditions and hydrology:

> Drainage systems consist of all of the elements of the landscape through which or over which water travels. These elements include the soil and the vegetation that grows on it, the geologic materials underlying that soil, the stream channels that carry water on the surface, and the zones where water is held in the soil and moves beneath the surface. Also included are any constructed elements including pipes and culverts, cleared and compacted land surfaces, and pavement and other impervious surfaces that are not able to absorb water at all.
>
> …The collection, movement, and storage of water through drainage basins characterize the hydrology of a region. Related systems, particularly the ever-

> changing shape of stream channels and the viability of plants and animals that live in those channels, can be very sensitive to the hydrologic processes occurring over these basins. Typically, these systems have evolved over hundreds of thousands of years under the prevailing hydrologic conditions; in turn, their stability often depends on the continued stability of those hydrologic conditions.
>
> Alteration of a natural drainage basin, either by the impact of forestry, agriculture, or urbanization, can impose dramatic changes in the movement and storage of water. …Flooding, channel erosion, landsliding, and destruction of aquatic habitat are some of the unanticipated changes that …result from these alterations.
>
> …Human activities accompanying development can have irreversible effects on drainage-basin hydrology, particularly where subsurface flow once predominated. Vegetation is cleared and the soil is stripped and compacted. Roads are installed, collecting surface and shallow subsurface water in continuous channels. …These changes produce measurable effects in the hydrologic response of a drainage basin.

8-17 Why does the IPNF consider that having 15% or 20% of soils in a given activity area to be damaged is acceptable? When did the IPNF have that debate with the public and scientific community? Landsberg et al., 2003 found that on ash-derived soils, "Compaction from earlier harvesting lasted for 70 or more years."

8-18 We disagree with the assumption that use of BMPs will result in meeting soil quality standards and maintaining soil productivity, since no BMP monitoring has ever occurred on the IPNF to validate such assumptions.

8-19 The DEIS does not adequately demonstrate the effectiveness of the soil mitigation measures proposed. There are good reasons to include a more thorough discussion of their effectiveness. For example, "Monitoring of winter-logging soil effects conducted by the Forest Soil Scientist on the Bitterroot National Forest over the past 14 years has shown that 58% of the ground-based, winter-logged units failed to meet Region 1 Soil Quality Standards. Winter-logging resulted in an average of 16% detrimentally damaged soil." (USDA Forest Service, 2005b, p. 3.5-21.)

8-20 The meaning of "soil productivity" in the terminology of NFMA is largely ignored. In the SQS the FS claims "Soil quality is maintained when erosion, compaction, displacement, rutting, burning, and loss of organic matter are maintained within defined soil quality standards." But even if the FS were to meet the 15% Standard in all Activity Areas forestwide, and even if the soil conditions of land outside proposed activity areas could reasonably be ignored, the FS still cannot assume that there has been no "significant or permanent impairment of the productivity of the land" as NFMA requires.

8-21 The DEIS presumes that areas of soil disturbance less than 15% areal extent in an "activity area" can be completely ignored in discussions about cumulative soil damage and accountings of management-induced reductions in soil productivity. This arises from the SQS. The DEIS discloses nothing in terms of the **reduction in soil productivity** caused by all that soil compaction. Implementation of the project would also mean creating additional detrimental soil

disturbance on many other previously logged areas, with likewise unquantified losses in soil productivity.

So the DEIS completely discounts the losses in soil productivity in "activity areas" when the areal extent happens to fall below an arbitrary level of 15%. 8-22

It may be the case that the Forest Service chose 15% as it's upper limit on soil damage within a unit merely because it's known that modern clearcutting methods can easily avoid compacting more that 15% of a unit in while removing all the merchantable trees and burning the slash. Of course, that's just speculation—we many never know, because the SQS were developed internally by the agency, without the use of any public process such as Forest Plan development, NEPA, or independent scientific peer review. 8-23

Also, the IPNF fails to consider the soil productivity implications of any level of road density in project area watersheds. And the implications of "sustained yield" in the context of soils damaged at **any** level of percent detrimental disturbance has never been a part of the IPNF's dialogue. It is reasonable to expect that in order for the FS to assure that soil productivity is not or has not been significantly impaired, to assure that the forest is producing a sustained yield of timber, for one example, tree growth must not be significantly reduced by soil-disturbing management activities. 8-24

Page-Dumroese et al. (1998) noted that soil compaction in the range of a 15-20% increase in bulk density in ash cap soils may decrease productivity of ash-cap sites by reducing pore space and root and ectomycomhizal activity.

Does the IPNF believe that only soils compacted such that bulk density has increased by more than 20% are in a detrimental condition? If so, please provide data that corroborate this assertion. 8-25 There are adequate data and research indicating that increases in bulk density of less than 20% above "historic" degrade soil conditions and processes in a persistent fashion. Adequate disclosure of adverse soil impacts requires disclosure of the amount of soils that have been adversely affected by compaction from all previous activities, including past logging, roads, landings, and past and on-going grazing, and not just the amount of soils that have been compacted such that bulk density has been increased by >20%. 8-26

"The Forest Plan Standard activity areas include all roads (new, temporary, existing system) within proposed units (SW-B22). The Regional standard activity areas include only temporary roads within proposed units…" (DEIS at 160.) For either standard, please disclose a definition of "within units" that anyone could apply. This is a confusing situation, given the DEIS's next paragraph seems to allow for contradictory situations: 8-27

> Harvest unit boundaries typically end at the road's edge and do not cross or include roads. In the GIS road coverage roads may be partially shown within a stand or activity area (harvest unit) when in fact, the road edge is the boundary. If road segments are included within proposed harvest units (as identified in GIS Arcview) they are counted as disturbance for the FP standard. (160.)

8-28 "(S)ince we can not expect that equipment will always stay on old trails or since trails may not be in a feasible or advantageous location to use, an additional 1% of disturbance is added to account for disturbance on any units that are already at or exceed 13 percent (SW-4)." (DEIS at 160.) What is the basis of that 1% add-on figure?

8-29 "Since the coefficients are based on an average, the areas that have had prior harvest activities could have soil disturbance levels lower or greater then the coefficient's average." (DEIS at 160.) That is the reason why, in order for such statistics to be considered reliable, estimates of error expressed in confidence intervals must be utilized.

8-30 "Large woody debris is essential for maintenance of sufficient microorganism populations and long-term site productivity." (DEIS at 161.) In order for the DEIS to adequately analyze and disclose cumulative effects, in the context of such "essential" factors, field surveys of representative past logged areas must be performed in the project area.

8-30 "Although not all proposed units were monitored for organic matter or coarse woody debris, it is expected that the monitored data is representative of amounts of OM and CWD found throughout the project area." (DEIS at 166.) So few (only 10) sites investigated for CWD cannot, in statistical terms, be adequately representative of the variable conditions of the project area to yield a small enough confidence interval to be reliable and therefore valid.

8-31 The proposal to exceed 15% detrimental disturbance via action alternatives shows the lack of utility the SQS have for actually meeting NFMA mandates, especially since the DEIS is completely vague as to how "temporary" roads or roads "within units" are included using the IPNF 20% standard.

8-32 Table 3-49 indicates that not all proposed units were surveyed for existing soil damage, which means the assumptions in the modeling were not adequately validated.

Page-Dumroese et al., 2000 emphasize the importance of validating soil quality standards using the results of monitoring:

> Research information from short- or long-term research studies supporting the applicability of disturbance criteria is often lacking, or is available from a limited number of sites which have relative narrow climatic and soil ranges. …Application of selected USDA Forest Service standards indicate that blanket threshold variables applied over disparate soils do not adequately account for nutrient distribution within the profile or forest floor depth. These types of guidelines should be continually refined to reflect pre-disturbance conditions and site-specific information. (Abstract.)

Restoration of soil functioning ought to be a high priority in areas such as this, where a lot of industrial logging has taken place already. The Bitterroot National Forest reports, "It is acknowledged that the effectiveness of soil restoration treatments may be low, often less than 50 percent." (USDA Forest Service, 2005b at p.3.5-20.) Tables 3-54 and 3-55 discuss soil productivity "improvement" or "increases" but the level "improvement" or "increases" is not

quantitatively or in any way disclosed. What monitoring data does the IPNF have on the efficacy of such soil restoration efforts? 8-33

The DEIS does not adequately consider the fine ecological balance existing site-specifically in soils, nor the implications for ecological health. Harvey et al., 1994 state: 8-34

> The ...descriptions of microbial structures and processes suggest that they are likely to provide highly critical conduits for the input and movement of materials within soil and between the soil and the plant. Nitrogen and carbon have been mentioned and are probably the most important. Although the movement and cycling of many others are mediated by microbes, sulfur phosphorus, and iron compounds are important examples.
>
> The relation between forest soil microbes and N is striking. Virtually all N in eastside forest ecosystems is biologically fixed by microbes... Most forests, particularly in the inland West, are likely to be limited at some time during their development by supplies of plant-available N. Thus, to manage forest growth, we must manage the microbes that add most of the N and that make N available for subsequent plant uptake.

(Internal citations omitted.)

The Lolo NF's Frenchtown Face Soils Report (2006) states:

> No discussion about forest woody debris and biological activity would be complete without promoting the values of brown cubical rot, and recommendations that may increase the amount of the product of this unique decomposition process across the landscape.
>
> The brown-rotters belong to the *Basidiomycota*. Their most interesting and telltale characteristic is their ability to utilize only cellulose, and their *inability* to degrade lignin.
>
> Residue left after advanced brown-rot decay is a brown, crumbly mass composed largely of lignin. In healthy forest ecosystems, especially coniferous forests, the upper-most soil horizon contains a significant portion of brown-rotted wood residues. The sponge-like properties of advanced brown-rotted wood act as a moisture and nutrient sink. Because of the high lignin concentrations, and little carbohydrate, it persists in the forest for a long time (Blanchette, 1995).
>
> The lignin product of brown rot is tremendously important in the forests of Western Montana. Since brown rot typically effects only heart wood, it is important that large trees are allowed to die and decompose naturally in the woods. For example, a Ponderosa pine 36 inches in diameter may possess 24 inches of heart wood. This in turn decomposes to a 16 inch zone of brown cubical residue. This stuff is often referred to as soil wood. Early logging techniques that dozed forest debris into piles then burned the organics significantly reduced the occurrence of soil wood in our forests. Soil wood possesses one characteristic that make it important; the ability to hold water. This high water holding capacity provides:

- Plant available water – especially during the driest months.
- Excellent underground habitat for all types of soil biological activity.
- Appropriate conditions that cause a hub of mycorrhizae fungi activity.

Replacement of the woody soil components from a site which as lost such may take from 100 to 300 years (Harvey et al., 1981).

The Frenchtown Face report continues:

In order to ensure sustained forest use and protect ecosystem integrity, it is imperative that land managers understand two concepts in regards to the fungal resource. First, the role of fungi is essential for the continuance of many ecosystem processes. Second, with proper awareness and skill, forest managers can greatly influence fungal processes and potential benefits.

Wood decay fungi in the coniferous forest ecosystem have three major roles:

1) breaking down plant residues and recycling carbon to the soil or the atmosphere;
2) releasing mineral nutrients from plant residues and making the nutrients available to living organisms; and
3) producing the physical character of the soil organic matrix.

The outcomes of these processes promote soil water infiltration rates, soil water-holding capacity, cation exchange capacity, nutrient availability, nitrogen fixing activity, and habitat for mycorrhizae associations, to name a few.

Managers can influence fungal processes by considering the effects of silvicultural, harvesting, and slash disposal activities. Silvicultural plans that promote fungal processes will prescribe harvests that preserve a cool, moist microclimate and provide for a continuous source of large woody debris for use by fungi. Harvest techniques should be light-on-the-land, disturbing as little soil as possible. Slash management techniques should emphasize leaving debris on site, such as the lop & scatter method.

An effect of roads that intercept subsurface flow is that the forest areas below such roads have drier soil conditions than natural. This alters vegetative diversity and productivity, and overall ecology for untold thousands of acres forestwide, perhaps hundreds in the Project Area. What scientific research has measured such impacts from roads in mountainous regions? The IPNF has never disclosed the levels of such ecological change caused by its extensive road system. 8-35

It is also not clear at all that the IPNF actually made proper estimates of existing detrimental disturbance within proposed cutting units based on scientifically sound methodology, using experts adequately qualified to assess the complexities of soil qualities and cumulative impacts, which could accurately reflect existing soil productivity limitations and damage. On page 160 the DEIS indicates that the soil samplers received training, but are the "students" tested to see if they are able to adequately carry out the complexities of the survey techniques? 8-36

Adams and Froehlich (1981) state: "While general field observations can be useful in recognizing severe compaction problems, measurement of actual changes in soil density permits the detection of less obvious levels of compaction." It is these "less obvious levels of compaction" that would be missed by cursory "walk-through" soil surveys.

The DEIS fails to commit to monitoring post-project levels of detrimental disturbance in treatment units. **8-37**

For a study done on the KNF and the adjacent Flathead NF, soil scientists measured soil bulk densities, macropore porosities, and infiltration rates using paired observations of disturbed vs. undisturbed soils. They discovered that although "the most significant increase in compaction occurred at a depth of 4 inches… some sites showed that maximum compaction occurred at a depth of 8 inches…" (and) "Furthermore, ... subsurface compaction occurred in glacial deposits to a depth of at least 16 inches." (Kuennen et al., 1979.) There is simply no way that soil scientists, let alone inadequately trained personnel, could make accurate estimates of soil compaction with walk-through surveys.

Regardless, the DEIS does not adequately recognize the differing issues of soil disturbance, as expressed in areas of detrimental disturbance, vs. reductions in soil productivity. The Forest Service has set upper limits on soil disturbance in "activity areas" (logging and burning units) to deal with the National Forest Management Act (NFMA) requirement that the agency must "insure that timber will be harvested from National Forest System lands only where …soil, slope, or other watershed conditions will not be irreversibly damaged." **8-38**

The loss of timber yield due to cumulative soil damage in the project area is not quantified in the DEIS, nor has the IPNF quantified the loss of timber yields forestwide. One way to quantify reduction in soil productivity would simply be expressed as reduction in wood growth over the decades following Bussel 484 project activities. In other words, reductions in future timber yield. The DEIS either assumes that this is trivial for the project area, or that such reductions in timber yield over future rotations (and for future generations of humans living with the forest) don't matter at all. **8-39**

In response to DEIS comments on the Myrtle Creek HFRA project on the adjacent Idaho Panhandle National Forests, comments that criticized the arbitrary nature of the SQS's use of 15% detrimental disturbance as somehow allowable, the Myrtle Creek HFRA FEIS cites one of the Forest Service's own experts on soil processes, Dr. Bob Powers of the Pacific Southwest Research Station:

> The Regional Soil Quality Standards (R-1 Supplement 2500-99-1) were revised in November 1999 (DEIS, A-11 (FEIS Chapter 3). Manual direction recommends maintaining 85% of an activity area's soils at an acceptable productivity potential with respect to detrimental impacts - including the effects of compaction, displacement, rutting, severe burning, surface erosion, loss of surface organic matter, and soil mass movement. This recommendation is based on research indicating that a decline in productivity would have to be at least 15% to be detectable (Powers, 1990). (Myrtle Creek HFRA FEIS at F-24.)

It is important to point out, however, that in the following comment, Dr. Powers is referring to separate and distinct thresholds when he talks about 15% **increases in bulk density**, which is a threshold of when soil compaction is considered to be detectable, and 15% **areal limit for detrimental disturbance**, which is the SQS threshold for how much of an activity area can be detrimentally disturbed (including compaction from temporary roads and heavy equipment, erosion resulting from increased runoff, puddling, displacement from skid trails, rutting, etc.). With that caveat, what Dr. Powers has to say in relation to the SQS is quite revealing as quoted in Nesser, 2002:

> [T]he 15% standard for increases in bulk density originated as the point at which we could reliably measure significant changes, considering natural variability in bulk density… [A]pplying the ***15% areal limit*** for detrimental damage is not correct... [T]hat was never the intent of the 15% limit… and ***NFMA does not say that we can create up* to 15% *detrimental conditions***, it says basically that we cannot create significant or permanent impairment, period... (emphasis added)

Nesser was, until recently, the Soil Scientist at the Regional Office. In order to comply with NEPA, an EIS must disclose the controversy it the agency fully recognizes surrounding its own use of SQS standards for compliance with NFMA.

8-40 "Class 2 represents slight soil disturbance. There is evidence of previous ground activities, but the observable soil characteristics do no meet detrimental soil damage criteria defined in Regional Soil Quality Standards." (DEIS at p. 164.) Has the IPNF calibrated Class 2 soil disturbance in terms of increases in bulk density above "historic conditions?"

Even if timber were the only accepted use of the Forest, it would be extremely irresponsible for the Forest Service to never factor in logging-induced losses in productivity, leading to potentially serious reductions over time in expected timber yields. In response to our comments on economics, the KNF's recent Trego Decision Notice states:

> Sustained yield was defined in the Kootenai Forest Plan, 1987, (Vol. 1, Chapter VI, Glossary) as "the achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the National Forest System without permanent impairment of the productivity of the land." Sustained yield is based on the lands' ability to produce. (Trego DN Appendix A-54.)

8-41 That's precisely our point here: Since the IPNF has no idea how much soil has been permanently impaired either within the project area or forestwide, "sustained yield" is merely an empty promise.

Further compromising soil productivity in the IPNF is the failure to adequately address the spread of noxious weeds, which have the potential effect of reducing site productivity by replacing natural vegetation and competing with same for soil nutrients, moisture, etc. The KNF recently stated:

> Weed infestations are known to reduce productivity and that is why it is important to prevent new infestation sand to control known infestations. …Where infestations occur off the roads, we know that the productivity of the land has been affected

> from the obvious vegetation changes, and from the literature. The degree of change is not generally known. (Northeast Yaak FEIS at 4-61.)

USDA Forest Service, 2005a states at p. 173:

> Noxious weed presence may lead to physical and biological changes in soil. Organic matter distribution and nutrient flux may change dramatically with noxious weed invasion. Spotted knapweed (*Centaurea biebersteinii D.C.*) impacts phosphorus levels at sites (LeJeune and Seastedt, 2001) and can hinder growth of other species with allelopathic mechanism. Specific to spotted knapweed, these traits can ultimately limit native species' ability to compete and can have direct impacts on species diversity (Tyser and Key 1988, Ridenour and Callaway 2001).

The IPNF must disclose how the productivity of the land been affected in the project area and forestwide due to noxious weed infestations, and how that situation is expected to change in the coming years and decades. **8-42**

The DEIS prescribes using dedicated skid trails to limit the areas of compaction experiencing long-term detrimental compaction and therefore losses in soil productivity. We object to the lack of any meaningful limitation, on a watershed basis, of the amount of soils so damaged permanently or for the long-term. The SQS's failures are revealed by allowing permanent reductions in soil productivity over arbitrarily-decided levels inside "activity areas" and unlimited amounts of areal extent damage due to roads, landings, etc. outside activity areas. Essentially, the FS's management scheme is committing vast areas of the IPNF to permanent losses or reductions in soil productivity, without explaining or quantifying the resultant losses in timber yield, ecological dysfunction due to other vegetative alternations, and disruptions in hydrologic functioning. This does not satisfy NFMA's requirements to maintain soil productivity, and reveals an agency that is unable to maintain the basis for sustainable forest management—soil productivity. **8-43**

Alexander and Poff (1985) reviewed literature and found that the amount of soil damage varies even with the same logging system, depending on many factors. For example, as much as 10% to 40% of a logged area can be disturbed by skyline logging. They state:

> There are many more data on ground disturbance in logging, but these are enough to indicate the wide diversity of results obtained with different equipment operators, and logging techniques in timber stands of different composition in different types of terrain with different soils. Added to all these variables are different methods of investigating and reporting disturbance.

The IPNF assumes that the implementation of BMPs will sufficiently mitigate any water quality problems that would result. The FS assumes the BMPs will protect the aquatic systems in the watersheds. This assumption is flawed as is attested by the degraded fisheries conditions that already exist. Consequently, this assumption by the FS is flawed and violates the CWA, Idaho Code, and IDAPA. **8-44**

The entire issue of BMPs has been repeatedly clouded by the FS. The Lolo NF and Regional Office have admitted that during projects such as this, not all problem sites are restored up to BMP standards (Lolo BMP Memo).

8-45 It is erroneous to assume that BMPs will assure water quality will be maintained, if present conditions are in many locations already in violation of the standards. The failure of BMPs is seriously implicated in the scientific literature. Beschta et al. (2004) state:

> It is perhaps widely accepted that "best management practices" (BMPs) can reduce damage to aquatic environments from roads. Time trends in aquatic habitat indicators indicate, however, that BMPs fail to protect salmonid habitats from cumulative degradation by roads and logging (Espinosa et al. 1997.) Ziemer and Lisle (1993) note a lack of reliable data showing that BMPs are cumulatively effective in protecting aquatic resources from damage.

Additionally, a 1999 USDA Office of the Inspector General Report concluded that reliance of speculative mitigation measures in order to reach a FONSI significantly compromised environmental quality. "Office of the Inspector General, U.S. Department of Agriculture., Evaluation Report No. 08801-10-At: Forest Service Timber Sale Environmental Analysis Requirements "(1999). The OIG conclude that: "Applicable mitigation measures contained in 10 of 12 decision notices and referenced environmental assessments reviewed, were not always implemented.

Wildlife Habitat

8-46 The DEIS does not disclose in any detail whatsoever the population levels and distribution of Management Indicator Species (MIS) and Threatened, Endangered, and Sensitive (TES) species. Obviously, we are greatly concerned that, with so much of the project area being altered via logging, burning, and road construction, how have such populations responded?

8-47 The DEIS also does not disclose the results of any site-specific surveys of those areas altered by logging in the past, comparing present vs. historic conditions of critical ecological factors (vegetative patterns and structure) that are important components of MIS and TES wildlife habitat. These include the amount and distribution of mature and old-growth forests, the amount of **interior** mature and old-growth forest, the amount and size distribution of snags, and the amounts and distribution of down logs. The DEIS itself discloses how important these ecological factors are to wildlife and fish, watershed hydrological functioning, and soil productivity. Yet these are factors which the DEIS largely ignores in failing to satisfy requirements under the National Environmental Policy Act (NEPA) to **analyze and disclose cumulative effects.**

8-48 After reading the DEIS, one is left wondering, why doesn't the DEIS include a "desired condition" that desires viable populations of all wildlife species, as NFMA requires, when the available evidence indicates that the low numbers of these species in the project area **do not** constitute numbers and distribution indicative of a viable population on the IPNF?

The DEIS does not adequately explain why analysis for fisher can substitute for a species identified in the Forest Plan as an MIS (pine marten). 8-49

Although one necessary purpose of an EIS is to provide cumulative effects analyses for the various resource topics, the DEIS's cumulative effects analyses are deeply flawed. The major flaw is the failure to adequately disclose the additional impacts of the proposed logging, burning, and other development activities together with the impacts of previous logging, road building, livestock grazing, and other development actions. The flaws of the cumulative effects analyses leave the public unable to see a clear picture of how past and continued manipulations and human enforced changes continue to blend—more realistically continue conflict with—the natural processes that created the natural landscape in the Bussel 484 project area. 8-50

So the questions a cumulative effects analysis for wildlife species must answer are: How much habitat in the project area have all projects modified, adding together past, foreseeable future, and Bussel 484 project impacts? And: How do the remaining, depleted habitat conditions compare to the habitat needs for well-distributed, viable populations of wildlife in the Bussel 484 project area and in the IPNF? The DEIS's cumulative effects analyses for wildlife evade these simple questions of such vital importance. As written, the DEIS does not support the proposal to deplete more wildlife habitat. 8-51

The IPNF relies upon a database of timber stand examination information documented by stand examiners who are not necessarily wildlife biologists. This has led to inaccurate designations of old growth, as well as invalid assumptions by biologists doing habitat analyses for timber sales. The IPNF has stated:

> Habitat modeling based on the timber stand database has its limitations: the data are, on average, 15 years old; canopy closure estimates are inaccurate; and data do not exist for the abundance or distribution of snags or down woody material… . (USDA Forest Service, 2000c.) 8-52

How old is the database information (TSMRS, FSVeg, etc.) used in wildlife habitat modeling and old growth inventory for the project area? Are its canopy closure estimates accurate (reliable) and how is that determined? Does it have reliable data for the abundance or distribution of snags or down woody material? 8-53 8-54 8-55

The DEIS relies upon unpublished references such as those from Forest Service biologist Samson (2006) to claim that it is utilizing effective conservation strategies that will maintain viable populations of wildlife. And it relies upon other habitat modeling, depending upon the species discussed. ("This information was compiled into spreadsheets and evaluated to determine habitat suitability (WL-3)." DEIS at 232.) However, none of those methodologies have been subject to independent scientific peer review, to validate them for the ways the IPNF utilizes them.

Please describe the independent peer-review status of the Samson, 2006. 8-56

These sources, as well as biologists on the Bussel 484 ID Team, are not from the independent research arm of the agency. A scientist from the agency's research arm, Ruggiero, 2007 states:

> Independence and objectivity are key ingredients of scientific credibility, especially in research organizations that are part of a natural resource management agency like the Forest Service. Credibility, in turn, is essential to the utility of scientific information in socio-political processes.

Ruggiero goes on to make the same distinction we do above, pointing out that the Forest Service's scientific research arm **is distinct** from its management arm:

> The Forest Service is comprised of three major branches: the National Forest System (managers and policy makers for National Forests and National Grasslands), Research and Development (scientists chartered to address issues in natural resource management for numerous information users, including the public), and State and Private Forestry (responsible for providing assistance to private and state landowners). This article is directed toward the first two branches.
>
> The relationship between the National Forest System and the Forest Service Research and Development (Research) branches is somewhat hampered by confusion over the respective roles of scientists (researchers) and managers (policy makers and those that implement management policy). For example, some managers believe that scientists can enhance a given policy position or management action by advocating for it. This neglects the importance of scientific credibility and the difference between advocating for one's research versus advocating for or against a given policy. Similarly, some scientists believe the best way to increase funding for research is to support management policies or actions. But, as a very astute forest supervisor once told me, "Everyone has a hired gun…they are not credible…and we need you guys [Forest Service Research] to be credible." It is naïve to believe that direct involvement in the establishment or evaluation of management policy doesn't damage scientific credibility in the long run. Neglecting this fact may put one on the short-term path to increased relevance and greater funding opportunities, but at the cost of long-term credibility.

Ruggiero (2007) goes on to point out that:

> The Forest Service Manual (FSM), which provides direction on how to implement statutes and related regulations, states in the section on Research Policies: "To achieve its Research and Development (R&D) program objectives, the Forest Service shall ... maintain the R&D function as a **separate entity** … with clear accountability through a system that **maintains scientific freedom…**" (emphasis added). This means that both Congress and the authors of these FSM directives recognized the importance of keeping research independent. This also signifies congressional intent to protect a key element of scientific credibility.
>
> …This separation also serves to keep conducting science separate from formulating policy and the political ramifications of that process. The wisdom here is that science cannot be credible if it is politicized. Science should not be influenced by managers, and scientists should not establish policy. This logic keeps scientific research "independent" while ensuring that policy makers are free to consider factors other than scientific understandings. Thus, science simply

> informs decision making by land managers. As the new forest planning regulations clearly state, those responsible for land management decisions must consider the best available science and document how this science was applied (Federal Register 70(3), January 5, 2005; Section 219.11(4); p. 1059).

However, as everyone knows, agency experts such as Samson and those on the Bussel 484 ID Team **are** influenced by managers, and their inherent political positions. That is the clear converse of Ruggiero's article.

In sum, agency expert opinion provided in this DEIS is not the same as "the best scientific information" available, although the opinion may be based—however loosely or closely—upon the best science. Agency specialists have an acute responsibility to thoroughly investigate the latest and best available science that pertains to their field of expertise, so as to best inform decisionmaking. We maintain (and the courts have agreed) that this evaluation of scientific information must include that science specifically referred to in comments by the public (such as this letter) or other agencies, as pertaining to the project at hand.

Sullivan et al., 2006 discuss the concept of "best available science" and their research paper is incorporated within these comments. From their paper:

> Often, scientific and political communities differ in their definition of best available science and opposing factions misrepresent the concept to support particular ideological positions. Ideally, each policy decision would include all the relevant facts and all parties would be fully aware of the consequences of a decision. But economic, social, and scientific limitations often force decisions to be based on limited scientific information, leaving policymaking open to uncertainty.
>
> The American Fisheries Society and the Estuarine Research Federation established this committee to consider what determines the best available science and how it might be used to formulate natural resource policies and shape management actions. The report examines how scientists and nonscientists perceive science, what factors affect the quality and use of science, and how changing technology influences the availability of science. Because the issues surrounding the definition of best available science surface when managers and policymakers interpret and use science, this report also will consider the interface between science and policy and explore what scientists, policymakers, and managers should consider when implementing science through decision making.
>
> As part of their implicit contract with society, environmental scientists are obliged to communicate their knowledge widely to facilitate informed decision making (Lubchenco 1998). For nonscientists to use that knowledge effectively and fairly, they must also understand the multifaceted scientific process that produces it.
>
> A common misconception of nonscientists is that science can provide objective answers to the thorny question, "How *should* we manage this ecosystem or resource?" Such questions can be answered only by reconciling the socially constructed values and expectations of the stakeholders at the policymaking table.

Scientists may, of course, participate in goal setting, but they should neither be expected nor claim to be completely objective under those circumstances. In contrast, science can inform society about the consequences of its management goals and actions, which may lead to revised goals and actions, but goal setting itself is outside the realm of science.

Science is a dynamic process that adapts to the evolving philosophies of its practitioners and to the shifting demands of the society it serves. Unfortunately, these dynamics are often controversial for both the scientific community and the public. To see how such controversies affect science, note that over the last decade nonscientists have exerted increasing influence on how science is conducted and how it is applied to environmental policy. Many observers find this trend alarming, as evidenced by several expositions titled "science under siege" (e.g., Wilkinson 1998; Trachtman and Perrucci 2000).

Also controversial are recent legislative efforts to define best science, to mandate that certain kinds of data be given greater weight by decision makers, or to establish by law the qualifications for those who would conduct peer review (Bolten 2004). This in itself is contrary to the quest for the best available science because legislators—usually nonscientists—are seeking to dictate which type of science is best and then casting it as law, ignoring the fact that the best available science will continually evolve.

To achieve high-quality science, scientists conduct their studies using what is known as the scientific process, which typically includes the following elements:

- A clear statement of objectives;
- A conceptual model, which is a framework for characterizing systems, stating assumptions, making predictions, and testing hypotheses;
- A good experimental design and a standardized method for collecting data;
- Statistical rigor and sound logic for analysis and interpretation;
- Clear documentation of methods, results, and conclusions; and
- Peer review.

Peer review.—A basic precept of science is that it must be verifiable, and this is what separates science from other methods of understanding and interpreting nature. The most direct method of verification is to redo the study or experiment and get the same results and interpretations, thus validating the findings. Direct verification is not always possible for nonexperimental studies and is often quite expensive and time-consuming. Instead, scientists review the study as a community to assess its validity. This latter approach is the process of peer review, and it is necessary for evaluating and endorsing the products of science. **The rigor of the peer review is one way to assess the degree to which a scientific study is adequate for informing management decisions.** The use of peer review in applied sciences such as fisheries, natural resource, and environmental science has proven to be problematic because there are two components to consider, the science and the

policy based on it.

Peer review has a different meaning to scientists than it does to the public. To scientists, peer review is a formal process conducted by active, knowledgeable experts in the general field of the study of interest. The peer review covers (1) the validity of the methods used, (2) whether the methods and study design adequately address the objectives, (3) whether the results that are reported are adequate for interpretation, (4) whether the results support the conclusions, and (5) whether the findings represent a significant advance in scientific knowledge. Typically, several knowledgeable scientists conduct the review independently and anonymously.

While the scientific community is primarily interested in the validity of the research, the public and policymakers are is more interested in the impact of science on societal decisions. Thus the basis for judging science differs, as does the meaning of valid evidence (Clark and Majone 1985). The policy implications of science are judged not only on the basis of its quality but also regarding how it influences the public. Science, as well as discussions of "best" science, become controversial to nonscientists only when it has the potential to change societal policy. In any peer review process, the selection of reviewers helps set the tone for the critique.

In a scientific peer review, reviewers are selected because they are thought to be fair, unbiased, and knowledgeable, and anonymity is preserved to encourage frankness. For public reviews, reviewers are often selected because they can articulate opposing points of view, and reviewers' identities and credentials are revealed, helping to inform the debate. Such differences in style and substance are often misunderstood and unappreciated by both scientists and nonscientists. The U.S. Office of Management and Budget, which advises the president, recently proposed standards for conducting peer reviews of regulatory science. These standards are opposed by many scientists because they contradict conventional peer review in several important aspects, particularly by (1) disclosing the identities of the reviewers, (2) encouraging public—that is, nonscientist—participation, and (3) modifying conflict-of-interest criteria (Bolten 2004; Kennedy 2004). Recognition that scientific review and public debate inform different aspects of policymaking is important, but it is also important to recognize that one cannot replace the other.

Scientific information and information related to science conventionally has been available in four basic forms, all of which are useful in policy development and management. The first is the peer-reviewed literature, which formally presents the findings of scientific research after an extensive, independent review by other experts in the field. The second is the gray literature, which does not typically receive an independent peer review but which may be reviewed in-house, that is, within the author's own institution. The third is the opinion of individuals who are considered experts in the field. Typically no review is implied, although the experts' reputations may attest to the quality of their statements. Finally, there is anecdotal evidence, such as public testimony, which generally must stand on its

own. Each form typically reflects different scientific content and exhibits different degrees of review, timeliness, and availability (See Table 2).

Peer-reviewed literature.—The most readily available and reliable sources of information are scientific journals, monographs, and books. This type of information is considered the most reliable mainly because it has undergone peer review. It is widely available because it is generally published in a standard format, is held by many libraries, is often accessible through the Internet, and is catalogued by a variety of abstracting services. Peer-reviewed literature is often not as timely as other information sources because time is needed to do a proper review.

Gray literature.—Gray literature, such as some agency or academic technical reports, is also available, but until recently has not been widely accessible. This literature commonly contains reports of survey, experimental or long-term historical data along with changes in protocols, meta-data, and the progress and findings of standard monitoring procedures. Gray literature may be reviewed internally, such as by other agency scientists, but it typically does not contain significantly new findings that would require review by a broader or more independent audience. Like the peer-reviewed literature, gray literature is increasingly accessible through rapidly evolving electronic forums.

Expert opinion.—The third source of scientific information is professional experts such as university and government scientists. Expert opinion can be highly reliable, especially when it is based on the experience of multiple experts who collectively function as peer reviewers of a sort. Furthermore, it may be the only form of scientific knowledge available for some crucial policy issues. Questions such as “Is this stock overfished?,” “Is this species imperiled?,” and “Is this water body impaired?” often require substantial amounts of expert opinion to answer them. In fact, judgments about the recovery of imperiled species are based largely on expert opinion (Schemske et al. 1994).

Anecdotal evidence.—A final source of information that should be acknowledged is anecdotal evidence. Webster’s dictionary defines an anecdote as a short narrative of an interesting, amusing, or biographical incident; basically, it is a short story about a personal experience. In fisheries and environmental science, anecdotal evidence often becomes available through public comments at regulatory meetings, through newspaper or popular journal coverage, or through letters sent to government representatives or the media. It may reflect traditional ecological knowledge, that is, knowledge that is not generally available to the public but passed on from one generation to the next within various fishing and environmental communities. Scientific communities often put much less credence in this type of information because it is difficult to access, verify, and review. This is so even when anecdotal evidence is generated by the scientific community itself. The public can be offended when their input is dismissed as “anecdotal,” but the process of science would be impeded if this type of information were dealt with inappropriately. One reason for reconsidering the role of anecdotal evidence in informing science is that today it is

easier to document, look for patterns in, and follow up on less-structured forms of information than it was in the past. This is an area that will require greater examination. As discussed in the section on the democratization of science (below), anecdotal evidence may often be relevant at the science–policy interface.

Politicization of Science

Many nonscientists and scientists believe that science is being increasingly politicized. Articles in newspapers (e.g., Broad and Glanz 2003) and professional newsletters document frequent instances in which the process and products of science are interfered with for political or ideological reasons. In these cases, the soundness of science, as judged by those interfering, turns on the extent to which the evidence supports a particular policy stance or goal. What was previously an objective scientific debate then becomes centered on values in a public forum. Some environmental sociologists refer to such a debate as a "tournament of values" (Hull and Robertson 2000). Politicization is especially problematic for scientists supervised by administrators who may not feel the need to follow the same rules of scientific rigor and transparency that are required of their scientists. While public debate about science-informed issues is important, for we must identify values of concern and risks associated with alternative management actions, political intervention itself can be a major barrier to the sound practice and application of science.

Scientists committed to the sustainable management of ecosystems are developing new strategies to buffer science from political interference, while keeping open the possibility for a democratic debate. These strategies fall into four main categories:

1. Invoke independent review. The emphasis here is on *independent*, which means that reviewers have little personal stake in the policy outcomes and cannot be intimidated or persuaded by stakeholders. Key strengths of independent review include

a. minimizing the influence of special interest groups;
b. separating scientific and nonscientific issues;
c. incorporating all relevant information; and
d. articulating all relevant assumptions, risks, and alternatives (Meffe et al. 1998).

2. Develop standard procedures and criteria. The procedures and criteria for guiding management actions should be developed *before* stakeholders are embroiled in controversy. Decision rules should be laid out before the data are even considered. A critical and difficult step is to articulate the uncertainties related to various costs and benefits of potential management actions (Mangel et al. 1996; Shelden et al. 2001).

3. Revise the bureaucratic structure. Science functions best when the responsibility for it resides in an institution that is politically independent of the policymakers it informs (Hutchings et al. 1997; Wagner 2001). Furthermore, fragmented information and authority enhance the probability of poor policy decisions mediated by political influence (Yaffee 1997). Science-based management is facilitated by viewing resources in a landscape or ecosystem context, which requires scientists to communicate across disciplines (Baron et al. 2002). Thus, bureaucracies that

> broadly integrate information, while linking management actions with science but keeping the scientific and policymaking functions separate, should produce sound, useful science.
> 4. Promote scientific literacy. A society that understands how science works is more likely to value science as an aid in decision making than is a scientifically illiterate society. Scientific literacy enhances citizens' ability to participate effectively in the decision making of modern society and helps them distinguish science from pseudoscience (Maienschein 1998). Scientific literacy means not only being familiar with various facts and technologies but also expecting legitimate disagreement among scientists and being able to think critically to reach an informed opinion on public issues. A more scientifically literate society would probably be less tolerant of political interference with science. Much can be learned from how science and policy have historically interacted to gain insights on how best to link environmental science with policy now (Gunderson et al. 1995). Certainly both scientists and policymakers must act adaptively and learn from the changing science–policy interface.

8-57 The DEIS completely omits discussion of the northern goshawk, which until recently was on the IPNF Sensitive species list. The rationale used by the Forest Service in downlisting this species was provided by the non-peer reviewed source—Samson (2006).

"No treatment is proposed in stands that are known to meet the minimum criteria for Old Growth." (P. 138.) The possible extent of what is unknown by the FS troubles us.

In supposedly demonstrating compliance with Old growth standard 10a, the DEIS doesn't clearly state what all the necessary and relevant old-growth criteria are, instead referring to Green and others 2005 without translating that document for Project analysis purposes.

8-58 The DEIS refers to the use of the modeling procedures (wildlife, water, etc.), yet if fails to disclose the amount of error inherent in the use of the models for the purposes they are being used. The models have not been verified on the ground here.

8-59 Regarding an IPNF Sensitive species, the black-backed woodpecker, Forest Service biologist Cherry (1997) states:

> The black-backed woodpecker appears to fill a niche that describes everything that foresters and fire fighters have attempted to eradicate. For about the last 50 years, disease and fire have been considered enemies of the 'healthy' forest and have been combated relatively successfully. We have recently (within the last 0 to 15 years) realized that disease and fire have their place on the landscape, but the landscape is badly out of balance with the fire suppression and insect and disease reduction activities (i.e. salvage logging) of the last 50 years. Therefore, the black-backed woodpecker is likely not to be abundant as it once was, and continued fire suppression and insect eradication is likely to cause further decline.

The Region 1 black-backed woodpecker assessment (Hillis et al., 2002) notes that the black-backed woodpecker depends upon the very forest that the premises of this project abhor:

> Black-backed woodpeckers occupy forested habitats that contain high densities of recently dead or dying trees that have been colonized by bark beetles and woodborer beetles (Buprestidae, Cerambycidae, and Scolytidae). These beetles and their larvae are most abundant within burned forests. In unburned forests, bark beetle and woodborer infested trees are found primarily in areas that have undergone natural disturbances, such as wind-throw, and within structurally diverse old-growth forests. (Internal citations omitted.)
>
> …Black-backed woodpeckers also occur in unburned landscapes Bull et al.1986, Goggans et al.1987, Bate 1995, Hoffman 1997, Weinhagen 1998, Steeger and Dulisse in press, Taylor unpublished data). Taylor's observations of black-backed woodpeckers in unburned forests in northern Idaho suggest that they may occur at substantially lower densities in unburned forests, but no rigorous comparisons between black-backed woodpecker densities in burned and unburned forests have been done. Hutto (1995) hypothesized that black-backed woodpeckers reproduce at *source* reproductive levels in burns, but may drop to *sink* reproductive levels in the intervening periods between large burns.

This project is clearly a part of the IPNF's fire suppression policy, given the purpose and need statements. Hutto, 1995 states: "Fires are clearly beneficial to numerous bird species, *and are apparently necessary for some*." (p. 1052, emphasis added.) Hutto, 1995 whose study keyed on forests burned in the supposedly disastrous 1988 season, noted:

> Contrary to what one might expect to find immediately after a major disturbance event, I detected a large number of species in forests that had undergone stand-replacement fires. Huff et al. (1985) also noted that the density and diversity of bird species in one- to two-year-old burned forests in the Olympic Mountains, Washington, *were as great as adjacent old-growth forests*…
>
> …Several bird species seem to be relatively *restricted* in distribution to early post-fire conditions… I believe it would be difficult to find a forest-bird species more restricted to a single vegetation cover type in the northern Rockies than the Black-backed Woodpecker is to early [first 6 years] post-fire conditions. (Emphasis added).

Regarding the "U.S. Forest Service Region One Black-Backed woodpecker Assessment" (Hillis et al., 2002) we point out the following salient points:

1. "The relatively minor decline in existing habitat compared to the mean HRV for the entire 1940 to 2000 time period… simplistically interpreted, might suggest that black-backed woodpeckers are at no risk." **"That conclusion is likely grossly understated…"** (p. 13. emphasis added).
2. "Burned habitats lost to timber salvage have not been considered… (Ibid.)
3. "Policy-makers also may need to reevaluate the priorities for salvage logging burned areas… Even in 'high burn' periods… adverse impacts on black-backed

woodpeckers can result from relatively modest amounts of salvage logging." (Ibid. p. 14.)

4. *Managers should recognize the need for decadence in unburned forests.* For black-backed woodpeckers, this is especially important in trees that are otherwise healthy, dying, or recently dead." (Ibid. p. 15.)

We now refer to the very first management recommendation at the end of Hillis et al., (2002):

> Considering both the departure from historically available habitat and the increased interval between large fires, **these findings suggest the black-backed woodpecker may be at substantial risk in USFS Region One**. This conclusion suggests that *Region One policy-makers should recognize the need for retaining moderate and high severity fires on substantial acreages at normal intervals when land use and fire suppression decisions are made.* (Italicized in orig., p. 14.)

This recommendation is significant in that it recognizes that there is still substantial risk to the viability of black-backed woodpeckers **following recent large wildland fires in this region.** In subsequent years, there have been fires in the Northern Rockies but not as substantial as in 2000; and in any case the FS has yet to consider the viability of the black-backed woodpecker in the context of this landscape scale.

Dolan (1998a,b) states in regards to impacts on the black-backed woodpecker due to fire suppression and post-fire logging states:

> It seems that we have a huge cumulative effects problem here, and that each salvage sale removes habitat that is already very limited. We are having trouble avoiding a "trend to federal listing" call for the BBWO in salvaging burns, unless comparable acres of fire-killed dead are being created through prescribed burns.

The comments by other biologists attached to Dolan (1998a,b) reveal that the FS has yet to design a consistent, workable, scientifically defensible strategy to ensure viable populations of the black-backed woodpeckers. Fire suppression, insect and disease suppression, and "salvage" logging policies of the FS are the biggest threat to black-backed woodpecker population viability on the Forest, unfortunately in failing to create a conservation strategy the cumulative impacts of the IPNF's ongoing fire suppression policy will remain unexamined.

The FS has yet to design a consistent, workable, scientifically defensible strategy to ensure viable populations of the black-backed woodpeckers. The cumulative impacts of the IPNF's ongoing fire suppression policy are also not adequately considered.

"Distribution of black-backed woodpeckers is presumed to coincide with existing stands of mature and old forest structure and lodgepole pine (pole size and larger) that provide the highest potential habitat." (DEIS at 266.) The inclusion of immature forest as currently suitable habitat for the black-backed woodpecker (and other species) strongly associated with old growth is a flaw of the DEIS's wildlife analyses.

A recent look at European forests (whose management model is one on which the U.S.'s is largely based) reveals what researchers here in the U.S. are discovering, but which policy makers and decisionmakers here resist acknowledging. Dudley & Vallauri, 2004 state:

> Up to a third of European forest species depend on veteran trees and deadwood for their survival. Deadwood is providing habitat, shelter and food source for birds, bats and other mammals and is particularly important for the less visible majority of forest dwelling species: insects, especially beetles, fungi and lichens. Deadwood and its biodiversity also play a key role for sustaining forest productivity and environmental services such as stabilising forests and storing carbon.
>
> Despite its enormous importance, deadwood is now at a critically low level in many European countries, mainly due to inappropriate management practices in commercial forests and even in protected areas. Average forests in Europe have less than 5 per cent of the deadwood expected in natural conditions. The removal of decaying timber from the forest is one of the main threats to the survival of nearly a third of forest dwelling species and is directly connected to the long red list of endangered species. Increasing the amounts of deadwood in managed forests and allowing natural dynamics in forest protected areas would be major contributions in sustaining Europe's biodiversity.
>
> For generations, people have looked on deadwood as something to be removed from forests, either to use as fuel, or simply as a necessary part of "correct" forest management. Dead trees are supposed to harbour disease and even veteran trees are often regarded as a sign that a forest is being poorly managed. Breaking up these myths will be essential to preserve healthy forest ecosystems and the environmental services they provide.
>
> In international and European political processes, deadwood is increasingly being accepted as a key indicator of naturalness in forest ecosystems. Governments which have recognised the need to preserve the range of forest values and are committed to these processes can help reverse the current decline in forest biodiversity. This can be done by including deadwood in national biodiversity and forest strategies, monitoring deadwood, removing perverse subsidies that pay for its undifferentiated removal, introducing supportive legislation and raising awareness.

Castello et al. (1995) state:

> Pathogens help decompose and release elements sequestered within trees, facilitate succession, and maintain genetic, species and age diversity. Intensive control measures, such as thinning, salvage, selective logging, and buffer clearcuts around affected trees remove crucial structural features. Such activities also remove commercially valuable, disease-resistant trees, thereby contributing to reduced genetic vigor of populations.

There is considerable scientific controversy over the adequacies of the IPNF's snag standards and guidelines, recognized by the IPNF itself. The IPNF (USDA Forest Service, 2000c) recently called for updated snag guidelines: "Apply snag and down woody material guidelines from the 8-60

Upper Columbia River Basin Assessment to improve marten habitat" (p. 39). The Northern Region Snag protocol has not been subject to independent scientific peer review and validation from post-implementation monitoring. Nor has it been the subject of a contextually proper NEPA and NFMA review as a forest plan amendment.

"The existing condition of cavity habitat is reduced from 100% of potential but occurs at a level (77%) that exceeds Forest Plan standards (40-60% of potential)…" (DEIS at pp. 237-238.) The
8-61 IPNF continues to rely on Thomas, 1979 in determining viable populations of cavity nesting species, and fails to identify what is considered to be the best available science. The IPNF fails to recognize the fact that the new science **disagrees with** the reliance on Thomas, 1979. For example, Bull et al., 1997 (as cited in the DEIS) provide the following critique of the Thomas 1979 guidelines:

> The guide most widely used in the past, Thomas and others (1979), prescribed the number of nest and roost trees to leave for specified woodpecker populations, but the number was based on a hypothetical, untested model and did not include any snags for foraging. Three studies (Baste 1995, Bull and Holthausen 1993, Dixon 1995) conducted in eastern Oregon have shown that retaining foraging structure is essential, in addition to nest an roost trees in managed landscapes. The Thomas model provided only two roost trees per pair per year, yet research has shown that individual pairs of pileated woodpeckers and white-headed woodpeckers use considerably more than two per year (Bull and others, 1992, Doxon 1995). Radio-telemetry studies have shown that home range sizes of pileated woodpeckers (Bull and Holthausen 1993), white-headed woodpeckers (Dixon 1995), and three-toed and black-backed woodpeckers (Goggans and others 1988) are considerably larger than those used in the Thomas model. Raphael and White (1984) found that the relation between numbers of snags and cavity nesters in not linear, which was assumed in the Thomas model. The substitution factor used in the Thomas model is variable and largely a function of snag density. Neitro and others (1985) thought allowing substitution of snags that reduced the number retained was not appropriate. The Thomas model did not take into account the habitat needs of some of the secondary cavity nesters, like bats and brown creepers, that use such snag features as loose bark. In addition, Bull and Holthausen (1993) found lower densities of pileated woodpeckers in nine study areas than predicted by Thomas and others (1979) based on the number of snags present. The above studies present new data suggesting that some of the assumptions and data used in the Thomas model are not valid, and that the prescribed snag densities need to be revised upward. (Bull 1997, p. 28.)
>
> Ideally, data would be available on the exact number of snags required to support specific populations of primary and secondary cavity nesters. Unfortunately, this kind of information is not available. We do know, however, that the snag numbers presented by Thomas and others (1979) are not adequate to support the populations intended because of a lack of foraging strata and invalid assumptions used in the model. If management agencies have an objective to manage for viable populations of woodpeckers, providing numbers of snags that have been shown to support viable populations in the recent studies would be prudent. (Bull et al. 1997, p. 29;)

The FS has not responded to this new scientific information that seriously calls into question its snag standards and guidelines. Harris (1999) and ICBEMP DEIS Appendix 12 also present scientific information that contrasts greatly with the IPNF on this topic. And McClelland (undated) states: 8-61

> The snags per acre approach is not a long-term answer because it concentrates on the products of ecosystem processes rather than the processes themselves. It does not address the most critical issue--long-term perpetuation of diverse forest habitats, a mosaic pattern which includes stands of old-growth larch. **The processes that produce suitable habitat must be retained or reinstated by managers. Snags are the result of these processes (fire, insects, disease, flooding, lightning, etc.)**. (Emphasis added.)

And Hutto, 1995 addresses the *processes* topic, talking about fire in that case:

> Fire is such an important creator of the ecological variety in Rocky Mountain landscapes that the conservation of biological diversity [required by NFMA] is likely to be accomplished only through the conservation of fire *as a process*…Efforts to meet legal mandates to maintain biodiversity should, therefore, be directed toward maintaining processes like fire, which create the variety of vegetative cover types upon which the great variety of wildlife species depend. (Emphasis added.)

Table 3-81 Historic Range of Variability" doesn't display a range at all, it only has one number for each category. Please disclose the relevant ranges, and the sources of data upon which those ranges are determined. 8-62

The relatively tiny "changes in Size Class by Alternative" (Table 3-82 at p. 240) are misleading, since this fails to consider that canopy cover, loss of snags and down logs/down log recruitment—all important habitat components for many species, would be significantly reduced even with the thinning. Changes in size class is meaningless as an analysis measure. 8-63

The connectivity analysis (DEIS at 245) lacks adequate context. It is presented separate from species habitat discussions and even though it is a topic relevant to spatial considerations, not even a single map is provided. 8-64

The flammulated, boreal owl and the great gray owl are species of concern that are sensitive to logging and other management activities. The IPNF provides inadequate management strategies to insure their viability. See, for example, Hayward and Verner, 1994. 8-65

Logging and other disturbance associated with the timber sales and other cumulative impacts would affect northern goshawk nesting, post-fledging family habitat, alternative nesting, foraging, competitors, prey and potential habitat, including areas away from cutting units. Research in the Kaibab National Forest found that goshawk populations decreased dramatically even after partial logging and even when large buffers around nests were provided (Crocker-Bedford, 1990).

In managing to sustain the northern goshawk, the DEIS states:

> Activity within an approximately 420-acre area surrounding each active goshawk nest would comply with the following management recommendations (Reynolds and others 1992):
> i. 20% or less in shrub/seed/sapling size class
> ii. 60% or more canopy closure in immature and older size classes (34.)

So the DEIS lumps the Reynolds old forest, mature forest, and mid-aged forest into a single category, effectively equating immature forest and old growth. However, what Reynolds et al., 1992 states is substantially different:
a. Approximately 20% in old forest (VSS 6).
b. Approximately 20% in mature forest (VSS 5).
c. Approximately 20% in mid-aged forest (VSS 4).

8-66 How is the DEIS's interpretation of Reynolds et al., 1992 consistent with the requirement to use the best available science?

8-67 There must be protection of the 5400 acre goshawk foraging areas for the known active territories. The impact of logging on goshawk foraging habitat is well-detailed in the scientific literature. Problems with forest thinning have been noted by several goshawk experts (USDA Forest Service 2000b), including Dr. Richard Reynolds, the lead author of the southwest goshawk guidelines. Regeneration cuts will also impact goshawk foraging, because younger stands of forest have been identified as poor goshawk foraging habitat (Patla 1997). This is why the Reynolds et al. (1992) guidelines requires a threshold level (60%) of older, more dense forests with large snags in goshawk foraging habitat.

Opening forests by logging will increase suitability of species as the red-tailed hawk, who competes with goshawks, as well as the great horned owl, a goshawk predator. The problems of habitat conversion from that of goshawk to red-tailed hawk has been reported by LaSorte et al., 2004 based on a study of over 120 goshawk territories.

Clough (2000) noted that in the absence of long-term monitoring data, a very conservative approach to allowing logging activities near active goshawk nest stands should be taken to ensure that goshawk distribution is not greatly altered. This indicates that the full 180-acre nest area management scheme recommended by Reynolds et al. (1992) should be used around any 8-68 active goshawk nest on the Forest. Removal of any large trees in the 180-acre nesting area would contradict the Reynolds et al. (1992) guidelines.

"With acknowledgement and due consideration of differing/contrary views (e.g. regarding goshawk – Greenwald and others 2005) and/or seemingly contrary information (e.g. regarding black-backed woodpecker – Hillis and others 2002) the analysis is based on scientific literature most appropriate for Region 1 of the Forest Service, the IPNF, and the project area." (DEIS at 8-69 232.) The DEIS states that there is a controversy, but in cryptic fashion fails to actually say what the differing/contrary views are.

Greenwald et al., 2005 reviewed the current literature on goshawk habitat relationships applicable to the Northern Rockies. Nine of 12 studies demonstrated selection for stands with

higher canopy closure, larger tree size, and greater numbers of large trees than found in random stands. Some notable statements and conclusions include:

> …Most studies found that goshawks avoided open areas and logged early-seral stands; none of the studies cited in this paper found selection for such features.
>
> …While some studies suffered from small sample sizes or relatively short sampling periods, the consistency of results demonstrates goshawk selection for late-successional forest structures (e.g., high canopy closure, large trees for forest type, canopy layering, abundant coarse woody debris) when using areas within their studied home ranges. … This is not to say that goshawks only forage or roost in mature stands, but rather that such stands are disproportionately selected.
>
> … (R)eviewed studies found goshawks avoided open areas, particularly logged open areas, and none found selection for openings.
>
> … The 5 studies correlating nest occupancy and productivity with habitat features consistently demonstrated a relationship between closed-canopied forests with large trees and goshawk occupancy. Occupancy rates were reduced by removing forest cover in the home range, which thereby resulted in reduced productivity because there were fewer active breeding territories. (Internal citations omitted.)
> Seeking to promote abundant populations of 14 prey species, Reynolds et al. (1992) recommend maintaining 20% of the landscape in grass–forb or seedling–sapling stage forest, 20% in young forest, 20% in mid-aged forest, and 40% in mature and old forests. … Given the above findings that goshawks generally avoid open areas and early-seral forest, that logging reduces goshawk occupancy and productivity, and a lack of evidence that creating openings or young forest through logging benefits goshawks, these recommendations appear to lack support in research produced since 1992.
> Across most of the western United States, mature and old-forests have declined to much less than 40% of the landscape. Given these declines and the lack of information on the amounts of mature and old-forest goshawks require, we recommend protecting existing mature and old-forest characteristics and ensuring that such forests are allowed to develop in proportions similar to presettlement conditions. This can be accomplished by restricting cutting to small trees, and prohibiting large reductions in canopy closure. A similar proposal was recently adopted by Region 5 of the United States Forest Service for the Sierra Nevada. In sum, based on apparent inconsistencies between subsequent research and Reynolds et al. (1992), we recommend adaptation of the management guidelines to incorporate results of numerous studies conducted since 1992. (Internal citations omitted.)

The DEIS does not adequately consider cumulative effects on upland habitat for boreal toads. This does not make sense, since such small populations that are likely to persist are especially susceptible to fragmentation and extirpation due to isolation of smaller populations. **8-70**

8-71 The preference for large diameter of nesting trees for the pileated woodpecker is notably absent from the DEIS. McClelland and McClelland (1999) found such results in their study in northwest Montana, with the average nest tree being 73 cm. (almost 29") dbh. Effectively, the IPNF provides inadequate commitment to leaving specific numbers and sizes of largest trees favored by this MIS.

B.R. McClelland has extensively studied the pileated woodpecker habitat needs. To quote a March 12, 1985 letter from B.R. McClelland to Flathead NF Supervisor Edgar B. Brannon:

> Co-workers and I now have a record of more than 90 active pileated woodpecker nests and roosts, …the mean dbh of these trees is 30 inches… A few nests are in trees 20 inches or even smaller, but the minimum cannot be considered suitable in the long-term. Our only 2 samples of pileateds nesting in trees <20 inches dbh ended in nest failure… At the current time there are many 20 inch or smaller larch, yet few pileateds selected them. Pileateds select old/old growth because old/old growth provides habitat with a higher probability of successful nesting and long term survival. They are "programmed" to make that choice after centuries of evolving with old growth.

McClelland (1977), states:

> (The Pileated Woodpecker) is the most sensitive hole nester since it requires old growth larch, ponderosa pine, or black cottonwood for successful nesting. The Pileated can be considered as key to the welfare of most hole-nesting species. If suitable habitat for its perpetuation is provided, most other hole-nesting species will be accommodated.
>
> Pileated Woodpeckers use nest trees with the largest dbh: mean 32.5 inches;
>
> Pileated Woodpeckers use the tallest nest trees: mean 94.6 feet;
>
> The nest tree search image of the Pileated Woodpecker is a western larch, ponderosa pine, or black cottonwood snag with a broken top (status 2), greater than 24 inches dbh, taller than 60 feet (usually much taller), with bark missing on at least the upper half of the snag, heartwood substantially affected by Fomes laracis or Fomes pini decay, and within an old-growth stand with a basal area of at least 100 sq feet/acre, composed of large dbh classes.
>
> A cluster analysis based on a nine-dimensional ordination of nest tree traits and habitat traits revealed close association between Yellow-bellied Sapsuckers, Mountain Chickadees, and Red-breasted Nuthatches. These three species plus the Pileated Woodpecker and Hairy Woodpecker are relatively grouped by coincident occurrence in old growth. Tree Swallows, Black-capped Chickadees, and Common Flickers are separated from the above five species by their preference for more open areas and their frequent use of small dbh nest trees.

> (Most) species found optimum nesting habitat in stands with a major component of old growth, particularly larch. Mean basal area for pileated woodpecker nest sites was 150 square feet per acre. (McClelland. B.R. and others, 1979)
>
> Many large snags are being cut for firewood. Forest managers should limit firewood cutting to snags less than 15 inches in d.b.h. and discourage use of larch, ponderosa pine, and black cottonwood. Closure of logging roads may be necessary to save high-value snags. Logging slash can be made available for wood gatherers.

The DEIS fails to quantify the snags that would be cut down for safety reasons during logging operations (due to OSHA regulations). And the use of temporary roads and skid trails is a routine procedure in timber sales. When snags are standing in the way of a convenient location for either a temporary road or skid trail, most assuredly the snags will be cut down. **8-72**

The Myrtle HFRA project DEIS uses old growth criteria that is becoming standard for the entire IPNF. That DEIS states, "…minimum standards are considered a starting point in determining whether a stand should be allocated as old growth. Other structural characteristics such as snags, downed woody debris, and number of canopy layers are also considered in the process (Green et al, 1992)." Given how vague the preceding definition is, please disclose the precise definition(s) for old growth that the IPNF is using, including numbers/ranges for all of the components of old growth that the IPNF recognizes as necessary for defining old growth. It is part of our ongoing concerns about old growth on the IPNF where the IPNF says, essentially, "here's part of the definition of old growth that we're using, but we're not disclosing the full, objective criteria that we're using." So the IPNF apparently believes that old growth is defined by the trees retained post-logging, instead of a scientifically sound definition of old growth. The IPNF's apparent failure to accept numerical minimums of canopy layers, snags, and large down logs as old-growth criteria, they are not considering the best scientific information available on OG wildlife habitat needs. **8-73**

Since field reviews are necessary for accuracy of OG inventories, the failure provide information on the accuracy of the IPNF's <u>forestwide</u> inventory leaves compliance with the 10% Forest Plan standard very much in doubt, which is where it has been since before the Douglas-fir Beetle project in the late 1990s. **8-74**

Since the IPNF does not recognize the importance of canopy layers, snags, defective trees, and large down logs in terms of objective old-growth criteria, the proposed activities approved for areas that would otherwise develop into old growth are problematic. The amounts of those structures within old growth (Green et al., 1992) could easily be substantially eliminated with the planned activities. **8-75**

Then there is doubt as to the adequacy of the 10% old-growth Standard itself. Lesica (1996) stated that the Northern Region of the FS's general goal of maintaining 10% of forests as old growth may extirpate some species. This is based on his estimate that 20-50% of low and many mid-elevation forests were in old growth condition prior to European settlement. The adjacent Kootenai National Forest has done an analysis (USDA Forest Service, 1999) that shows 10% to be, quite realistically, not within the historical range. The IPNF and KNF are similar enough for **8-76**

USDA Forest Service, 1999 to raise significant doubt about the adequacy of the forestwide old-growth standard.

The DEIS does not disclose the historic range of old-growth habitat in this project area. The scientific basis for the IPNF's position, namely that maintaining 10% old-growth on the Forest is plenty to maintain population viability of all species needing old-growth habitat, has never been established. The FS does not cite adequate scientific basis—it is merely an arbitrary figure.

8-76 Since there is no scientific basis for assuming that 10% old growth is enough for species viability, the proof would be in the monitoring. And nothing else shows the FS has completed or is committed to the monitoring that would insure old-growth species' viability. Unfortunately, region-wide the FS has failed to meet Forest Plan old-growth standards, does not keep accurate old-growth inventories, and has not monitored population trends in response to management activities as required by Forest Plans and NFMA (Juel, 2003).

8-77 Open roads fragment old growth, resulting in firewood cutting that destroys snag habitat and reduces recruitment of down woody debris in old growth. The IPNF does not disclose the significance of the effects on OG wildlife species' populations of habitat degradation of old growth because of firewood cutting and illegal poaching of trees due to unrestricted access. The IPNF did not present an analysis of the impacts of open roads through old growth in the affected OGMU.

The IPNF's recent Twomile EA (Coeur d'Alene River Ranger District) states:

> There have been changes over the last 100 years in the size and distribution of patches across the landscape. The mean patch size has decreased since the early 1900's in the Coeur d'Alene Basin and patches have become more linear, with accompanying increases in edge and decreases in core/interior habitats (Geographic Assessment, p. 42; PF Doc. VEG-R10). (P. 3-9.)

8-78 The DEIS does not provide a comparison between the natural historic range and current conditions regarding patch size, edge effect, and interior forest of old growth in the OGMU. Old growth is not truly "effective" with these edge effects, yet the DEIS fails to consider this in its total "effective" old growth inventory.

Open roads exist in old growth, fragmenting the habitat, and result in firewood cutting that destroys snag habitat and reduces recruitment of down woody debris in old growth.

8-79 The fact that large trees are important for maintaining viability for the Townsend's big-eared bat is not considered.

8-80 The IPNF FIA analysis does not assure that habitat quality regarding block size and spatial distribution of old growth is sufficient for maintaining viable populations of wildlife in the IPNF. Nor is it disclosed in the DEIS if the criteria for OG identification during the FIA inventory is consistent with the Green et al., 1992 criteria to be meaningful for wildlife habitat analyses.

The analysis largely assumes no impacts to the pileated woodpecker simply because old growth would not be logged, but this makes no sense at all.

The fact that large trees are important for maintaining viability for the Townsend's big-eared bat is not adequately considered in the DEIS. 8-79 repeat

The FS's claim to virtue for logging is not supported by the scientific literature. Veblen (2003) states:

> The premise behind many projects aimed at wildfire hazard reduction and ecological restoration in forests of the western United States is the idea that unnatural fuel buildup has resulted from suppression of formerly frequent fires. This premise and its implications need to be critically evaluated by conducting area-specific research in the forest ecosystems targeted for fuels or ecological restoration projects. Fire regime researchers need to acknowledge the limitations of fire history methodology and avoid over-reliance on summary fire statistics such as mean fire interval and rotation period. While fire regime research is vitally important for informing decisions in the areas of wildfire hazard mitigation and ecological restoration, there is much need for improving the way researchers communicate their results to managers and the way managers use this information.

The IPNF cites absolutely no data collected in the analysis area or interpretation of data done with adequate scientific veracity to show that there is genuinely a problem with forest or tree density, that has been caused by fire suppression, or any that logging will cure. 8-81

Juday (1978) discusses in detail how the protection of old-growth forests greatly sustains the many uses of our national forests, as mandated by the Multiple Use-Sustained Yield Act and the National Forest Management Act. Instead of embracing a positive vision for old-growth forests, as outlined by Juday (1978), the IPNF continues to see the Forest as mainly a source of logs. 8-82

The Logan Creek Ecosystem Restoration Project Final EIS (USDA Forest Service, 2004a) states at page 3-199:

> Across the Interior Columbia River Basin (Quigley, et al. 1996), old forests have declined by 27 to 60 percent over that past 100 years and large residual trees and snags have decreased by 20 percent. Fire exclusion and timber harvest have altered the structure and composition of forests throughout the Basin, resulting in a 60 percent increase in susceptibility to insects, disease, and stand-replacing fires. These changes have contributed to declining habitat conditions for numerous species of wildlife associated with old growth forests.

Snags may be cut down for safety reasons during logging operations (due to OSHA regulations), however the DEIS does not consider in any quantitative fashion the level of loss of standing snags, or resultant impacts to wildlife. The IPNF fails to disclose <u>how much</u> snag loss would be expected because of safety concerns and also skyline corridors and other methods of log removal—the loss could be more significant that disclosed, because the IPNF doesn't provide any idea the degree of snag loss due to these concerns. 8-72

8-77
8-80

The FS has still not sufficiently dealt with the issue of fragmentation, road effects, and past logging on old-growth species' habitat, as discussed above. The DEIS fails to disclose the degree to which edge effects on old growth species' habitat exist, and how much total edge effect would be increased, by the alternatives. Cumulative effects on old-growth habitat and on old-growth associated species include increased fragmentation, reduced older forest patch sizes, increased high-contrast edge, reduced availability of interior habitat, and decreased forested connectivity. These effects would reduce the ability to provide for the habitat needs of old-growth associated species for decades to come following implementation of the timber sale and other activities in the cumulative effects analysis area.

8-83

The continued fragmentation of the IPNF is a major ongoing concern. It is documented that edge effects occur 10-30 meters into a forest tract (Wilcove et al., 1986). The size of blocks of interior forest that existed historically before management (including fire suppression) was initiated must be compared to the present condition. USDA Forest Service, 2004a states at p. 3-201:

> Forested connections between old growth patches …(widths) are important because effective corridors should be wide enough to "contain a band of habitat unscathed by edge effects" relevant to species that rarely venture out of their preferred habitats (Lidicker and Koenig 1996 and Exhibit Q-17).

And at p. 3-216:

> Timber harvest patterns across the Interior Columbia River basin of eastern Washington and Oregon, Idaho, and western Montana have caused an increase in fragmentation of forested lands and a loss of connectivity within and between blocks of habitat. This has isolated some wildlife habitats and reduced the ability of some wildlife populations to move across the landscape, resulting in long-term loss of genetic interchange (Lesica 1996, U.S. Forest Service and Bureau of Land Management 1996 and 1997).

8-83

USDA Forest Service, 2004a further discusses the fragmentation effects on old-growth habitat, effects that would be exacerbated by this project:

> Harvest or burning in stands immediately adjacent to old growth mostly has negative effects on old growth, but may have some positive effects. Harvesting or burning adjacent to old growth can remove the edge buffer, reducing the effective size of old growth stands by altering interior habitats (Russell and Jones 2001). Weather-related effects have been found to penetrate over 165 feet into a stand; the invasion of exotic plants and penetration by predators and nest parasites may extend 1500 feet or more (Lidicker and Koenig 1996). On the other hand, adjacent management can accelerate regeneration and sometimes increase the diversity of future buffering canopy.
>
> The occurrence of roads can cause substantial edge effects on forested stands, sometimes more than the harvest areas they access (Reed, et al. 1996; Bate and Wisdom, in prep.). Roads that are open to the public expose many important wildlife habitat features in old growth and other forested stands to loss through firewood gathering and increased fire risk.
>
> Effects of disturbance also vary at the landscape level. Conversion from one stand

> condition to another can be detrimental to some old growth associated species if amounts of their preferred habitat are at or near threshold levels or dominated by linear patch shapes and limited interconnectedness (Keller and Anderson 1992). Reducing the block sizes of many later-seral/structural stage patches can further fragment existing and future old growth habitat (Richards et al. 2002). Depending on landscape position and extent, harvest or fire can remove forested cover that provides habitat linkages that appear to be "key components in metapopulation functioning" for numerous species (Lidicker and Koenig 1996, Witmer et al. 1998). Harvest or underburning of some late and mid seral/structural stage stands could accelerate the eventual creation of old growth in some areas (Camp, et al. 1996). The benefit of this approach depends on the degree of risk from natural disturbances if left untreated.
>
> Effects on old growth habitat and old growth associated species relate directly to … "Landscape dynamics—Connectivity"; and … "Landscape dynamics—Seral/structural stage patch size and shapes."

(USDA Forest Service, 2004a at 3-196 and 3-197.)

Harrison and Voller, 1998 assert that "connectivity should be maintained at the landscape level." They adopt a definition of landscape connectivity as "the degree to which the landscape facilitates or impedes movement among resource patches." Also:

> "Connectivity objectives should be set for each landscape unit. …Connectivity objectives need to account for all habitat disturbances within the landscape unit. The objectives must consider the duration and extent to which different disturbances will alienate habitats. … In all cases, the objectives must acknowledge that the mechanisms used to maintain connectivity will be required for decades or centuries."

(Id., internal citations omitted.) Harrison and Voller, 1998 further discuss these mechanisms:

> Linkages are mechanisms by which the principles of connectivity can be achieved. Although the definitions of linkages vary, all imply that there are connections or movement among habitat patches. Corridor is another term commonly used to refer to a tool for maintaining connectivity. …the successful functioning of a corridor or linkage should be judged in terms of the connectivity among subpopulations and the maintenance of potential metapopulation processes. (Internal citations omitted.)

Harris, 1984 discusses connectivity and effective interior habitat of old-growth patches:

> Three factors that determine the effective size of an old-growth habitat island are (1) actual size; (2) distance from a similar old-growth island; and (3) degree of habitat difference of the intervening matrix. …(I)n order to achieve the same effective island size a stand of old-growth habitat that is surrounded by clearcut and regeneration stands should be perhaps ten times as large as an old-growth habitat island surrounded by a buffer zone of mature timber.

Harris, 1984 discusses habitat effectiveness of fragmented old growth:

> (A) 200-acre (80 ha) circular old-growth stand would consist of nearly 75% buffer area and only 25% equilibrium area. …A circular stand would need to be about

> 7,000 acres (2,850 ha) in order to reduce the 600-foot buffer strip to 10% of the total area. It is important to note, however, that the surrounding buffer stand does not have to be old growth, but only tall enough and dense enough to prevent wind and light from entering below the canopy of the old-growth stand.

Harris, 1984 believes that "biotic diversity will be maintained on public forest lands only if conservation planning is integrated with development planning; and site-specific protection areas must be designed so they function as an integrated landscape system." Also:

> Because of our lack of knowledge about intricate old-growth ecosystem relations (see Franklin et al. 1981), and the notion that oceanic island never achieve the same level of richness as continental shelf islands, a major commitment must be made to set aside representative old-growth ecosystems. This is further justified because of the lack of sufficient acreage in the 100- to 200-year age class to serve as replacement islands in the immediate future. …(A) way to moderate both the demands for and the stresses placed upon the old-growth ecosystem, and to enhance each island's effective area is to surround each with a long-rotation management area.

The FS's own studies disclose that mixed severity fires are also key to the development of some old-growth types (USDA Forest Service, 1998-1999). Thus, the development of mature forests to old growth is also being retarded by logging and fire suppression. The issue of old-growth mixed conifer—a type that contains a significant component of Western larch—is being ignored. USDA Forest Service (1998-1999) identifies Western larch as a "forest type at risk" with "36% loss" within the Columbia River Basin. Causes listed are "fire exclusion and past harvest." Logically then, the value for old-growth wildlife species is enhanced by fires, but the FS wants to suppress fire via its management.

Wildlife biologist B.R. McClelland has for many years studied the relationship of cavity nesting birds, particularly the pileated woodpecker, to this very same larch-containing old-growth habitat. See: McClelland and McClelland, 1999; McClelland et al. 1979; and McClelland, 1977.

If the FS were study the Northern Region Overview, connect the dots and disclosed the obvious conclusions, it would be clear that the proposed logging to prevent the effects of "catastrophic" fire areas is severely detrimental to cavity nesting species, including the pileated woodpecker. This is an indicator for the kind of forest the FS proposes to avoid allowing to develop via prescribed natural fire. From USDA Forest Service, 1998-1999, pp. 25-26, under Western larch:

> Mixed severity fire intervals of 40-90 years followed by lethal fires on a 100-200 year + time frame are within the historical range of disturbance to which the seral species are adapted. In the absence of mixed severity fire or some stand thinning, on moist sites, larch is replaced by more shade tolerant species by 90-140 years. With thinning or mixed severity fire, larch can maintain site dominance for 200+ years.
>
> …(M)ixed severity fire often served to maintain or even increase the larch dominance in stands. Residual large tree cover (less than 20% canopy cover) after large stand replacing fire was common. This large tree residual structure (emergent

> structure) occurring singly or in small groups has declined in many areas. In addition, the areal extent of this cover type has decreased significantly. In many areas where a mix severity fire regime helped maintain a more diverse landscape structure with larger trees, the current landscapes are in a more homogenized landscape condition.
>
> …The loss of mixed-severity fire will result in much less recruitment of the type of mixed seral and climax species old growth type communities found in the past. There is also a risk of continued loss of the areal extent of the type due to the lack of mixed severity fire disturbance in early and mid-seral structural stages and a current lack of canopy openings large enough for successful larch regeneration in the mid and late successional communities.

The IPNF falls far short of analyzing and disclosing these cumulative effects on old-growth wildlife species' viability, caused by the current conditions and by the proposed timber sale. 8-84

Indirect effects of logging activities

The DEIS makes a case for logging as a way to reduce insect and disease damage to timber stands. As far as we are aware, the FS has no empirical evidence to indicate its "treatments" for "forest health" decrease, rather than increase, the incidence of insects and diseases in the forest. Since the FS doesn't cite research that proves otherwise, we can only conclude that "forest health" discussions are unscientific and biased toward logging as a "solution." Please consider the large body of research that indicates logging, roads, and other human caused disturbance 8-85 promote the spread of tree diseases and insect infestation.

For example, multiple studies have shown that annosus root disease (Heterobasidion annosum, formerly named Fomes annosus), a fungal root pathogen that is often fatal or damaging for pine, fir, and hemlock in western forests, has increased in western forests as a result of logging (Smith 1989). And researchers have noted that the incidence of annosus root disease in true fir and ponderosa pine stands increased with the number of logging entries (Goheen and Goheen 1989). Large stumps served as infection foci for the stands, although significant mortality was not obvious until 10 to 15 years after logging (Id.).

The proportion of western hemlock trees infected by annosus root disease increased after precommercial thinning, due to infection of stumps and logging equipment wounds (Edmonds et al. 1989, Chavez, et al. 1980).

Armillaria, a primary, aggressive root pathogen of pines, true firs, and Douglas-fir in western interior forests, spreads into healthy stands from the stumps and roots of cut trees (Wargo and Shaw 1985). The fungus colonizes stumps and roots of cut trees, then spreads to adjacent healthy trees. Roots of large trees in particular can support the fungus for many years because they are moist and large enough for the fungus to survive, and disease centers can expand to several hectares in size, with greater than 25% of the trees affected in a stand (id.). Roth et al. (1980) also noted that Armillaria was present in stumps of old-growth ponderosa pine logged up to 35 years earlier, with the oldest stumps having the highest rate of infection.

Filip (1979) observed that mortality of saplings was significantly correlated to the number of Douglas-fir stumps infected with Armillaria mellea and laminated root rot (Phellinus weirii). McDonald, et al. (1987) concluded the pathogenic fungus Armillaria had a threefold higher occurrence on disturbed plots compared to pristine plots at high productivity sites in the Northern Rockies. Those authors also reviewed past studies on Armillaria, noting a clear link between management and the severity of Armillaria-caused disease.

Morrison and Mallett (1996) observed that infection and mortality from the root disease Armillaria ostoyae was several times higher in forest stands with logging disturbance than in undisturbed stands, and that adjacent residual trees as well as new regeneration became infected when their roots came into contact with roots from infected stumps.

Precommercial thinning and soil disturbance led to an increased risk of infection and mortality by black-stain root disease (Leptographium wageneri) in Douglas-fir, with the majority of infection centers being close to roads and skid trails (Hansen et al. 1988). Also another Black-stain root disease (Verticicladiella wagenerii) occurred at a greater frequency in Douglas-fir trees close to roads than in trees located 25 m or more from roads (Hansen 1978). Witcosky et al. (1986) also noted that precommercially thinned stands attracted a greater number of black-stain root disease insect vectors.

Complex interactions involve mechanical damage from logging, infestation by root diseases, and attacks by insects. Aho et al. (1987) saw that mechanical wounding of grand fir and white fir by logging equipment activated dormant decay fungi, including the Indian paint fungus (Echinodontium tinctorium).

Trees stressed by logging, and therefore more susceptible to root diseases are, in turn, more susceptible to attack by insects. Goheen and Hansen (1993) reviewed the association between pathogenic fungi and bark beetles in coniferous forests, noting that root disease fungi predispose some conifer species to bark beetle attack and/or help maintain endemic populations of bark beetles.

Goheen and Hansen (1993) observed that live trees infected with Laminated root rot (Phellinus weirii) have a greater likelihood of attack by Douglas-fir beetles (Dendroctonus pseudotsugae). Also, Douglas-fir trees weakened by Black-stain root disease (Leptographium wageneri var. pseudotsugae) are attacked and killed by a variety of bark beetle species, including the Douglas-fir bark beetle (D. pseudotsugae) and the Douglas-fir engraver (Scolytus unispinosis) (id.).

The root disease Leptographium wageneri var. ponderosum predisposes ponderosa pine to several bark beetle species, including the mountain pine beetle (D. ponderosae) and the western pine beetle (D. brevicomis) (Goheen and Hansen 1993).

A variety of root diseases, including black-stain, Armillaria, and brown cubical butt rot (Phaeolus schweinitzii), predispose lodgepole pine to attack by mountain pine beetles in the interior west. The diseases are also believed to provide stressed host trees that help maintain

endemic populations of mountain pine beetle or trigger population increases at the start of an outbreak (Goheen and Hansen 1993).

Grand and white fir trees in interior mixed-conifer forests have been found to have a high likelihood of attack by the fir engraver (Scolytus ventralis) when they are infected by root diseases, such as laminated root rot, Armillaria, and annosus (Goheen and Hansen 1993).

More western pine beetles (Dendroctonus breviformis) and mountain pine beetles (D. ponderosae) were captured on trees infected by black-stain root disease (Ceratocystis wageneri) than on uninfected trees (Goheen et al. 1985). The two species of beetle were more frequently attracted to wounds on trees that were also diseased than to uninfected trees. They also noted that the red turpentine beetle (Dendroctonus valens) attacked trees at wounds, with attack rates seven-to-eight times higher on trees infected with black-stain root disease than uninfected trees. Spondylis upiformis attacked only wounded trees, not unwounded trees (Id.). 8-85

The cumulative effects of management actions—past ongoing, and foreseeable—on lands of all ownership is glossed over for most if not all resource discussions. The listing and discussions about past and ongoing activities in the DEIS is far too cursory to provide a real analysis and understanding cumulative effects. We believe that in order to properly assess cumulative effects, the FS must not only quantify the acres and point to locations of past and ongoing actions, but also state the goals of the projects and if those goals were met, indicate if any assumptions underlying those projects' "purpose and need" statements were correct, and disclose significant monitoring information related to potentially similar impacts from the project proposal. 8-86

Water quality and fisheries

An important part of the project's expressed Purpose and Need is to "Work toward full support of designated beneficial uses in the Bussel Creek Watershed." Unfortunately, the DEIS does not propose a plan with enough detail for anyone to conclude how full support of beneficial uses could be achieved. Most of the present road network would remain, and it is doubtful that the level of proposed improvements will result even in the modest TMDL sediment reduction goals. 8-87

Forest Service hydrologist Johnson (1995) states, "For the roads we no longer actively use, our dwindling road maintenance budget will make it difficult to maintain the culvert crossings. When these fail during storm and runoff events, tremendous amounts of sediment can be delivered directly to the channel and from there down to lower streams with significant beneficial uses such as sensitive fish habitat." The DEIS fails to disclose the significance of this foreseeable lack of maintenance, and the direct, indirect and cumulative effects poorly maintained roads have on water quality. 8-88

The DEIS fails to include an alternative that removes or fixes all the roads having design flaws, are otherwise contributing to soil and watershed problems contributing to Bussel Creek's status as impaired, or are not needed for foreseeable management activities. The DEIS did not consider an alternative that gets the streams in the project area to meet Riparian Management Objectives (RMOs). The public needs to know how much it will cost to manage these watersheds up to acceptable conditions. 8-89 8-90

It is reasonably foreseeable that a wildfire will affect the project area, the only question is when. The Western Montana Level I Bull Trout Team (Riggers et al., 2001) state:

> (T)he real risk to fisheries is not the direct effects of fire itself, but rather the existing condition of our watersheds, fish communities, and stream networks, and the impacts we impart as a result of fighting fires. …If we are sincere about wanting to reduce risks to fisheries associated with future fires, we ought to be removing barriers, reducing road densities, reducing exotic fish populations, and re-assessing how we fight fires. At the same time, we should recognize the vital role that fires play in stream systems, and attempt to get to a point where we can let fire play a more natural role in these ecosystems.

The biologists emphasize, "the importance of wildfire, including large-scale, intense wildfire, in creating and maintaining stream systems and stream habitat." The biologists continue "in most cases, proposed projects that involve large-scale thinning, construction of large fuel breaks, or salvage logging as tools to reduce fuel loading with the intent of reducing negative effects to watersheds and the aquatic system are largely unsubstantiated." The biologists point out that logging, thinning and fire suppression can have harmful effects on watersheds (Id.). The DEIS does not propose a plan that will result in minimized risk to water quality following foreseeable
8-91 and inevitable wildfire—a plan that proactively deals with road and other erosion sources so that the short-term loss of vegetation and increase in runoff won't result in unnecessary degrading of water quality and fish habitat.

The DEIS at p. 42 lists several "Forest Service Best Management Practices… currently incorporated into road construction/reconstruction activities on the forest." How many miles of
8-92 existing roads in the watershed—which will not be upgraded by the action alternatives—were not designed with those BMPs etc. in mind?

The KNF's recent Trego Decision Notice admits that effectiveness of BMP work is not complete, rather temporary, and in need of frequent monitoring and maintenance:

> BMPs are proven practices that ***reduce*** the effects of roads to the watershed. They are not remedies for walking away from the road forever. …Traffic and other factors …degrade these features. That is why BMPs are not static. BMP structures need to be maintained and monitored as conditions change.

(Trego Decision Notice at Appendix 5-17, emphasis added.) Even if all roads were to be brought up to BMP standards, it is clear that more maintenance will be needed in later years. The DEIS
8-93 fails to identify the needs, nor the funding to achieve them. This was the subject of an EPA comment on the KNF's Smoked Fish Environmental Assessment:

> (I)t is not clear if roads would be maintained on a continuing basis so that sediment reduction benefits from BMP upgrades would be long-term. We are concerned that the Kootenai National Forest (KNF) may lack adequate funding to maintain forest roads on a continuing basis… Unless road BMPs are maintained on a continuing basis, sediment reduction benefits may be temporary, and may not contribute to improved water quality restoration over the long term, especially if some roads encroach on streams.

(Smoked Fish Decision Notice at B-56.) The DEIS states: "Routine road maintenance is likely to occur as needed on existing roads in the project area. This includes the ongoing upkeep of roads necessary to retain or restore them to the approved road management objective. The overall condition … of the roads are adequate for the anticipated uses." (p. 45.)

The DEIS does not address the implications of this necessary long-term ecological and economic investment. And that last statement contradicts the rest of the paragraph. 8-94

Fine sediment in spawning gravels is a major limiting factor to fry survival in many of the drainages on the IPNF. Spawning success is an extremely important factor in maintaining the viability of fish populations. Bussel Creek is suffering from high levels of fine sediment and if evaluated would not meet the Fry Emergence standard. 8-95

Isaacson, 2001 states: "During the Forest planning period …the IPNF Plan committed to the maintenance of at least 80% of emergence even if technologies change." The amendment to the Forest Plan that eliminated this standard did not consider existing watershed degradation. 8-96

The Forest Plan Appendix JJ requires validation monitoring. "Intergravel fines modeling–Compare stream intergravel fines with predicted values." FP Appendix JJ at page 4. Isaacson, 2001 states: "The intergravel fines monitoring is a necessary component in determining the fry emergence success. I found no reference in the FEIS to any validation monitoring that compared the existing situation with the predicted values as required by the IPNF Forest Plan."

The DEIS does not demonstrate conformance with the Forest Plan Fry Emergence Standard; fails to adequately consider the Project's relationship to rain on snow; does not conform the IPNF Forest Plan monitoring standards; and does not adequately disclose the cumulative effects of Forest Service and other Federal and non-Federal activities within the Project area. 8-95 8-97 8-98 8-99

Table 2-21 indicates that the IPNF believes that the 5.8 miles of road construction and the 1.3 miles of road reconstruction above that of Alternative C will result in no additional sediment to Bussel Creek. The assumption that the BMPs and/or project design features will completely control sediment has not been proven in any landscape in the Northern Rockies. 8-100

The assumption that the combination of the planned watershed restoration in combination with the logging and additional road construction will result in a net benefit to the watersheds also calls for citing the results of quantitative effectiveness monitoring. Effectiveness monitoring should verify the fact that the construction of roads will have little to no impact, as claimed in the DEIS, to the affected stream. Although the IPNF has carried out many restoration/logging sales in the past, there is no reference in the DEIS to quantitative documentation as to the effectiveness that would support the DEIS's assumptions. 8-101

Another major problem with the models is that they fail to take into account the extreme peak flow increases due to the high density of roads in the project area. Johnson (1995) states, "Impacts from roads basically fall into three areas: introduced sediment into streams; snowmelt re-direction and concentration; and surface flow production." 8-102

Johnson (1995) discusses how "snowmelt re-direction and concentration and surface flow production" increase peak flow amounts multiplicatively by the presence of roads in a drainage.
8-103 The DEIS fails to acknowledge this limitation of the water models utilized for this analysis.

Johnson (1995) also points out that the old road design used on many roads in the project area utilized ditches on the inside of the road which greatly increases drainage efficiency, causing peak flows to go far beyond any modeled predictions. So the very existence of the current road network is causing major water quality impacts.

"The TMDL and WATSED models are used to estimate sediment additions and reductions (*see*
8-104 *Water* section)." (DEIS 71.) The DEIS does not indicate the reliability of the models for quantitative sediment yields, meaning the models have not been validated for the use intended—demonstrating compliance with the Clean Water Act and state regulations.

We are puzzled that stream road crossings were assessed for "risk" of failure and expressed in
8-105 amounts of sediment increase in the IPNF's Iron Honey EIS, whereas this DEIS does not disclose such risks.

At p. 42-43, the DEIS states:

> At the time the IPNF Forest Plan was approved (1987), the emphasis was on developing a commodity production strategy while minimizing impacts to watersheds and aquatic resources, including fish. The strategy for watershed management was constructed in the forest plan as a "maintenance" objective. In some situations, thresholds, or "minimum impact" standards defined the criteria for maintenance. To ensure that watersheds and aquatic resources were maintained during forest management activities, BMPs were applied. Despite the existing forest plan standards and BMPs, the condition of fish habitat on the forest was declining, primarily due to timber harvest and road building activities (IPNF 1992).

8-106 The IPNF knew that its "commodity production strategy" would likely result in severe watershed degradation, but implemented it anyway (Issacson, 2001).

Some glaring omissions from DEIS discussions of reference conditions are the population levels
8-107 and distribution of TES fish species, the westslope cutthroat trout and bull trout. How have these populations fared, following construction of so many miles of roads in the Bussel Creek watershed, all the hydrologically altered soil conditions, and reductions in canopy closure via logging, fire, and road construction?

From USDA Forest Service 2004a, which explains the importance of some RMO values for fish habitat:

> Pools are deeper, slower portions of a stream created by plunges, sharp bends, large substrate, beaver dams, or scouring under large woody debris. Pools are critical to trout in that they provide feeding/resting areas for sub-adults and adults as well as over-wintering habitat. Cutthroat, bull, rainbow, and brook trout all rely heavily on the presence of large, deep pools with heavy cover. Pools are most abundant in stable streams with large amounts of large woody debris.

> …"Large woody debris" is a catchall term that describes old root wads, fallen logs, or tree trunks that are submerged or partially submerged in the stream. In order to affect fish habitat, woody debris must be large enough to stay put in the stream during normal flow years. In small streams …, large woody debris may only need to be four inches in diameter, but in larger, powerful streams …, it may need to be several feet in diameter or else the flow carries it downstream.
>
> Large woody debris is important for trout habitat. Wood tends to be the primary mechanism for creating pool habitat in small to mid-size streams. Large woody debris is also the principal source of cover for fish. Trout need to be able to hide from predators like herons, raccoons, and other fish. Both cutthroat trout and bull trout depend heavily on cover. Generally, the more wood the better.
>
> …Stream water temperature in part determines which fish species can exist in a stream. Stream water temperature is a key feature in understanding bull trout, cutthroat trout, and brook trout distribution. Water temperatures are controlled primarily by elevation and ground water input, but channel width and riparian canopy shading also have some influence.

"Table 3-11 Indicators & Measurement Parameters for Determining Limiting Factors: Indicators Chosen for Limiting Factor Assessment" (DEIS at 69.) It is not clear why parameters Table 3-10 were not brought forth, since some are RMOs. 8-108

"There are known human-caused fish barriers in the Bussel 484 Project Area." (P. 72.) Would all these human-caused fish barriers be eliminated by the alternatives? 8-109

"The average westslope cutthroat trout density for the proposed project area is considered to be above average (11-fish/100 square meters)." (P. 77.) This makes no sense, since the DEIS at p. 74 indicates "There is no historic quantitative data…" on fish populations. 8-110

"The WATSED model identifies a current sediment level of 548 tons/year *(Water* section*).* Historically, sediment yields were in balance through natural process such as fire, mass failure and climatic events." (P. 80.) The DEIS does not disclose the range of conditions that would be considered "reference conditions." 8-111

"The temperature TMDL calls for increasing shade canopy over the stream channels by 20-80% in Bear and Little Bear Creeks." (P. 81.) The DEIS does not indicate when this desired condition will be attained. 8-112

"Some stream channels and riparian conditions have been altered by human activity i.e. riparian harvest, log drives, road construction. The reduction of mature forests within riparian areas of some streams in the project area reduces the potential for recruitment of large woody debris which influences instream cover, and pool habitat." (P. 81.) At what point in time (how many years from 2008) will riparian forest conditions recover such that large woody debris recruitment will achieve "reference conditions?" 8-113

8-114 "The majority of the reaches surveyed from 1991 to 2005 in the fisheries analysis area did not meet the INFS RMO target objective for pool frequency (F-4)." (P. 82.) At what point in time (how many years from 2008) will aquatic conditions recover such that the RMO target objective for pool frequency will fall within "reference conditions?"

8-115 "Alternatives A, B and C would meet NFMA requirements to "provide for diversity of plant and animal communities" in the Plan area (16 USC §1604 NFMA §6 (g)(2) (B)). Why does this statement omit from desired conditions meeting "reference conditions" of having viable populations of native fish species?

Managing in opposition to natural processes

8-116 The DEIS fails to disclose the ecological and economic cumulative impacts of its fire suppression management regime. The Forest Service has never complied with NEPA by analyzing and disclosing economic and ecological cumulative effects of the IPNF's fire suppression. Ingalsbee (2004) describes the direct, indirect, and cumulative environmental impacts of firefighting, and offers specific examples from the 2002 Biscuit Fire in southern Oregon. He notes direct effects from fireline construction, tree felling, chemical use, water use, and suppression firing operations along with indirect effects from off-highway vehicle use, and road reconstruction. Additionally, the entire premise of the Bussel 484 proposal—indeed most logging proposals put forth by Region 1 national forests—is that the ecological impacts of fire suppression have been drastic and unacceptable. Those effects must be addressed in a forestwide EIS such as Forest Plan revision, if project EISs such as Bussel 484 don't disclose them.

The DEIS states on p. 46:

> The most recent fire in the project area, the Elm Street Fire, burned during the summer of 2007. It was a mixed-severity fire having a highly varied mosaic of effects due to variable pre-fire fuel loads. The largest opening created by the fire is approximately 15 acres where the fire burned with high enough intensity to consume the crowns of the overstory trees. The perimeter is approximately 1.9 miles long and is surrounded by approximately 1.5 miles of dozer line with the remainder comprised of existing roads. All dozer lines were rehabilitated using an excavator to pull the berm back into the line and to place coarse woody debris over the line. The dozer lines were also seeded.

8-117 The DEIS does not disclose the results of monitoring of the rehabilitation measures.

At p. 61, the DEIS states:

> BEHAVE, Fire Behavior Prediction and Fuel Modeling System, was used to predict fire behavior given current, post harvest, and post harvest slash treatment conditions. Fire behavior characteristics such as rate of spread and fire intensity were predicted and utilized to plan and prioritize suppression efforts. Fuel models that describe current and post harvest slash conditions, developed by the National Forest Fire Laboratory (NFFL) were used as input for BEHAVE. Fuel loads are measured in tons per acre.

8-118 This indicates the FS has planned and prioritized suppression efforts, but the DEIS does not disclose those plans and priorities for the project area. Also, this seems to indicate

that the BEHAVE modeling is only being applied to treated areas, which means it fails to consider the cumulative effects of past logging.

At p. 60, the DEIS states:

> Forest Service Manual 5130.2 states: "The objective of fire suppression is to safely suppress wildfires at a minimum cost consistent with land and resource management objectives and fire management direction as stated in fire management action plans." Minimum cost considerations usually lead to decisions of aggressive initial attack to keep fires small unless other less aggressive suppression responses to contain or confine wildfire are deemed more cost effective.

"Minimum cost considerations" inevitably conflicts with wildland fire use—allowing natural processes to operate.

The DEIS at p. 63:

> Of the 16% of National Forest acres that have been harvested since the 1960s only 2% of those treatments would be effective barriers to high-intensity fire spread beyond 15 years because of continued fire suppression and subsequent increases in surface fuels under Alternative A.

Where were those treatment(s) that are now barriers to high-intensity fire spread, and what exactly was the description of those treatment(s)? 8-119

"Quick shrub growth and conifer regeneration reestablishes solar and wind sheltering of surface fuels which reduce fire behavior potential. Native shrubs and herbs occurring on these sites also maintain high live fuel moistures throughout the growing season, which also reduces fire behavior potential." (DEIS at 65.) This is saying that the shading by shrubs (when they re-grow following logging and slash treatment) helps to keep things shaded and therefore cool and moist. The DEIS doesn't, however, recognize that that is the case with a naturally closed canopy—to be thinned out or "regenerated" by the proposed logging. So would the logging just reduce crown fires, which are normal? 8-120

"Although these activities have improved the forest composition, the forest composition for the St. Joe River Basin and within the Bussel 484 project continues to be dominated more by mid- to late-seral shade-tolerant species as compared to historic levels." (P. 121.) This begs the question, how much logging is needed to replace natural processes (fire), and how long would it take the IPNF to achieve such a "desired condition?" 8-121

At p. 121 the DEIS states:

> Within the St. Joe River Basin, as well as within the Bussel 484 Project Area, there has been a shift from historic conditions to a more homogeneous structure and species composition... There has been an increase in mid-seral structures dominated by grand fir and Douglas-fir, which have become contiguous and created a more homogeneous landscape. … There are fewer stands typified by an old, open overstory of large early-seral species with an understory of mixed species of varying shade tolerances. Stands typified by small and medium-sized young trees have increased. These stands are generally more uniform in structure and more densely stocked compared to historic conditions.

8-122 What field data do you have to base this conclusion of "old, open overstory" being the reference conditions? Likewise the "Stands typified by small and medium-sized young trees"? What data was gathered in St. Joe River Basin to form basis of these statements? Have they been verified for the Project Area?

8-123 "Stand structures in the Bussel 484 Project Area include a few stands that have an open overstory of moderately old, large trees with an understory of younger, smaller trees." What are those stand numbers, and what is the nature of field data?

8-124 "These stands are trending towards multi-storied structure. The historical condition in this project area was generally **even-aged, one- and two-storied stands of moderate to large area.** (P. 122, emphasis added.) Again, what is field data basis for that statement?

Other issues

8-125 Please disclose the District's timber target, and how it compares to each of the other IPNF Ranger Districts.

8-126 The DEIS does not include an alternative that would protect the historic railroad grade and prevent more damage.

The DEIS at p. 58:

> ***Economic efficiency*** uses the cost and revenue estimates included in the financial analysis and adds other economic costs and benefits that are not part of Forest Service monetary transactions. This analysis considers the quantifiable market and non-market benefits and costs associated with implementing each alternative. …An example of a non-market benefit or cost is an increase or decrease in recreation.

8-127 So something that damages the forest via increase in ATV use is an economic "benefit" in the DEIS's calculation.

8-128 The economics section is far too brief to determine anything at all. It's all about timber salability. The DEIS fails to display **itemized** costs. There is no way to tell if there is anything missing, if the PNV is correctly calculated.

8-129 The DEIS's Table 3.47 is not clear on how much of the 28.41 miles of routes "Accessible to vehicles < 50" currently available are authorized legal, and how much of the mileage is currently illegal.

8-130 The DEIS does not demonstrate an actual overall public benefit of the ATV use the Decision would sanction. The need really isn't there, except apparently to appease many people who now violate existing closures.

"Some of the illegal use is caused by confusion about where it is legal to drive due to inadequate signs, maps, or restrictive devices. The forest visitor map does not show all forest roads. This can confuse visitors." (P. 151.) This speaks to the effectiveness of FS enforcement and in fact,

overall management. The DEIS does not disclose why the IPNF assumes that the proposed re-arrangement of open ATV routes will result in fewer closure violations. 8-131

"Where skid trails approach or intersect open roads or designated ATV routes, restrictive devices or debris such as logs, brush and rocks would be placed to effectively stop vehicle use." (P. 155.) The DEIS does not explain why such measures are expected to be effective here, whereas they're not elsewhere as demonstrated in the widespread closure violations. 8-132

"The project design feature would reduce the impacts of some illegal ATV use; however past experience has shown that it is difficult to completely eliminate illegal use." (P. 158.) Please design an administrative contingency for continued violation of closures or off-trail incursions, such as eliminating ATV use altogether. 8-133

"This area is popular for snowmobiling. The Forest Service, State of Idaho, and Shoshone County have a cost share agreement allowing snowmobile use grooming on approximately ten miles of designated routes. No changes are proposed for winter use." (DEIS at 154.) The extent and impacts of snowmobile use in the project area is not disclosed. 8-134

How is consistency of action alternatives with the 2005 Travel Management Rule demonstrated? 8-135

The DEIS at pp. 43-44 states:

> Other elements of modern harvest prescriptions that address specific resource objectives include retention of snags for cavity nesters, retention of down wood for soil nutrition and wildlife habitat, maintaining sediment filtering vegetation near riparian areas, and maintaining vegetation diversity through hardwood retention and protection of rare plants. …Early harvests emphasized cheap, labor-intensive logging methods, such as railroad, horse, short distance jammer systems, and tractor logging. Logging systems were selected primarily by the least expensive method to transport the trees from the forest to the mill. This sometimes involved harvesting on steep slopes, creating excessive soil disturbance and increasing the risk of erosion. Streams were sometimes used as a method to transport logs from the harvest site, causing impacts to the aquatic system and adjacent riparian habitat. Road systems were sometimes dense (10 miles per square mile) to facilitate rapid and inexpensive removals, in some cases compromising water quality. (43.) Tractor dozer piling was once a common practice. Monitoring showed that it resulted in heavily disturbed soils, so dozer piling is no longer used to treat fuels. (44.)

The point of a cumulative effects analysis, as stated in multiple places in these comments, is that an EIS must disclose the extent of the existing damage from all those past bad practices so that the public can understand what restoration is needed to achieve ecological and economic sustainability. After all, "INFS allows for and encourages watershed restoration." (DEIS at 43.) 8-136

The DEIS makes decisions about which roads are to be kept and which are to be decommissioned, without properly involving the public or disclosing which considerations lead to those decisions. 8-137

The DEIS states, "Some areas (764 acres) were replanted to increase stocking levels…" (46.) The DEIS does not disclose why it was deemed necessary to replant, why stocking levels were not achieved in the first planting.

"Activities on private lands such as timber harvesting, prescribed fires, and road construction have and, in the future, would continue to directly reduce the potential for crown fire where they occur." (DEIS at 63.) That would be true only if slash is correctly treated, and if the stands are not highgraded, which unfortunately is the current practice of the Potlatch Corporation.

"The burned harvest areas result in at least 20 years of effective change in fuel conditions, where the fine fuels may be reduced by up to 90% and larger fuels may be reduced by as much as 60%
8-140 (First Order Fire Effects Modeling)." (DEIS at 64.) How was that model validated? And since this 20-year effect gradually subsides, how does the DEIS differentially consider vegetation succession every year post-slash burning?

The DEIS states,

> Pocket gopher control has been used on 570 acres within the Bussel Creek Drainage to protect natural and planted seedlings. Pocket gopher control to protect regeneration is proposed to continue on 40 acres of these previously harvested areas within the Bussel 484 Project Area. (P. 46.)

8-141 Are such associated costs considered in considerations of "suitability" for timber production?

Lopping is proposed to deal with slash on the vast majority of logged acres in the action alternatives. "Lopping does not reduce post harvest activity fuel loading. It does however, reduce the depth of the post harvest fuel bed and increase the compaction, or density, of the activity
8-142 fuels. Fuels that are close to the ground dry slower due to higher relative humidity and reduced air movement that occurs near the ground surface." (DEIS at 65-66.) What is the basis for this assumption, which is put forth by the DEIS to justify the use of lopping?

The DEIS's description of the commercial thinning treatments (and likewise of the thinning areas within the group shelterwood units) doesn't provide nearly enough details to determine
8-143 how the silvicultural goals would be met. It doesn't disclose specifics of tree species targeted for removal or cutting, nor tree sizes for retention. Under the DEIS's definition, almost anything goes, and therefore we feel there are few assurances that the logging systems are much different from the DEIS's description of the old days of highgrading.

Thank you for your attention to these concerns. It is our intention that you include in the record
8-144 and review all of the literature we've cited herein. **Please contact the Jeff Juel if you have problems locating copies of any of them.** Also, please keep each of our groups on the list to receive further mailings on the proposal.

We conclude this comment letter with this passage from Frissell and Bayles (1996):

> Most philosophies and approaches for ecosystem management put forward to date are limited (perhaps doomed) by a failure to acknowledge and rationally address the overriding problems of uncertainty and ignorance about the mechanisms by which

complex ecosystems respond to human actions. They lack humility and historical perspective about science and about our past failures in management. They still implicitly subscribe to the scientifically discredited illusion that humans are fully in control of an ecosystemic machine and can foresee and manipulate all the possible consequences of particular actions while deliberately altering the ecosystem to produce only predictable, optimized and socially desirable outputs. Moreover, despite our well-demonstrated inability to prescribe and forge institutional arrangements capable of successfully implementing the principles and practice of integrated ecosystem management over a sustained time frame an at sufficiently large spatial scales, would-be ecosystem managers have neglected to acknowledge and critically analyze past institutional and policy failures. They say we need ecosystem management because public opinion has changed, neglecting the obvious point that public opinion has been shaped by the glowing promises of past managers and by their clear and spectacular failure to deliver on such promises.

Sincerely,

/s/

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

April 21, 2008

Reply To
Attn Of: ETPA-088

Ref: 05-023-AFS

Ms. Cornie Hudson, Project Team Leader
St. Joe Ranger District
222 7th Street, Suite 1
St. Marie, ID 83861

Dear Ms. Hudson:

The U.S. Environmental Protection Agency (EPA) has reviewed the draft Environmental Impact Statement (DEIS) for the **Bussel 484 Project** on the Idaho Panhandle National Forest in Idaho. We are submitting comments pursuant to our responsibility under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act.

The Idaho Panhandle National Forest (the Forest) is proposing to manage vegetative resources, provide wood products, work toward full support of designated beneficial uses in the Bussel Creek Watershed, and manage access to provide for multiple uses. The proposed action would treat approximately 2,239 acres within the 14,646 acre project area. The DEIS considers a no-action alternative and two action alternatives:

1. **No Action - Alternative A:** Maintain the existing level of management including fire suppression, road maintenance, recreation use, and previously authorized projects.
2. **Proposed Action - Alternative B:** This alternative would include timber harvest and associated fuels treatment on approximately 2,239 acres. Silvicultural prescriptions include 1,543 acres of commercial thins, 553 acres of group shelterwood cuts, 53 acres of seedtree cuts, and 90 acres of clearcuts with reserves. Road activity would include construction of 5.5 miles of system road, 0.3 miles of temporary road, and 6.7 miles of road reconstruction. An additional 0.2 miles of road would be constructed on Potlatch Corporation lands to facilitate timber harvest on National Forest System (NFS) lands. Access management activities would include providing ATV access to the entire Norton Creek Railroad Grade.
3. **No Road Construction – Alternative C:** Silvicultural prescriptions would be the same as those for Alternative B, but with no new road construction. Approximately 5.4 miles of road would be reconstructed to facilitate timber harvest. Access management activities would include providing ATV access to portions of Norton Creek Railroad Grade.

Both of the action alternatives would result in the decommissioning and storing 29.1 miles of road; planting 367 acres after timber harvest; pocket gopher control on 367 acres; precommercial thinning and pruning on 821 acres; changes in access management; planting some portions of riparian areas in Bear Creek, Little Bear Creek, and other parts of Bussel Creek; placing large woody debris in Bear Creek and Bussel Creek; and correcting two fish migration barriers.

We commend the Forest Service for the inclusive process used in developing the Bussel 484 project. By drawing on watershed assessments, roads analysis, public input, the Forest Plan and other plans the Forest has done an admirable job of crafting a proposal that addresses multiple goals at a landscape scale. We do, however, seek additional information and/or clarification on a limited number of issues. Among these are the need for new road construction in units 233 and 248; access management on the Bussel Creek Trail; the impacts to resources along the Norton Creek and Lines Creek trails under the proposed alternative; and the proposed time line for riparian plantings (10-15 years). These questions are explained in detail in the attached comments. Based on our review, we are rating the DEIS as EC-1 (Environmental Concerns – Adequate). An explanation of this rating is enclosed.

If you have questions or would like to discuss our comments, please contact Teresa Kubo of my staff at (503) 326-2859. Thank you for the opportunity to provide comment.

Sincerely,

Christine B. Reichgott

Christine B. Reichgott, Manager
NEPA Review Unit

Enclosure

EPA Region 10 Detailed Comments
Bussel 484 Project

Road Construction

The proposed alternative would construct 5.5 miles of new system road, 0.3 miles of temporary road, and reconstruct 6.7 miles of road. The DEIS provides a discussion of the role these roads play in terms of project salability and financial efficiency. It does not, however, include a robust discussion of the criteria used to determine whether newly constructed roads should be temporary or permanent. Further, it is not clear that the preferred harvest system is road dependent in every case. Specifically, it appears that two permanent spur roads would be constructed off of road 758 to access units 248 and 233. In looking at map M5 in Appendix A, it appears that these units could receive ground-based treatment without the proposed road construction.

Recommendations:

1) The final EIS (FEIS) should discuss the criteria used to determine whether newly constructed roads should be temporary or permanent. 9-1

2) Given the existing potential for ground-based extraction, the FEIS should clarify why permanent spur roads NR 14A and NR 14C are needed. 9-2

Access Management

The DEIS proposes to shift motorized use away from the northern portion of the project area, thereby reducing sediment impacts to 303(d) listed streams and creating 1,027 wildlife security acres. EPA is fully supportive of this management direction, but we are concerned about the adequacy of the proposed design features to curb illegal use of newly closed routes. Of particular concern is the Bussel Creek trail, where off-trail motorized use has resulted in damage to riparian areas and wet meadows in the Bear Creek area. If areas are to be newly opened to ATV use (such as the Norton Creek Trail), it will be of critical importance to ensure that those areas now proposed for non-motorized use are effectively closed to motorized traffic.

In addition, as noted on page 8, when roads are closed and access is reduced, other areas may experience increased use. The DEIS explores the cumulative impact of this concentrated use on recreation opportunities, but does not include the same level of analysis for impacts to water quality and aquatic and terrestrial habitat. The proposed alternative would concentrate ATV use in areas previously designated as non-motorized. These trails cross and/or parallel several water bodies, including Norton Creek and Lines Creek.

Recommendations:

1) In addition to project design feature 8.C (placement of logs, brush and rocks), the FEIS should explore additional design features to deter illegal use of newly closed roads. This may include additional enforcement, signage, public outreach, and permanent barriers. 9-3

2) The FEIS should analyze potential cumulative impacts to habitat and water quality resulting from increased ATV use in the southwest portion of the project area. This should include a discussion of the extent to which the proposed trails encroach on the streams they parallel. 9-4

Riparian Restoration

As noted on page 81, the 1998 Idaho DEQ 303(d) list had Bussel Creek tributaries (Little Bear and Bear Creeks) identified as temperature impaired. The DEIS goes on to note that stream temperatures in both of these streams currently exceed federal and state bull trout temperature standards. The temperature TMDL developed to address these exceedances calls for increasing shade canopy over the stream channels by 20-80% in Bear and Little Bear Creeks. For these reasons we are fully supportive of the riparian planting activity proposed in the action alternatives. We question, however, the extended timeline associated with these planting activities. As noted on page 100, 1.8 miles of Bear and Little Bear Creeks would be planted with native conifers and shrubs over the course of 10 to 15 years. Given current exceedances and the direction in the TMDL, we would encourage the Forest to pursue these planting activities in the near term (or provide the rationale for delaying these plantings).

Recommendation:

1) We recommend that the Forest conduct planting activities along Bear and Little Bear Creeks in the near term (sooner than 10 to 15 years out) in support of temperature TMDL implementation. 9-5

U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements Definitions and Follow-Up Action*

Environmental Impact of the Action

LO – Lack of Objections

The U.S. Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC – Environmental Concerns

EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO – Environmental Objections

EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU – Environmentally Unsatisfactory

EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 – Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 – Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 – Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.

APRIL 26

BUSSEL EIS

I would like to see the Bussel Cr. trail kept open to Bear Cr. than up Bear Cr. to the old camps. 10-1
This would make a good ATV. trail as it is an old road

J Wesley Goodwin
2302 Cromwell Dr.
St. Marys, Md.

Response to Comments on the Bussel 484 Draft EIS

Letter #1 – R. Dickison; Regulus Stud Mills, Inc.; March 31, 2008

1-1: Your support for the project is noted.

Letter #2 – M. Mihelich; Kootenai Environmental Alliance; April 7, 2008

2-1: As you requested, the IPNF letter dated 4/1/08 has been added to the project file (PI-85), however, it is unclear why this should be part of the record. The FY07 and FY08 Budget Instructions were not used in the Bussel 484 Project analysis process. The Bussel 484 Project is compliant with NEPA 40 CFR 1500.1(b) (FEIS p. 7).

Letter #3 – M. Mihelich; Kootenai Environmental Alliance; April 18, 2008

3-1: The IPNF EMS is a management system that includes many of the IPNF activities and operations, including the Bussel 484 Project. Bussel 484 could be chosen for an EMS review. However, because EMS is a management system, there would not be direct reference to EMS within project design documents. Alternatively, when design considerations are included within the EIS, requirements within the IPNF's EMS would direct IPNF personnel to ensure that those design considerations are implemented on the ground. Review the Timber Harvest Significant Aspect (Operational Control and Monitoring) section of the IPNF EMS Guide for more information on this connection. Furthermore, these "operational controls" (e.g. mitigations) are outlined in the NEPA document, and subsequent procedures for conducting the project on the ground are outlined in current Forest Service Manual and Handbooks.

3-2: Two Corrective/Preventive Action Request (CAR) forms were filed for the Bussel 484 Project Area. One involved a plugged culvert, and the other involved a private landowner building road on private property which added large amounts of soil to the surface of FS Road 1904. The plugged culvert was cleared, and the Forest Service is working with the private landowner to resolve the concerns with the contaminated surfacing. CAR forms are on file at the district office.

3-3: 40 CFR 1502.9(b) requires the agency to, "discuss at appropriate points in the final statement any responsible opposing view which was not adequately discussed in the draft statement and shall indicate the agency's response to the issues raised." First, this regulation does not require an exhaustive pre-emptive review of opposing views, but only of those raised. Furthermore, the opposing views raised must be responsible, which implies the agency has discretion to determine what is responsible. With respect to "Methodology and scientific accuracy," 40 CFR 1502.24 states, "Agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements. They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement." Chapter 3 of the EIS, and the 24 pages of scientific references, demonstrate the District's compliance with 40 CFR 1502.24.

The FEIS discusses limitations and uncertainty in the analysis of effects to water (pp. 215-219) and differing or contrary views regarding wildlife analysis (p. 244). The NCASI document as cited in the FEIS, only points to the difficulty in determining sedimentary cumulative effects.

3-4: See response to comment 3-3.

3-5: The District is not using Quick Bird Imagery. Photo imagery used in this analysis was the western portion of the Shoshone County Digital Ortho Photo acquired from the National Agricultural Imagery Program. The photo imagery was used qualitatively, not quantitatively.

3-6: The findings of the Countryman (1955) paper have been considered and are incorporated by reference in the FEIS (p. 128). Omi and Martinson (2002), and Pollet and Omi (2002), quantitatively discuss the effects of fuel reduction treatments, including thinning, on wildfire behavior and display the results that a treatments had on fire behavior and fire effects burned by wildfires under extreme conditions. Graham and others (2004), Agee and Skinner (2005), Agee and Lolley (2006), Youngblood and others (2008), and Moghaddas and Stevens (2005) describe the specific effects of fuel treatments, including thinning, on fire behavior. The effects of the proposed treatments described in the FEIS (pp. 127-130) are consistent with their findings.

3-7: Each of the action alternatives includes precommercial thinning of previously regenerated stands. The effects of fire in young natural and artificially regenerated forest stands is discussed in the FEIS (pp. 124, 129-13) and is supported by discussions found in Zack and Morgan (1994) and Thompson and others (2007).

3-8: Fuel loading was inventoried in some of the stands proposed for treatment using two of the photo guides developed by Fischer (1981). The inventories were not used in the analysis as they were incomplete and were thought to be biased by design. For the analysis FFE-FVS was allowed to select default initial fuel models and subsequent fuel loading based on information from the stand examination data that was used to provide the model with site and tree data.

3-9: There is no requirement for the Forest Service to annually monitor fuel loading. Monitoring of changes in fuel would be conducted while harvesting and fuel treatment activities are occurring and after they are completed by District fire management personnel to ensure that the objectives of the proposed fuel treatments are met (FEIS p. 38 Table 2-20). Funding for this monitoring would come from the appropriate timber sale collections.

3-10: FFE-FVS was used in the fire and fuels analysis. The assumptions and limitations of the model are described in the Analysis Methods section of the Fire and Fuels analysis in Chapter 3 of the FEIS (pp. 119, 120).

3-11: See Differences between Draft EIS and Final EIS on page 117 of the FEIS. FARSITE and NEXUS were not used in the fire and fuels analysis. An FRCC assessment was conducted by the Fire and Fuels analyst and was used solely to inform his description of the existing condition. Behave Plus 3.0.2 was used in the DEIS but that analysis was replaced in the FEIS by the FFE-FVS analysis. It is fair to say that "even with the addition of 42 fuels models there remains a problem with displaying some of the differences in potential fire behavior that may be present both before and after fuels treatments." This is due in good part to the fuel bed assumptions of homogeneity and continuity in both the Anderson (1982) and Scott and Burgan (2005) fuel models. The FFE-FVS modeling used in the analysis for the FEIS uses a dynamic method of selecting fuel models that is intended to compensate for this unrealistic homogenization. According to Reinhardt and Crookston (2003) "The dynamic method selects two or more fuel models based on fuel loads and other stand characteristics, calculates the resulting fire behavior for each fuel model, and takes a weighted average of the results. The selection of the fuel models and their weights depends on stand conditions, including fuel loads." The benefit of this method is that "the calculated potential fire intensity varies continuously as fuel conditions change in the stand." (Reinhardt and Crookston 2003).

3-12: SIMPLLE was not used in this analysis. The IPNF digital fire history atlas was used to qualitatively assess the occurrence of past stand replacement fires in the analysis area.

3-13: Fuel models 8 and 10 referred to on page 62 of the DEIS are two of Anderson's (1982) 13 fire behavior fuel models and the citation to Anderson's 1982 publication that describes the 13 standard fire

behavior prediction system fuels models was provided in the DEIS. The updated fire and fuels analysis found in the FEIS used the most recent version of the Inland Empire Variant of the FFE-FVS that was available at the time. The Inland Empire variant of FFE-FVS includes the 13 fuel models described by Anderson (1982). The FFE-FVE version used also includes a modified slash fuel model (fuel model 14 within the model) that is an intermediate slash fuel model between the traditional fuel model 11 and fuel model 12. FFE-FVS was allowed to assign fuels based on stand characteristics and fuel loading. The FFE-FVS selected Anderson's (1982) fuel models 8, 10, 11, 12 and 13 and also selected fuel model 14, which is defined in Reinhardt and Crookston (2003).

The following is an excerpt from Scott and Burgan (2005).

> "The original 13 fire behavior fuel models are "for the severe period of the fire season when wildfires pose greater control problems..." (Anderson 1982). Those fuel models have worked well for predicting spread rate and intensity of active fires at peak of fire season in part because the associated dry conditions lead to a more uniform fuel complex, an important assumption of the underlying fire spread model (Rothermel 1972). However, they have deficiencies for other purposes, including prescribed fire, wildland fire use, simulating the effects of fuel treatments on potential fire behavior, and simulating transition to crown fire using crown fire initiation models."

Rather than considering one set of fuel models superior to another, it is more appropriate to consider them in addition to one another and both sets have utility and limitations in predicting fire behavior characteristics. We believe it was appropriate to use the original 13 fuel models and the additional fuel model 14 because the majority of surface fuels involved in the modeled stands are fairly uniform accumulations of dead and down woody fuels both before after harvesting. The fuel moisture scenario use in the prediction of fire behavior characteristic was also consistent with the appropriate use of the original 13 fuel models. The dynamic method of fuel model selection used in the FFE-FVS (described in the response to 3-11) also alleviates some of the limitations in predicting potential fire behavior and crown fire initiation by utilizing weighted averages of the calculated fire behavior for each of the fuel models represented. This approach prevents unrealistic results that can occur when using only one fuel model to represent fuel conditions within a stand. By comparison, the additional timber litter, timber understory, and slash-blowdown fuel models provided by Scott and Burgan could also help prevent unrealistic results by giving an analyst more individual fuel models to choose from (including the original 13 fuel models), thereby creating a smoother gradient in values that describe fuel bed characteristics from one fuel model to another than existed when there were only 13 models to choose from.

3-14: The FFE-FVS is considered to be state of the art by both the fire community and the St. Joe Ranger District. The limitations of the FFE-FVS are discussed in the Fire and Fuels analysis in the FEIS (p. 120). The FFE-FVS is available for public use on personal computers, is commonly used in the scientific literature, and is known to provide scientifically accurate results.

3-15: There are no primary fuels reduction targets assigned to the Bussel 484 Project. Please see FEIS pp. 1-2 and 117. Reducing the potential for large, severe wildfire is analyzed as an effect of the project, it is not a purpose of the project. The statement "Reduce the potential for large, severe wildfires while promoting conditions for safe and effective wildland fire management." was originally listed as a purpose and need during project development. Subsequent analysis of the fire regimes within the analysis area revealed that large and occasionally sever wildfires are not unnatural. The only structures located in or immediately adjacent to the analysis area are a power line and an electronic site. It was decided that due to the nature and locations of these structures, in combination with the habitat types and fire regimes, conducting fuel treatments specifically for the purpose of protecting these sites was unnecessary. The statement was unintentionally left in the purpose and need of the DEIS. Therefore reducing the potential for large, severe wildfire has been stricken from the purpose and need of the project. Effects of no action, and proposed actions on potential fire behavior characteristics at the stand level are discussed and disclosed in the Fire and Fuels analysis in the FEIS.

3-16: Bussel Creek is not identified as a high priority watershed (SW-49). For medium and low priority water bodies (e.g. Bussel Creek), actions are allowed as long as there is no further impairment of the beneficial uses (IDAPA 58.01.02.054.05).

3-17: No short-term activity exemption exists for Bussel Creek. Within the DEIS, the statement is made that Bussel is listed in the 2002 303(d) list of Water Quality Limited Water. However, the draft 2008 303 (d) list identifies Bussel Creek as fully supporting beneficial uses. Until such time as the 2008 is approved, we will continue to operate under the 2002 303 (d) list.

3-18: The 2008 Integrated Report is in draft format and is not identified on the DEQ website as having been approved by EPA as of 5/12/2008.

3-19: No values have been calculated concerning riparian plantings and the temperature TMDL shade requirements. Please refer to comment 8-112 below.

3-20: It is not known if there are any fisheries or hydrology reports or reports from other IPNF personnel. Please see comment 8-44 for further information.

There are no current rules requiring that the FS must notify the Army Corps of Engineers (COE), Idaho Department of Water Resources (IDWR) and the Idaho Department of Environmental Quality (DEQ) in the event of a road failure. While there are no rules regarding the FS to notify other agencies about road failures, it is common for our agency to work closely with regulatory agencies (COE, DEQ, and IDWR) in all respects concerning water quality and appropriate repairs. In the event of repairs, the FS submits plans to the appropriate agencies for review and comment. In the case of emergency repairs, the FS would notify the IDWR as soon as possible when subsequent activities are required per the MOU between the FS and IDWR. There is no similar MOU with the DEQ or COE.

SW-53 is a Federal Highway Administration Damage Assessment Form filled out by a St. Joe District engineer documenting a fill failure on Rd 758 (Eagle Creek Road) at the 9.2 mile marker. It also contains a map and 1996 aerial photographs which shows the location on the ridge between Toles and Norton Creeks.

3-21: The road maintenance discussions (FEIS pp. 47, 228) were updated to include culvert maintenance. Also FEIS Appendix B, Practice 15.21 (p. 24) states that culverts and ditches shall be kept functional.

3-22: Road maintenance is obviously a concern for the commenter, and it is for the Forest Service as well. Part of the purpose for the Bussel 484 project is to reduce the amount of road maintenance required (FEIS p. 5). Annual maintenance is conducted depending upon available funding. Forest Service appropriations are authorized by Congress. Unfortunately, resources are limited. The Forest Service is committed to using whatever funds it has available to accomplish travel management objectives in a targeted, efficient manner.

Road maintenance is scheduled to occur periodically and includes maintenance of culverts. The Forest Service Road maintenance budget has been declining for years. Still, the FS continues to prioritize work and maintain their road networks. In IDAPA Title 38, Ch 13. 040.04 under the section titled “Road Maintenance”, the following direction is found: “Conduct regular preventative maintenance operations to minimize disturbance and damage to forest productivity, water quality, and fish and wildlife habitat.” The Forest Service is doing this regular preventative maintenance. Each system road is assigned a management level and based on that management level; a specific schedule of maintenance needs is performed. The objective of the Road Maintenance Program is to maintain the road system to the approved maintenance levels within the constraints of funding allocations and authorizations. Currently, maintenance is performed on a regular cyclical basis. Condition surveys are performed on 20 percent of all Maintenance Level 3, 4, and 5 roads every year, resulting in identification of conditions on all of these routes every five years. Condition surveys on Maintenance Level 1 and 2 roads are performed on a random sample number of roads decided upon by direction from the Regional Forester's office.

3-23: The Flanagan et al. document was not used in the analysis of culverts in the Bussel Creek watershed. Other methods were used for culvert assessment (FEIS pp. 21-217, 223). Upgrading twelve additional culverts was added to the FEIS (pp. 1, 23, 34, 212, 230, 231).

3-24: Culvert assessments utilized field inventoried size data and estimations of 100-year peak flows (FEIS p. 215). Culverts identified as not being large enough for the 100-year event are scheduled to be removed or upgraded to the appropriate size (FEIS p. 23, 34). Documentation for culvert analysis is in the project file (SW-31).

3-25: Please refer to comment 3-4 above.

3-26: Sand is the primary or a large component of bedload material being transported during peak flows. Because the size of bedload material being transported increases with discharge, the size of the largest particle is dependent on what peak flow events are to be considered. A study of gravel bed streams found that the largest particles transported ranged from D44 to D100 (King and others 2004 p 25).

3-27: Project file document SW-53 identifies a small road fill failure that occurred in 1996. The storm damage occurred at mile 9.2 of the Eagle Creek Road (Rd 758) which is at or near the ridge top between Toles and Norton Creek.

3-28: The project file (SW-23 WATSED results) contains information regarding project area ECA.

ECA By Watershed (no road recontour)

Drainage	Pre-activity (2007)	Maximum (2009)	Recovery	Recovery year
Bussel*	1280	1982	1254	2017
Norton	308	393	308	2012
Lines	640	1041	632	2019
Bear	211	285	206	2014
Toles	119	262	116	2020

* Entire Bussel Creek watershed includes all tributaries

ECA By Watershed (includes road recontouring)

Drainage	Pre-activity (2007)	Maximum (2009)	Recovery	Recovery year
Bussel*	1267	1677	1247	2014
Norton	296	345	287	2011
Lines	648	883	631	2016
Bear	205	233	198	2011
Toles	117	213	113	2017

* Entire Bussel Creek watershed includes all tributaries

3-29: An ECA analysis was conducted only for future private land activity, because future private activities were not included in the WATSED modeling. The ETAC model referred to was for application on National Forests in the Blue Mountains of Oregon (USDA Forest Service 2005 p. 6) and may not be applicable for the IPNF, while WATSED was developed for use in North Idaho. See the WATSED manual for reference that roads are modeled.

The WATSED model included all past roads, fires and harvest units to determine the ECA values. As part of the model, there is an internal calculation that allows for gradual healing over time as sites recover vegetatively from disturbances (SW-50). Within the WATSED model, roads never fully recover and therefore count in perpetuity as at least partial openings.

Other models were considered for determining the ECA value but the WATSED model was selected. A recent publication by Ager and Clifton (2005) provided a software model that was developed for Oregon and Washington forests. After reviewing the model, it appeared that both the WATSED model ECA calculations and the 2005 Ager and Clifton ECA model calculations were premised on very similar variables.

All ECA models/calculations have inherent limitations. Some of these limitations are listed below.

- Both models use the TSMRS database that is a good representation of past vegetation management activities on National Forest lands. Even so, some harvest my have occurred that is not accurately recorded or some harvests may have been overlooked completely.
- Both models assume that the undisturbed condition is fully stocked when in reality some stands at historic conditions were not fully stocked.
- Attempts to quantify harvest history of private land is not always exact. Still within the Bussel Project area, private land stand data was incorporated into the WATSED model (SW-39, 23).
- The ECA analysis is a relative index of change and not an absolute result. It is not be used independently. Instead, it is used in combination with surveys, on the ground review and professional judgment to determine what the effects from the proposed activities may have on channel conditions and water quality.

3-30: Please see response above 3-29.

3-31: Erosion curves have been added to the project file (SW-50) or see the WATSED manual for reference. Displaying look-up tables will not provide the decision maker information to make an informed decision, the estimated results of modeling will provide adequate information. Displaying look-up tables for the public will not provide any usable information without understanding the "nuts and bolts" of the models program operation.

3-32: The DEIS and FEIS discuss the limitations and uncertainty of the WATSED model (DEIS pp. 206, 210; FEIS pp. 216-219, 221). See the WATSED manual for reference. The WATSED model does not attempt to estimate indirect effects to stream channels. The WATSED model is best used as a relative comparison between alternatives and the estimated sediment and water yield values are not definitive (FEIS pp. 217-219, 221; SW-24).

3-33: The Forest Service never claimed that the WATSED model was used to predict effects to stream dynamics. Rather the effects of any action on stream dynamics would be based upon field observations in tandem with model results and professional judgment (FEIS pp. 219-220).

3-34: The TMDL model estimates sediment at considerably lower levels than the WATSED model. It may be that the WATSED model and TMDL model analyzed different sized drainages. Normally the WATSED model uses that larger drainage for cumulative effects analysis, whereas the TMDL model examines a much smaller sub-basin of the larger watershed. The DEIS and FEIS discuss the limitations and uncertainty of the WATSED model (DEIS pp. 206, 210; FEIS 217-219, 221). The model's outputs are best used for comparison of alternatives for cumulative effects analysis and do not provide definitive values (FEIS pp. 217-219, 221; SW-24).

3-35: The WATSED Model is not stochastic in nature. However, based on past calibration of the WATSED model, the accuracy of the model results do vary. Despite the variable levels of accuracy, the model is still valuable as a means of offering comparison between alternatives.

3-36: See responses to comments 3-32 through 3-35. WATSED is commonly used throughout the Northern Region of the Forest Service for watershed analysis. It was used as part of the water analysis for this project to compare estimated resulting water yields for the alternatives. Peak flow analysis was based on the St. Joe River discharge values from the USGS gauging station. Coefficients and equations developed by the Idaho Department of Environmental Quality were used to estimate changes in sediment. WATSED was also used to give another estimate of sediment. Stream channel form and process were analyzed in terms of their response to changes in water yield and sediment yield. Stream channel classifications were considered. Historical and recent aerial photographs were compared. Effects to wetlands are qualitatively analyzed, and hydrological connectivity is also discussed. See FEIS p. 215.

3-37: The St. Joe Subbasin Assessment and TMDL cite "(USFS 1996)", which is titled "WATSED" (SW-16 p 223, 229). The TMDL model uses "the mean sediment export coefficients measured in-stream on geologies of northern and north central Idaho".

3-38: The two fish migration barriers on Road 1900 were located in the project area by a Forest Service field crew during the 2004 field season while doing culvert surveys. The Forest Service is proposing, as a part of the Bussel 484 Project, to replace or remove the culverts so that they are in compliance with IDAPA 20.02.01.040.02e.i. (04/052/000). The culverts have been in place since 1978. It is not known how long the culverts have been barriers because they have filled with material over time and thus have become increasingly inefficient for passage. The culverts are considered partial barriers at low flows.

3-39: The FEIS discusses the direct and indirect short-term and long-term effects (specifically from sedimentation) which include effects that may occur immediately or periodically overtime after the proposed activities would occur. More detail on direct and indirect short-term and long-term effects to the fisheries resource was added to the Affected Environment Section of the FEIS to clarify and enhance this discussion (FEIS pp. 70-93). Pages 232-236, 238-239 of the FEIS discuss impacts from short-term effects.

3-40: Page 4 of the FEIS states the purpose and need for the Bussel 484 Project is to "Promote or maintain large-diameter trees, snags, coarse woody debris, and stands dominated by large-diameter trees: The substantially higher contribution of pole/small/medium size classes coupled with a similar reduction in the mature/large size class increases the susceptibility to substantial loss to disturbance from insects, disease, and fire". Silvicultural prescriptions proposed for both action alternatives total 1,486 acres of commercial thin (CT) which is approximately 70% of the total treatment acres (FEIS pp. 14-15, 18-19). As defined on FEIS page 22 the purpose of a commercial thin treatment is to regulate stand density to promote tree growth and vigor. Generally, smaller trees would be harvested and larger trees would be retained (thin from below).

Recent scientific literature confirm some general patterns of forest carbon storage and release over the period of forest stand development and natural or induced disturbances. As overall context, our nations forests have and continue to sequester vast amounts of carbon (nationally a net carbon sink, sequestering far more carbon then is released), equivalent to approximately 10% of annual carbon dioxide emissions from burning fossil fuels (Heath and Smith 2004; Birdsey and others 2006). Law and others (2003) evaluated changes in carbon storage and fluxes for ponderosa pine stands in central Oregon. Their evaluation concluded that net ecosystem productivity (NEP; balance between being a net carbon source and net carbon sink) is lowest and negative (carbon source) in young stands (9 – 23 years), moderate in young stands (56 – 89 years), highest in mature stands (95-106 years), and low in old stands (190-360 years). Most mature and old stands remained a net sink of carbon. Pregitzer and Euskirchen (2004) synthesized results from 120 separate studies of carbon pools and carbon fluxes for boreal, temperate, and tropical biomes. They found that in temperate forests NEP is lowest (more towards source), and most variable, in young stands (0-30 years), highest (more towards carbon sink) in stands 31-70 years, and declines thereafter as stands age. These studies also reveal a general pattern of total carbon stocks declining after disturbance and then increasing, rapidly during intermediate years and then at a declining rate, over time until another significant disturbance (timber harvest or tree mortality resulting from drought, fire, insects, disease or other causes) kills large numbers of trees and again converts the stands to a carbon source where carbon emissions from decay of dead biomass exceeds that amount of carbon removed from the atmosphere by photosynthesis within the stand. Over the long term (centuries) net carbon storage is often zero, if stands regenerate after disturbance, because re-growth of trees recovers the carbon lost in the disturbance and in decomposition of trees killed by the disturbance (Kashian and others 2006; PF: V-18).

3-41: The publication has been reviewed, and information from it was used and cited in the FEIS (pp. 139, 143). It was added to the FEIS bibliography (Appendix H).

3-42: This publication, *Logging to Control Insects: The Science and Myths Behind Managing Insect "Pests"* (Black 2005), has been reviewed and is addressed in the following response. Parts of this research do apply to this project as it discusses the need for a diverse tree species and age distribution in

the forests. This project proposes to increase the presence of long-lived early seral species contributing to the desired diversity, increasing the forest resistance to bark beetle attack and reducing the number of acres in a simplified forest setting. This paper also addresses the issue of "logging to control bark beetles once an outbreak has started". The FEIS addresses bark beetles as being in an endemic state and therefore no outbreak has been identified. Commercial and pre-commercial thinning as proposed for this project are being prescribed for the improvement of growth and yield in the residual stand along with favoring long-lived seral species as leave trees when present.

3-43: More information was added to the Fisheries section which addresses effects from past present and reasonably foreseeable activities to the fisheries resource (FEIS pp. 72-73, 75, 77, 79-84, 86, 88, 90-91, 93-95, 104-108). The affected environment section includes discussions on direct and indirect effects and their significance to the fisheries resources. Elements of the listed CFRs are discussed in the effected environment section of the FEIS. More detail was added to the FEIS to better clarify and enhance the discussion of these elements.

Cumulative effects analysis was conducted for the Bussel Creek watershed and a discussion has been added to the EIS in relationship to Marble Creek the receiving water body of Bussel Creek outputs (FEIS p. 214). Private land activities are included in the cumulative effects analysis for water (FEIS 237-238); SW-39).

3-44: No Environmental Assessments are missing to our knowledge. Information related to logging that occurred prior to the 1960s is not documented in our timber stand management data base (FEIS p. 137, 180; PF: ACT-2, ACT-3, ACT-4)

3-45: Currently, the latest published monitoring report is the 2004 Monitoring and Evaluation Report. However, where more recent information was available, that info was used for the analysis (see FEIS pp. 56, 66, 68, 74-75, 80, 82, 85-87, 89, 91, 97-99, 107, 116, 146, 150, 152, 156-157, 162, 164, 175, 181, 185, 202, 221, 223, 225-226, 231, 235, 248-249, 262, 277).

3-46: The FEIS (pp. 10, 13, 56-57, 81, 95, 167, 170, 173, 205-206) discusses some unauthorized or illegal motor vehicle use in the project area. Due to limited law enforcement officers and budget, catching the illegal use is often not possible. The purpose and need as well as the proposed changes are an attempt to deal with the problem of illegal use and resource damage.

Letter #4 – J. Cook; Idaho Department of Parks & Recreation; April 21, 2008

4-1: Bussel Creek Trail is discussed under "Management Options Considered but not Analyzed in Detail" on page 12 of the FEIS. Resource concerns including wildlife security and water quality are identified as reasons for converting the trail to non-motorized use. Seasonal restrictions may address wildlife security concerns but do not address water quality concerns. Current conditions of Bussel Creek Trail 258 and benefits of converting it to a non-motorized trail are discussed throughout the FEIS (pp. 12, 96, 98, 102, 169, 170, 172-173).

4-2: The majority of use is along the first 1.0 mile of trail and resource damage in Bear Creek and Little Bear Creek riparian areas is associated with this use. Use of the trail beyond the first mile is low. Users are not currently using the trail to connect the Marble Creek Trail system. Lack of use, resource damage, wildlife security and water quality are all contributing factors towards closing the trail to motorized use. Trail maintenance would occur every other year when the trail is converted to non-motorized use (FEIS p. 48). See responses 4-1 and 4-10 concerning the management of Bussel Creek Trail as a single-track motorized trail.

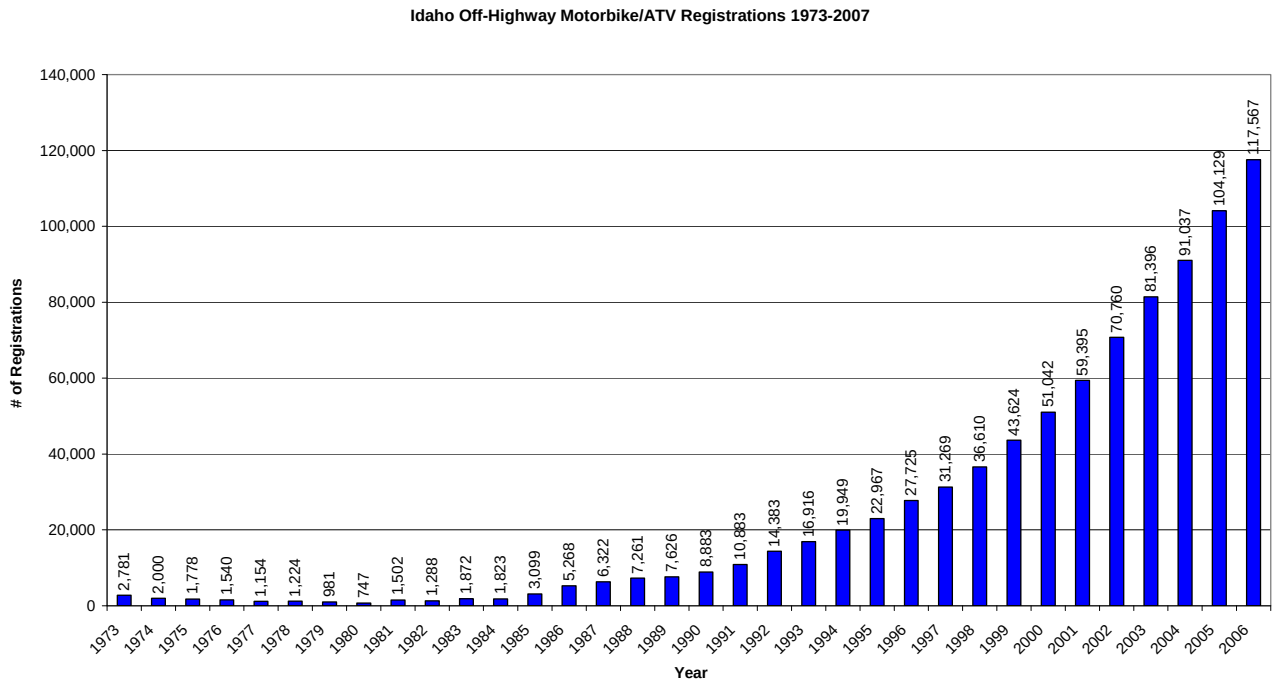
4-3: See responses to comments 4-1 and 4-2 concerning the management of Bussel Creek Trail as a single-track motorized trail.

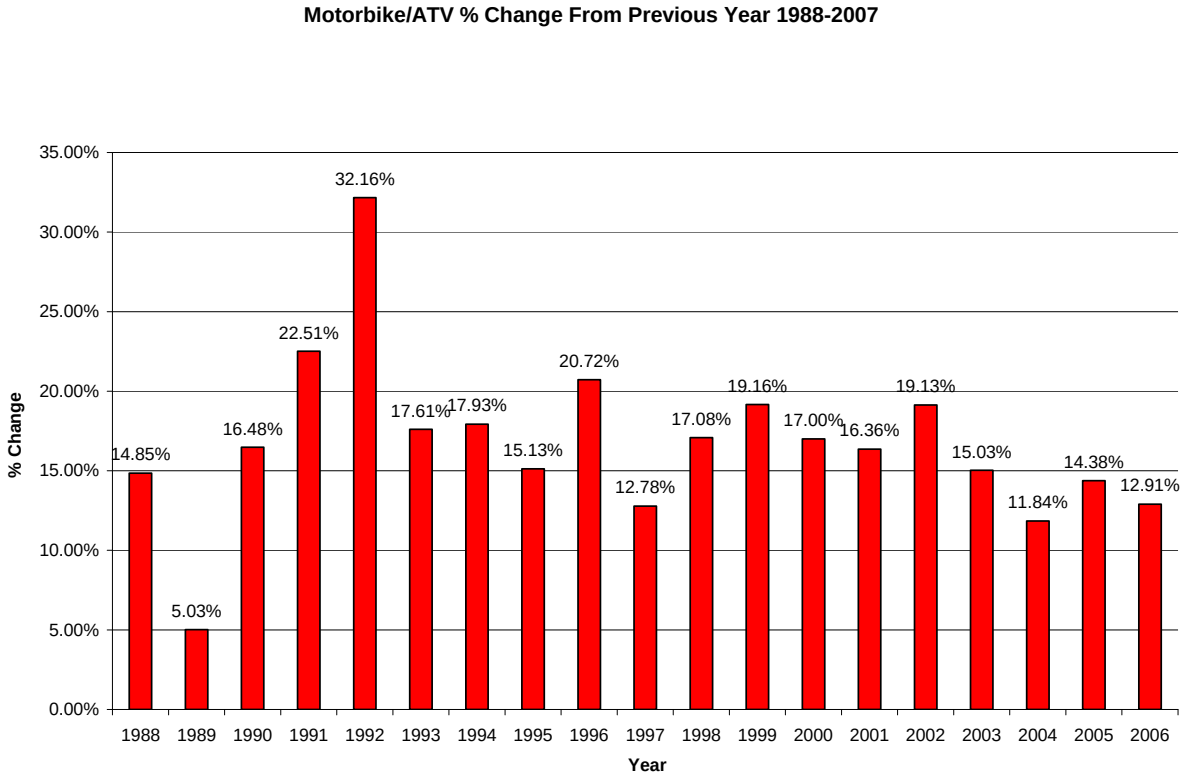
4-4: The FEIS has been updated to reflect the changes in Idaho State Law for riding OHVs (FEIS p. 166). The changes to state law will be in effect July 1, 2008.

4-5: The statement from the Idaho OHV Public Outreach Project was taken as a direct quite from their website at the time of writing the DEIS. The website has since been updated to read "More than 100,000 OHVs are registered in Idaho today and 10,000 additional OHVs are being registered each year!" The quote was changed in the FEIS to reflect the updated terminology (FEIS p. 166).

The OHV registration data used in the DEIS was supplied by the IDPR via email on 7/18/2007 and is part of the project record (REC-7). According to that data there were 82,931 ATVs and 33,962 motorcycles registered in 2006 for a total of 116,893 registered OHVs in Idaho in 2006. The updated data provided in Mr. Cook's DEIS comment letter dated April 21, 2008 shows 83,606 ATVs and 33,970 motorcycles registered in 2006 for a total of 117,576 OHVs registered in Idaho in 2006. The FEIS was updated to reflect the most current data (FEIS p. 173).

The following charts provided by the IDPR show the most current number of OHVs registered in Idaho from 1973-2006 and the percent change in registrations.





Registration rates have trended downward since 2002; however, overall registrations have been increasing by approximately 10,000 machines per year. The decrease or leveling off of OHV use and registration is speculative and not predictable in the foreseeable future (3-5 years).

4-6: The Incline Railroad Grade is steep, rutted and erosion is occurring. The district recognizes that the steepness of the grade contributes to erosion. Motorized use is exacerbating the problem. Both Alternatives B and C propose to close the Incline Railroad Grade to full size vehicles and ATVs. It is our intention to install a restrictive device which would be effective (FEIS p. 173).

4-7: The beginning of the Bussel Creek Trail was an old road a long time ago; however it is currently not accessible to full size vehicles. The topographic map that was used for the analysis shows the Bussel Creek Trail as a single dashed line, indicating a trail that would not be accessible to full-size vehicles. Topographic maps can differ in how roads and trails are portrayed and are not intended to show routes that are designated as open to vehicle use. Through the 2005 Travel Management Rule, routes will be designated and signed as open to vehicle use and maps would be provided at that time.

4-8: Please see response to comment 4-5.

4-9: The FEIS has been updated to provide additional information to better describe the difference in riding opportunities available under Alternatives B and C (FEIS pp. 170-173). Alternative B provides more loop riding opportunities of varying lengths that would be available to unlicensed riders. Alternative C would provide “out and back” riding opportunities for unlicensed riders. Lines Creek Trail would provide a short loop ride for unlicensed riders. Licensed riders would not be as adversely affected by Alternative C as they could use Road 758 to complete a loop similar to that offered under Alternative B.

4-10: Seasonal closure of the trail would not alleviate water quality concerns. Erosion control devices could be installed; however the lack of use that Bussel Creek trail is receiving does not warrant this level of investment. Please refer to the Watershed and Wildlife sections of the FEIS for further discussions concerning seasonal closures and water quality.

The St. Joe Ranger District has over 400 miles of motorized trail. The Bussel Creek trail is currently receiving very little use, indicating that users have not historically been using this trail to connect into the Marble Creek system on this route. Relocating the trail is not desirable given the lack of existing use. There may be options to connect the Bussel Creek and the Marble Creek areas with designated routes; however that is outside the scope of this project. There may be options to connect the Bussel Creek and the Marble Creek areas with designated routes in the future because such a proposal would be more appropriate to look at in the travel management planning which is occurring on the district concurrently in order to get a broader view of the parts of the trail which fall outside the Bussel 484 project area.

4-11: Correction has been made in the FEIS to reflect that registration numbers include both ATVs and motorcycles (FEIS p. 173).

4-12: Bussel Creek Trail is analyzed as a single-track motorized trail under Alternative A and as a non-motorized trail under Alternatives B and C. OHV data has been updated in the FEIS to reflect the most current data available. Terminology has been changed to describe the data (FEIS pp. 166, 173). OHV use continues to increase as indicated by the IDPR data provided. Please see response to comment 4-5 for a review of OHV use data.

Letter #5 – A.Nomee; Coeur D' Alene; April 21, 2008

5-1: The Idaho Fish and Game stated that the analysis area is not used much as winter range and does not provide winter range of any importance (FEIS p. 265; PF: WL-46). In the assessment of the larger surrounding landscape and the Bussel 484 Project area it was determined that the area is not considered a high priority for winter range management (PF: PD-2 p. 77). The areas where motorized use is proposed in the Bussel 484 Project area (FEIS Map 8 and Map 9) do not coincide with the low elevation south facing winter range identified in the Forest Plan (PF: WL-30).

5-2: Your preference for Alt. C is noted. See the response to comment 5-1. The difference between alternatives in potential effects on disturbance and elk are analyzed and displayed in the FEIS (pp. 265-266). The selected alternative will result in the same access as that in Alternative C (ROD p. 8)

5-3: See the response to Comment 5-1. Road 1254 does not go through winter range (PF: WL-30). The purpose and need for management of access to provide for multiple uses (FEIS p. 5) was addressed by proposing to decommission other roads and managing access in other areas to provide wildlife security and improved elk habitat potential (WL-14). Road 1254 provides access to the Dworshak-Taft Transmission Line, so long-term storage with the associated removal of culverts would not allow ready access for maintenance and repairs of the transmission line.

5-4: See response to Comment 5-1. Restricting over the snow use was not a part of the purpose and need (FEIS pp. 4-5). The Forest Service, State of Idaho, and Shoshone County have a cost share agreement allowing snowmobile use grooming on approximately ten miles of designated routes. No changes are proposed for winter use (FEIS p. 169). After consideration of this comment, review of the situation, and review of the purpose and need we do not believe over the snow travel is an important issue that needs to be addressed in this analysis or decision.

5-5: See response to comment 9-5 below.

5-6: Those resources that have been used, for various purposes, by native people will be referred to as Traditional Cultural Species (TCS) to protect intellectual property rights in this response.

Traditional Cultural Species (TCS) include native plants that inhabit a wide variety of habitats throughout the Idaho Panhandle National Forest. Nearly every habitat type contains TCS. Native plant habitat types within the Bussel 484 Project are discussed regarding direct, indirect, and cumulative effects of each alternative in Chapter 3 of the *Forest Vegetation* and *Plant Species at Risk* sections of the FEIS pages 131-144 and 155 to 163. It should be noted that those TCS that occur in high-potential dry forest, sub-alpine, deciduous riparian, aquatic, and peatland habitats (PF: B-2) will not be affected as these habitat

types do not occur within the project area (FEIS pp. 156-157). As part of a healthy forest the IPNF is dedicated to maintaining viable native plant communities and a mixture of habitats capable of supporting the full range of naturally occurring plants including TCS. The alternatives of the Bussel 484 project maintain habitat types across the forest. While some seral species will be retained and/or returned to an earlier stage others will be treated to improve the health of the current stage and encourage progression to later serial stages.

As part of all action alternatives, rodent control activities would be done if necessary. In the event that young trees are not being affected by rodents no treatment will take place. Little research has been done in regards to native plant up take of rodentcides zinc phosphide and strychnine. The research that is available suggests that there are no significant residues in crop plants (FEIS p. 160).

Without identification of specific habitats or species, and/or locations of resources used by the Coeur d'Alene Tribe the IPNF can not analyze additional effects to TCS or consider additional mitigation measures for the Bussel 484 Project. Forest staff will continue to work with Tribal staff at the Forest Plan level to identify programmatic management of TCS, and as specific information is provided for project level analysis, will consider appropriate measures for sustained management of TCS for their use by Tribal members.

5-7: Please see FEIS p. 7. District Ranger, Chuck Mark, first discussed this project with the Coeur d'Alene Tribe during a meeting in March of 2005 (PI-27) then mailed the Bussel 484 Scoping Notice to them in April 2005 (PI-31, PI-32). In September 2005 Chuck Mark sent a letter to the Coeur d'Alene Tribe inviting them to a public field trip to the project area (PI-53). He discussed this project with the Coeur d'Alene Tribe again during meetings with them in March 2006 and February 2007 (PI-57, PI-63) and again on March 18, 2008 after they were provided a copy of the Draft EIS (PI-83A).

Please see FEIS p. 56. The project area has been systematically surveyed for cultural resources through fourteen previous projects. In addition to the field surveys; historic records, maps, and photos were reviewed for confirmation of known sites and to possibly identify new sites. Some areas in the Bussel 484 Project were reexamined and some known sites were monitored and re-evaluated for eligibility for this supplement based on information obtained during field review. In addition to the field surveys; historic records, maps, and photos were reviewed for confirmation of known sites and to possibly identify new sites. Consultation with the State Historic Preservation Office and Native American Groups has been completed as in accordance with the NHPA. These surveys have identified a number of cultural or historic properties in the project area. No sites of cultural or religious significance to federally recognized affected American Indian tribes have been identified in the project area.

Cultural resource consultation with the Coeur d'Alene tribe regarding the Bussel 484 project was one of the topics of discussion at a meeting between the cultural resource staffs of the Coeur d'Alene Tribe, and the Idaho Panhandle National Forests on April 30, 2008. A map of the project area has been provided to the tribe's cultural resource staff for their comments on potential effects to areas of significance to the Coeur d'Alene Tribe.

Letter #6 – P. Sleeger; U.S. Department of Interior; April 21, 2008

6-1: The DEIS and the FEIS contain references to past and recent field surveys and collected data. The *Analysis Methods* discussion in the *Fisheries* section of the FEIS contains applicable scientific literature used in the effects analysis and development of data collection needs and the development of techniques used for analysis. The methodology section in the Fisheries section presets and lists the scientific literature used in the development of the fisheries analysis. The fisheries "project file" was referenced for hard copies of field data. More detail and references of relevant scientific literature was added to the fisheries section of the FEIS to enhance the discussion of the fisheries resources and effects from the proposed activities (pp. 66-117).

6-2: Attainment of the temperature TMDL stream shade values is dependent on when trees are planted adjacent to Bear and Little Bear stream channels, tree growth rates, mortality, existing vegetation, and other site conditions. Predicting all of these conditions is not possible, but once the trees reach sufficient

height (maybe 20 or so feet) they may begin shading the stream and this could be 10-30 years after planting.

6-3: The analysis is based on the period of record through 2006 (when analysis completed). The EIS has been corrected (FEIS p. 218).

6-4: The estimated water yield increase is not from changes in storm intensity or duration as is typical for determining recurrence intervals, but from changes in evapotranspiration from harvesting timber. When estimating effects to peak flows from timber harvest there is no certainty that the recurrence interval may change at all, but the estimated increase through modeling would change the flow to an amount that plots out on the log-probability paper as an increase in recurrence interval as shown in the FEIS (pp. 222, 236).

Letter #7 – J. Oppenheimer; Idaho Conservation League; April 21, 2008

7-1: In Graham's 2007 paper on Free Selection, he sites Long and Smith's 2000 definition of an integrated system " an integrated system might include provisions for maintaining a variety of structural stages, tree densities, patch densities, compositions, tree sizes and so forth within stands and across landscapes in a pattern reminiscent of those that historically occurred. He also state that "such a system would provide for snags, decadence, down wood, and other often overlooked forest components) for example, interlocking crowns, interspersion of structural stages, disturbance) that are relevant to many current forests and management objectives.

Free Thinning as described by Ford, 1971; Smith 1986; and Helm, 1998 primarily releases selected crop trees that; -favors only crop trees, leaving the remainder of the stands un-thinned, -favors desired trees using a combination of thinning criteria; and –releases crop trees without strict regard to the crown position. The horizontal component of stands is not discussed in this definition, which as described by Graham and others is an important component of the forest stand and forested landscape.

The prescriptions being proposed for this project do provide provisions for maintaining or attempting to meet those factors described by Graham in "Free Selection" and by Ford and Others for "Free Thinning".

7-2: You are correct to dispute the statement quoted from page 9 of the DEIS. Its inclusion was an error as it was not a conclusion of the original document titled "A brief analysis of the effects of the use of prescribed fire or wildland fire use as the primary tool or vegetation management" (PF: FF-11). The discussion on pages 11 and 12 of the FEIS was updated. In fact, the St. Joe Ranger District has recently proposed the Heller Cascade prescribed fire project in which we would begin the implementation of a project that is very similar to the program referred to on the North Fork District of the Clearwater National Forest. The Bussel Creek Drainage is not the place for landscape-scale prescribed fire because of the adjacent private land, the previous investment in regeneration, the existing electrical transmission line and microwave site, and the existing stand conditions (FEIS p. 12)

We agree that the extent of roads and harvested stands in the project area provide fire breaks that may slow the spread of fire. However, we feel that the current condition of the stands in the project area do not lend themselves to the general use of prescribed fire at this time. As conditions permit, fire management staff responding to future unplanned ignitions will be afforded the opportunity to consider using these features when determining their fire management response.

7-3: On page 64 of the DEIS and pages 127-130 of the FEIS the short-term increased fire risk from the proposed treatments is recognized. Considerations for proposed fuel treatments included stand composition, stand size class, stand structure, estimates of existing fuel loads, calculated predictions of potential fuel loads, and qualitative estimation of future fire effects based on the calculated potential fuel loading and literature review. We have proposed some form of fuel treatment for all acres proposed for treatment. We consider lopping, jackpot… Activities proposed in the Bussel 484 Project would promote conditions for safe and effective wildland fire management in the project area by affecting live and dead fuels in ways that are beneficial to fire management. To "reduce the potential for large, severe wildfires

while promoting conditions for safe and effective wildand fire management," is more of an out come of the implementation of the proposed action and is no longer in the main part of the purpose and need.

7-4: Many factors are used to determine timber sale viability, yarding methods, volume per acre, haul distance to mention just a view. Reducing or eliminating the amount of road construction does not always make a sale economical. We have determined through analysis and the current market conditions that Alternative C is less economically feasibility than Alternative B FEIS p. 61). The FEIS does consider two alternatives that avoid road construction, Alternative A and Alternative C (FEIS pp. 13, 18, 61).

7-5: See 7-4 above**.**

7-6: We are aware that the situation regarding lynx and LAUs may have generated some questions/concern. As an explanation, the analysis for Bussel 484 was conducted at the same time the IPNF was in the process of remapping lynx habitat across the Forest (WL-31) and was initiated before the NRLMD ROD was signed and finished after it was signed and in effect. However, the analysis in the DEIS and FEIS were/are based on the best information available at the time of the analyses and is consistent with all current direction. The analysis was developed and conducted to assure protection of lynx and *potential* (emphasis added) lynx habitat regardless of the final remapping.

The DEIS and FEIS document the analysis of potential effects on lynx habitat based on the situation regarding lynx habitat at the time of the analysis (DEIS p. 256 – 260; FEIS pp. 267-272, WL-15 – WL-17, WL-19, WL-20, WL-24 – WL-27, WL-31, WL-32, and WL-48). The analysis is consistent with current direction (e.g. NRLMD and LCAS [WL-24, WL-26, WL-48). In response to this comment and to clarify and better explain the situation regarding the analysis for lynx and the identification of LAUs, we changed the lynx section in the FEIS (pp. 267-268).

The ongoing remapping of lynx habitat across the IPNF revealed that in order to conduct the best analysis for the Bussel 484 project using the best available data, that changes in the initial 2000 lynx mapping and LAU would be appropriate. The USFWS provided technical assistance in regards to the lynx analysis (WL-27). The Regional Office reviewed the changes to LAUs made for the analysis (WL-48). When the IPNF lynx habitat remapping is finalized we do anticipate changes regarding lynx habitat in the Bussel 484 area, these anticipated changes would not result in any potential for effects on lynx or lynx habitat.

7-7: We believe that appropriate consideration was given to grizzly bear in the Bussel 484 Project. During the analysis new information was reviewed for the potential to change how grizzly bear was addressed.

In September of 2007 a male grizzly bear was shot and killed in the North Fork Clearwater River drainage south of the St. Joe Ranger District. It was determined that the bear originated from the Selkirk area which is north of the St. Joe Ranger District. Although the route this bear took is unknown, based on existing conditions (e.g. human developments) between the Selkirk area and the North Fork Clearwater River and identified linkage zones (Servheen and others 2003), the most reasonable route for the bear to have used would have been across the upper St. Joe drainage, more specifically the area along the Idaho/Montana border. There are no verified records or reports of grizzly bears on the St. Joe Ranger district. There have been recent "credible" observations in the upper St. Joe River drainage, but these observations have not been verified despite efforts to verify at least one of the observations (Holt personal communication).

The St. Joe Ranger District is not in a Grizzly Bear Recovery Area (USDI 2000, USDI 1997, USDI 1993), nor was it included in the Bitterroot grizzly bear evaluation area in the *Grizzly Bear Recovery Plan Supplement: Bitterroot Ecosystem Recovery Plan Chapter* (USFWS 1996). Some alternatives in the Grizzly Bear Recovery in the Bitterroot Ecosystem FEIS did include the St. Joe Ranger District in an Experimental Population Area (USDI 2000); however, there were no anticipated impacts to land use activities on public land identified (ibid). There is no known grizzly bear population occupying the St. Joe Ranger District.

In light of the recent grizzly bear shooting the U.S. Fish and Wildlife Service has proposed surveying in the North Fork of the Clearwater drainage and the upper St. Joe drainage to assess if there are any

grizzly bears in the area. Based on current knowledge and recent events the potential for grizzly bear occurrence on the St. Joe Ranger District can not be totally dismissed. However, there is no information to suggest any occurrence other than the possibility of transient individuals. Even the potential for transitory occurrence in the St. Joe drainage is low, and lower still outside of the upper St. Joe drainage (i.e. the Bussel 484 Project area).

The potential for grizzly bear occurrence in the Bussel 484 analysis area is inconsiderably remote. This conclusion is based on the location of the project/analysis area, the lack of recorded sightings in the area, and the improbable likelihood of the area being used for movement of grizzly bear (e.g. the USFWS has targeted the upper St. Joe River drainage for surveys).

The analysis for grizzly bear is documented in the BA (FEIS Appendix C) and in the project file (WL-38). It is reasonable to conclude that this project would have no effect on grizzly bears. This conclusion is based on: a) the project not being in a recovery area or area of re-occurring use, b) the inconsiderably small (if any) potential for grizzly bear occurrence in the project area, c) the transitory nature of potential occurrence, and d) the inconsiderable small potential for human/bear conflicts.

7-8: Old Growth analysis was completed for the Bussel 484 Project (FEIS p. 152). The assessment of proposed treatment stands involved a review and comparison of the most current stand data with the criteria listed in Old-Growth Forest Types of the Northern Region (Green and others 2005). This data validated that the stands proposed for treatment did not meet criteria for allocation as old growth. Additionally, through the validation process, there was approximately an additional 755 acres allocated as old growth (FEIS p.152).

7-9: The Antidegradation Policy (IDAPA 58.01.02.051) identifies that "[t]he existing in stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." Aggradation is discussed in the FEIS on pages 226, 235, 238, and 241. The water quality analysis identifies estimated effects from proposed activities and identifies that activities would not appreciably affect existing uses (FEIS pp. 240-241), so beneficial uses would be maintained and protected.

Idaho DEQ (SW-46 2003 letter p. 2) identifies, for waterbodies with a TMDL, that sediment loading from a timber project should have sediment reductions prior to or occurring in the same time frame as the timber project. The sediment budget as presented shows sediment reductions over the same time frame as the proposed timber project (FEIS Table 3-70 pg. 239 and FEIS pp. 232-234).

7-10: DEIS (p. 217) identified effects from road reconstruction and road maintenance. Citations related to applying BMPs and their role in managing nonpoint source activities (IDAPA 58.01.02.350) and minimizing adverse effects on the aquatic environment (40 CFR 232.3(c)) have been added to the FEIS (p. 230).

7-11: Effects from past, current, proposed and reasonably foreseeable activities for the Bussel Creek watershed are disclosed in the FEIS (*Fisheries*, *Soil*s and *Water* sections of Chapter 3). Riparian conditions in the project area have improved since 1933 (FEIS p. 75, 228). After all proposed activities are completed there will be substantial improvements in Bussel Creek (FEIS pp. 96-104, 107-108, 240-241).

7-12: Marble Creek is not part of the project area (FEIS p. 3). When developing a project proposal we need to limit the geographic scope of proposals to make the projects manageable for analysis and implementation (FEIS p. 5).

7-13: It is apparent from comment 7-16 that the commenter has a copy of the St. Joe Geographic Assessment. We apologized for not contacting them making the other documents available per their request. The commenter is welcome to the St. Joe Ranger District at any time to review the Bear Bussel Area EAWS and the Bussel Creek Roads Analysis, both of which are part of the Bussel 484 project file, PD-2 and PD-3, respectively.

7-14: The FEIS provides rationale for the change in management areas (FEIS p. 3), and background analysis and documentation are located in the project file (PD-68, V-12).

7-15: Chapter 3 discusses all known past, present, and reasonably foreseeable future actions in detail (FEIS pp. 43-49) for the Bussel 484 project area and adjacent lands. The FEIS includes a harvest history map (Appendix A Map 15) to better show past harvests. Cumulative effects are disclosed in the FEIS in Chapter 3 by each resource. Please refer to the following table for locations in the FEIS.

Resource	Page # of Cumulative Effects
Air Quality	53-54
Cultural Resources	55, 58
Economics	62
Fuels and Fire	121-122, 127, 130
Fisheries	69-70, 72-73, 95, 104-108
Forest Vegetation	137, 140, 142-144
Noxious Weeds	145, 146, 150
Old Growth	153
Plant Species at Risk	161-162
Recreation	173
Soils	177, 189-194
Transportation	204, 206-208
Visual Quality	211
Water	219, 226, 229, 237-238, 240
Wildlife	244-245, 253, 253, 255-256, 259, 262-263, 266, 271, 273-274, 276-280

7-16: The St. Joe Geographic Assessment does indicate a higher amount of seedling/saplings (up 8%) and pole/small/medium (up 15%) sized trees, however as the "Purpose and Need" points out the proposed harvest in this project is designed to "promote and accelerate the development of long-lived, early-seral, shade-intolerant species (western white pine and western larch) etc… (FEIS p. 4). This addresses the significant change in forest structure for long-lived early seral species western white pine (down 21.9 %) and western larch (down 11.9%). In addition this proposal is designed to promote or maintain large-diameter trees, which addresses the higher contribution of seedlings /saplings and pole/small/medium (see FEIS p. 4).

7-17: RHCA vegetative buffers are considered adequate for prevention of sediment from entering stream channels (INFS 1995 p A-5). Recent monitoring (USDA 2006a p 81-82) identifies that no sediment even entered the RHCA from adjacent harvest units.

7-18: No old growth stands are being targeted for logging. In addition any stands proposed for harvest that were determined to meet the Old Growth criteria (Green and others) have been dropped from the proposal and allocated as "Old Growth" (FEIS p. 151-152)..

7-19: Both action alternatives would meet the Regional Snag Guidelines (FEIS pp. 36, 249).

7-20: We understand that the road prescription maybe hard for others to understand. The interdisciplinary team has worked to make a very complicated subject as clear and concise as possible. The detailed prescription for each road would be done on an individual base at the time of contract preparation. We would then decide, for example, if the decommissioning would be done as results of abandonment or will require removal of culverts or recontouring. This on-the-ground prescription would be reviewed by a interdisciplinary team prior to work being done to be sure management objectives are reached. The net reduction of roads as a result of the proposed action can be seen in FEIS Chapter 2 p. 17.

7-21: Roads are a controversial issue on the national forests. Roads can be good because they make possible the production of commodities that society needs (e.g. timber, cattle, minerals) and roads can also provide access for a wide range of recreational activities. But roads can also harm streams and

wildlife habitat. Roads are a necessary requirement in managed landscapes to provide for human uses and silvicultural treatments. Roads, however, can bring negative impacts to both aquatic and terrestrial species. One of the major findings of the Integrated Scientific Assessment[1] (1996) relates to the fact that where open road densities are high, both aquatic and terrestrial integrity have suffered.

Three things can be done to reduce open road density on managed landscapes. First, the transportation plan can stress minimization of road density and can limit new road construction to those roads absolutely necessary to meet silvicultural objectives. Second, existing roads no long necessary for the long-term management of the area can be obliterated. Third, access management restrictions can be put into place that help to mitigate and reduce the impacts of open roads.

The existing transportation system has been reviewed to determine if there are any unnecessary roads or roads that are causing unacceptable resource damage (FEIS p. 202, 207). Alternatives B and C would decommission 10.7 miles of unneeded road (FEIS p. 26). The restorative treatments (Road Prescription D) associated with the decommissioning (FEIS p. 25) would provide for an overall reduction in road densities within the project area and contribute both to a reduction in road maintenance costs and over the longer-term provide for improvements in water quality and fish populations within the project area (FEIS pp. 107, 234, 240).

Alternative B would provide access for initiating treatments in priority timber stands (FEIS pp. 137-140). Access is needed to these stands for their long-term management (FEIS p. 207). The system roads identified for construction are needed for access now and in the future. Alternative B would meet this objective by minimizing the amount of road construction to only that necessary management related access (FEIS p. 202; PF: PD-4).

The proposed road storage activities (Road Prescription C) would reduce the amount of road maintenance required within the project area. For instance, 21.6 miles of existing road and all new system road would be put into the long-term storage prescription (Road Prescription C), the intent of which is to “put the road to bed” in such a condition that it will not require any maintenance until it is needed again (FEIS p. 203). These treatments will minimize open road density within the project area.

Alternatives B and C would implement road closures in the northern portion of the project area to help mitigate and reduce the impacts of open roads, thereby providing for non-motorized recreation opportunities and protection of resource values including wildlife, watershed, and fisheries (FEIS p. 172).

7-22: The potential effects of road/trail densities and road/trail miles on wildlife sensitive to disturbances from roads were analyzed and documented: Disturbance/Access (FEIS pp. 254-256), Elk (FEIS pp. 264-266), Wolves (FEIS pp. 272-274) and Fisher/Marten (FEIS pp. 274-276). The road density in Bussel and Bear Creeks would be reduced in all action alternatives (FEIS Table 3-78 p. 255; Map 10 and Map 11).

7-23: Please see response to 7-22 above.

7-24: Helicopter logging is proposed in both Alternative B and Alternative C (FEIS pp. 14-16, 18-20).

7-25: Construction, reconstruction, and maintenance of roads for silvicultural purposes are consistent with 40 CFR 232 and 33 CFR 323 as long as best management practices are utilized. Soil and Water Conservation Practices (BMPs) associated with road construction and maintenance are found at FEIS Appendix B (15.07-15.09, 15.10 & 15.18, 15.13-15.15, 15.21). BMPs are the primary method for managing non-point pollution (IDAPA 58.01.02.350). FEIS Appendix B identifies over 20 BMPs related to roads, almost all of which are related to erosion reduction and stream sediment reduction (Appendix B p 5). These BMPs would be implemented and have been shown to be effective (FEIS p. 231). To speculate on the timing of road activities and the potential for high intensity rainstorms is highly uncertain. Rain-on-snow events are not likely to occur “shortly after road construction, reconstruction or

[1] Quigley, Thomas M.; Haynes, Richard w.; Graham , Russell T., tech. eds. 1996. Integrated scientific assessment for ecosystem management in the interior Columbia basin and portions of the Klamath and Great Basins. Gen. Tech. Rep. PNW-GTR-382. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 303 pages.

reconditioning" because rain-on-snow events in northeastern Idaho typically occur in mid-winter (Macdonald and Hoffman 1995).

7-26: Please see response to 7-25 above.

7-27: Tables 2-4 and 2-8, both in the DEIS (pp. 14, 19) and the FEIS (pp. 17, 21) provide Forest Service road numbers and miles of roads proposed for reconstruction. Maps M 4 and M 5 of the DEIS and Maps Map 4 and Map 5 of the FEIS show the location of the proposed road reconstruction.

7-28: The riparian plantings are an integral part of the Bussel Project (FEIS pp. 6, 18, 22, 38-39, 41, 61, 94, 97-100, 103-104, 107-108, 160, 230, 232, 241, 254)

7-29: All of the proposed units were surveyed to determine the existing level of soil disturbance and confirm if past management activities have taken place. The FEIS has been updated to make this more clear (p. 175, 180, 192-194, 197-199; PF: S-3). We can see how the headings in Table 3-53 and Table 3-62 in the DEIS were misunderstood. "Monitored Acres of Existing Detrimental Disturbance" has been changed to "*Existing Acres of Detrimental Disturbance,* Tables 3-55 and 3-57 pp. 192-194 and 197-199 of the FEIS.

7-30: Additional precautions (skid trail decompaction and monitoring) were added to Unit 224 because the existing disturbance patterns are localized so that equipment will not be able to utilize all existing skid trails since trails may not be in a feasible or advantageous location to use (FEIS pp. 1, 34, 38, 176, 180, 185, 189-190, 194, 199, 200). Soils would be monitored to determine whether acceptable productivity potential is maintained on at least 85% of the proposed activity area after timber harvest, fuels treatment, and decompaction activities are completed (FEIS Design Feature 10.M., p.34 and pp.184-194).

7-31: Road management prescriptions are defined on page 25 of the FEIS and describe methods that would effectively close the route to vehicle access. Design Features 10.E and 10.F on page 34 of the FEIS states "Where roads would be stored (RX C) or decommissioned (RX D), the beginning of the treatment area would be fully recontoured for 300 feet or a sight-distance (which ever is less) to eliminate motorized access."

During the RAPs process it was determined which roads were needed for the long term management of the National Forest System lands and what roads can be placed into long-term storage or decommissioned/obliterated. Closer methods will be consistence with the prescriptions in the FEIS, full-bench obliteration on roads placed in long-term storage would not be consistent with the area RAP. As stated in the purpose and need we recognize the concern over ATV/OHV usage and are trying to address those concerns.

7-32: See response to comment 7-31 for information regarding methods to close roads. The Forest has several Forest Protection Officers and two Law Enforcement Officers available for patrol. It is impossible to eliminate all illegal use. The Forest is in the process of Travel Management planning and intends to have the final plan completed in 2009. Through travel management planning, routes would be designated and signed and maps would be created to better inform the public of legal travel routes. This plan should assist Law Enforcement personnel in enforcement of road closures and educate the public in where it is legal to operate motorized vehicles (ROD p. 33).

7-33: See response to 7-32 above.

7-34: See response to 7-7 above.

7-35: See response to 7-6 above.

Letter #8 – J. Juel and others; The Lands Council and others; April 20, 2008; received April 21, 2008

8-1: Many past activities have taken place in the Bussel 484 Project area including, but not limited to past logging activities (FEIS pp. 43-49) (see response 7-15).

The amount of mature and old-growth forest, amount of snags and coarse woody debris, and soil conditions were analyzed for in the DEIS and FEIS. Analysis and disclosure are found in the Wildlife section pages 249-252; Forest Vegetation section pages 133-142: Old Growth section pages 151-155, and Soils sections pages181-182, and 187of the FEIS.

8-2: Please see response to comments 8-1 and 7-15.

8-3: An analysis of the changes between historical and current conditions was completed in the DEIS (pp. 118-123) and is discussed in the FEIS (pp. 132-137). This analysis incorporates the effects of all changes (including all human-induced changes) that have occurred to date. As far as new information about human-induced climate change, we agree with your comment that this is most appropriately considered "not on a project-level basis", but in the "context of Forest Plan Revision" and we plan to consider this issue in the process of Forest Plan Revision.
8-4: See response to 8-3 above.

8-5: Pages 43-49 of the FEIS addresses past harvesting practices and silvicultural objectives, and how they differ from current practices.

The timber stand data base includes records for timber harvests beginning in the early 1960s (ACT-2, ACT-3, ACT-4, Map 15), but harvests occurred prior to that time. We know this from historical accounts and aerial photography. Past timber harvests by decade according to the FACTS database for activities on the 12,192 acres of National Forest System lands in the project area can be found on page 43-47, 122 of the FEIS. Results (our existing condition) of these activities along with the fire history are described beginning on page 132 and continue through 137 of the final EIS.

The most recent timber harvest overlapping with any proposed units occurred
in only one area (Unit 100) that was treated in 1983 (Map 15). Previous logging in other proposed units occurred prior to the 1960s and no record exists in the data base regarding those activities FEIS p. 180).

8-6: The number of acres that have been planted in the project area with long-lived early seral species western larch, western white pine, and/or ponderosa pine is 1,017 (V-16). Some of these acres are replants due to poor stocking following the original planting operation. The location of these plantations can be found in the project file as a list of stands identifying where this activity occurred (ACT-2).

8-7: Bussel 484 is an area were fire suppression efforts would continue. Due to the investments in past silvicultural treatments and the proximity of major values-at-risk (Potlatch ownership, Bonneville Power Administration transmission lines) the implementation of landscape-scale prescribed fire or the option of wildland fire-use is an unacceptable risk. Later in the season on warm days from July through September the transition from benign surface fire to problematic crown fire can occur rapidly and is difficult or impossible to control. This type of fire behavior would result in much mortality and make it very difficult to keep a fire on the National Forest System lands(FEIS pp.11-12).

The No Action Alternative (Alternative A) on page 126 of the FEIS states “Continued fire suppression will eventually result in a deviation from the historic range of variability relative to the occurrence of low and/or mixed severity fires.”

It is agreed that the forests have changed too much since the early 20th century to try and recreate forest communities that existed at that point in time. Within the context of these changes, we have identified the need for reduced stand densities, for the purposes of removing the smaller trees and favoring retention of

and focusing growth on the larger diameter more vigorous trees. Less vegetative competition and a more diverse species composition tending towards the early-seral, more resilient tree species should promote forests that can withstand and adjust to ecological disturbance better (FEIS pp. 140-142). Adjusting forest structures in the Bussel 484 project area will not prevent forest disturbances, but allow these forest ecosystems to adjust and react better to insects, disease, and fire (FEIS pp. 140-141, ROD p. 24).

The impacts of fire suppression actions were disclosed in the DEIS on page 120 and can be found on page 134 of the FEIS.

The FEIS page 130 states "the proposed harvesting may provide opportunities to utilize changes in fuel types as natural barriers to fire spread that may allow managers to more readily reduce in suppression costs, reduce disturbance associated with traditional suppression actions, and/or realize resource benefits from wildfires in accordance with fire management plan direction." This is consistent with current fire management direction in the General Forest Fire Management Unit as described in the FEIS.

8-8: It is beyond the purpose and need of this project to determine Regional and Forest-level standards. The proposed activities would be consistent with existing Regional and IPNF standards (FEIS p.200).

8-9: If there were previously established activity areas, they are not relevant for this proposal because previous activity within a proposed harvest unit was accounted for when the current on-the-ground soil condition surveys were completed (FEIS pp. 177-183, S-5). Expanding analysis areas beyond the currently proposed activity areas would only dilute the direct effects of the proposed activities. Activity areas are areas where management activities are proposed and where soil quality standards apply. Direct and indirect effects to soils would only occur in the proposed activity areas because soils do not move across the landscape except possibly in the cases of mass failures or erosion. Effects of dedicating land to other uses, such as system roads and transmission line towers, are shown in the FEIS (pp.183-199). A past harvest map was also added to the FEIS (Map 15).

8-10: The DEIS did disclose project area-wide cumulative effects from past and proposed activities (DEIS pp. 190-191). This analysis was changed for the FEIS; however, because there would be no cumulative effects except where activities result in effects that overlap in time and space. The analysis area for the FEIS includes land where activities are proposed and also addresses land within the project area that is or would be dedicated for other uses (system roads and transmission line towers). Within an activity area, cumulative effects may occur if effects from proposed activities add to effects from other activities. For example, if previous logging in an area resulted in detrimentally disturbed soils that are still evident today and proposed activity could result in additional detrimental soil conditions on that same area, there would be cumulative detrimental disturbance (FEIS Table 3-49 p. 181). Potential disturbance is displayed in FEIS Tables 3-55 and 3-57 (FEIS pp. 192, 197). See response 8-9 above.

8-11: The analysis of peakflow records (DEIS p 213, 222-223) does not indicate hydrologic dysfunction (if by this, the commenter really means changed infiltration rates and subsequent increased runoff). The WATSED model used for estimating changes in peakflow includes effects from roads (which have compacted surfaces) (FEIS p. 221-222). Also see response 8-21 below.

8-12: See 8-9 and 8-10 above.

8-13: The WATSED model used in the water analysis incorporates various road designs and configurations (clearing width, cutslope area, width, and length), logging systems and harvest methods (tractor, cable, aerial), wildfire, and site preparation (mechanical, prescribed fire, or hand) are used to characterize the watershed disturbances that result in cumulative effects.

FEIS (p. 222) identifies that there is no increasing trend in peakflows for the St. Joe River at the Calder, Idaho, discharge gauge station or for data extrapolated to Bussel Creek based on the discharge per unit area relationship at the Calder gauge. The DEIS identifies that the level of timber harvest and roads above the Calder gauge has not lead to a trend in increasing peakflows. There is an extensive network of roads and harvest activities above the gauging station at Calder, Idaho, especially on private land. The

contention that soil compaction has led to serious hydrologic consequences is not born out by data from the St. Joe River peakflow discharge record (SW-A7) nor by existing channel pattern and form (FEIS pp. 223-226).

8-14: Effects on soils from past, current, and reasonably foreseeable projects where discussed in the DEIS (pp. 160, 161, 165, 168-169, 181-191), and additional discussion was added to FEIS (pp.190-194).

8-15: The FEIS does analyze for existing soil damage at the subwatershed level. The existing soil disturbance analysis focuses on the activity area as required by Forest Plan and Regional Soil Quality Standards. A total of 303 acres have been recognized as being lands dedicated to other uses of the National Forest System lands within the project area and longer having adequate productivity potential. These include system roads, trails, and transmission line towers (p.183). Table 3-49. 3-55, and 3-57, identify and analyze for existing harvest activities.

8-16: Despite the statement "not to claim that the Bussel 484 area is urban", the Objectors again cite Booth (1991) and Booth and Jackson (1997), both well written documents. However, the citations are unrelated to this project because they address watershed function in urbanized aquatic systems (i.e. King County, WA – Seattle area) such as the building of paved roads, houses, and overall urban development. The Bussel 484 project does not propose the building of subdivisions!

Once again, detrimental soil damage is defined in the Forest Service manual direction. There also is a productivity difference between soil disturbance (such as compaction) and detrimental damage (such as hydrologically dysfunctional soils). Detrimental damage equates to site impairment; the natural community cannot grow or is not sustainable. Size and extent of the disturbance is an important consideration here. For example, small areas of compaction may not impair root development and plant growth while large areas of deep or dense compaction may result in conversion of a site to annual species. Soil disturbance acknowledges that humans have changed the site (compaction, displacement, burning, reduced organic matter, etc.) and affected the soil but that the natural community and soil processes are still in place and are sustainable. Therefore, an estimation of past effects on soils, especially since they are site specific attributes of the land on which they occur, is subjective because of changes in soil type, initial variability of impacts, and recovery of soils over time. The objectors are therefore correct, no established limit on the amount of compacted or hydrologically impaired soil was provided because it would be meaningless since the disturbance cannot be linked to detrimental disturbance and the Regional SQSs.

8-17: The IPNF's Forest Plan standards for soils state in part, "Soil disturbing management practices will strive to maintain at least 80 percent of the activity area in a condition of acceptable productivity potential for trees and other managed vegetation" (IPNF Forest Plan, p. II-32, FEIS pp. 174, 200). This standard was set to protect soils, not to damage them. The Forest Service recognizes that some management activities may have effects on soils, so standards are set to protect them. This standard was developed as part of the forest planning process that included public involvement.

8-18: Additional information was added to the FEIS (pp. 176; S-25; S-26; S-27).

8-19: The effectiveness of soil mitigation measures are discussed in the DEIS on page 169 and in the FEIS on page 184-185. The DEIS states, "The techniques and their effectiveness are documented in several publications (Seyedbagheri 1996; Lynch and Corbett 1989 and 1990; Idaho DEQ 2001). The BMPs would have a high effectiveness … BMP monitoring in past harvest units identifies that there is little to no exposed soil".

In addition, mitigation measures, such as slash mats and winter logging, have been monitored on the IPNF continuously (Forest Plan Monitoring Reports 1993, 1998, 2002, 2004, and soils 2005 and 2006 (drafts))(PF: S-44, S-45). Contrary to the Bitterroot NF, in same cases winter logging has proven to be quite effective and provides a valuable tool to treat areas with minimal disturbance.

Additional information was added to the FEIS to demonstrate the effectiveness of soil mitigation measures, additional mitigation measures where added (FEIS pp. 34,184-185).

8-20: The Forest Service recognizes that ground-disturbing activities can have impacts on soil productivity, and activities are designed to minimize impacts. The soil quality standards were developed based on the best available science (Powers 1990). The 85% soil quality standard is only part of what is considered for determining whether activities would be consistent with NFMA for maintaining soil productivity. Coarse woody debris, organic matter, nutrient levels, erosion, and mass movement (FEIS pp. 175-179, 181-182, 187-189, 190, 195,200) are also considered. Discussion regarding NFMA consistency was added to the FEIS (p. 201).

8-21: Losses in soil productivity within activity areas are recognized and accounted for (DEIS pp. 164-165, 169-176, 181-189, 190-191; FEIS pp. 183-191). The FEIS includes mitigation for Unit 224 even though the estimated soil disturbance may not exceed standards (FEIS pp. 34, 184-185).

DEIS Tables 3-52 and 3-61 summarize disturbance from past activities and potential disturbance from proposed activities (DEIS pp. 170, 181); however, the headings in DEIS Tables 3-52, 3-53, 3-61, and 3-62 did not clearly state that the cumulative disturbance resulting from proposed activities include the existing detrimental disturbance (which includes compaction). The FEIS includes additional discussion about this (FEIS p. 187-188), and the table headings were changed to more clearly describe the resulting cumulative effects.
Consideration of soil compaction and its relationship to soil productivity played a large role in the development and design of the action alternatives (DEIS pp. 23, 32, 159, 169, 178, 194, 221; FEIS pp. 33, 158, 180, 184-186); in the determination of existing conditions (DEIS pp. 160, 164; FEIS pp. 179-183); and in the estimation of potential direct, indirect, and cumulative effects (DEIS p. 144, 158, 159, 161, 164, 168, 169, 178, 191, 210, 221; FEIS pp. 183-191).

Compaction is one type of soil disturbance considered for soil productivity (DEIS p. 164; FEIS p. 175). The following excerpts from the DEIS and FEIS show how the relationship between compaction and soil productivity were considered.

- "Unacceptable productivity potential exists when soil has been detrimentally compacted …" and "Manual direction recommends maintaining 85% of an activity area's soil at an acceptable productivity potential with respect to detrimental impacts, including the effects of compaction …" (DEIS p. 159; FEIS p. 175).
- "Direct effects on soils from proposed activities were estimated using the IPNF Soil Effects Spreadsheet model that accounts for compaction, erosion, severe burning, rutting, and displacement on the soil surface that is the most productive layer and also the easiest to disturb through activities" and "Compaction … can affect the soils physical, chemical, and biological properties, which indirectly can affect the growth and health of trees and other plants" (DEIS p. 161; FEIS p. 176).
- "Pre-commercial thinning would be done by hand (chainsaws), and the felled trees would be left on site with no further treatment. Since there would be no soil compaction … there would be no detrimental effect on soil productivity …" (DEIS p. 168; FEIS p. 186).
- "Design features to protect soil and site productivity (Design Feature 9) would be implemented … to ensure that activities are consistent with Forest and Regional standards in terms of soil compaction …" (DEIS p. 169; FEIS p. 184).
- "Obliteration would begin to reduce compaction of the soil, help to restore soil productivity …" (DEIS p. 178; FEIS p. 185).

8-22: See response to 8-21.

8-23: The Regional soil quality standard of maintaining 85% of an activity area in acceptable productivity potential is based on research indicating that a decline in productivity would have to be as great as 15% to be detectable (Powers 1990) (DEIS p. 159; FEIS p. 175). Powers goes on to say, "This does not mean that the Forest Service tolerates productivity declines of up to 15 percent, but merely that it recognizes problems with detection limits" (Powers 1990). The SQSs are currently under review and will be updated by a national team and researchers in the near future.

8-24: The DEIS (pp. 190-191) and the FEIS (pp. 180-181) consider impacts to soil productivity from roads on National Forest System lands within the Bussel Creek watershed. See 8-21 above.

8-25: The IPNF soil standard related to compaction states, "Soil disturbing management practices will strive to maintain at least 80 percent of the activity area in a condition of acceptable productivity potential for trees and other managed vegetation. Unacceptable productivity potential exists when soil has been detrimentally compacted, displaced, puddle, or severely burned as determined in the project analysis" (IPNF Forest Plan p. II-32)(FEIS pp.174-175, 200-201). FSM 2554.1 describes detrimental compaction as a 15 percent (not 20 percent) increase in natural bulk density.

On a side note, research also shows that compaction can have favorable effects on soils productivity as it may increase the water holding capacity (Powers et al. 2005; Zlatnik et al. 1999**).**

8-26: The DEIS (pp. 190-191) and the FEIS (pp. 180-181) consider impacts to soil productivity from roads on National Forest System lands within the Bussel Creek watershed. There are no grazing allotments within the Bussel 484 Project Area, so livestock are not permitted to graze in the area (DEIS p. 8; FEIS p. 10). Cattle do occasionally cross the ridge and wander into the project area, but there is no appreciable cattle grazing in the project area.

8-27: For the Forest Plan Standard, "within" units refers to any road (temporary, new system, existing system, or non-system road) that dissects or extends/dead ends into the unit.

For the Regional standard, only temporary and non-system roads associated with an activity area are considered. System roads are considered dedicated roads that are part of the FS transportation and access system and are not counted.

As for the confusing paragraph on DEIS page 160, it attempted to explain that the GIS Arcview roads layer may not always display the fact that the road(s) alongside a proposed unit defines the unit boundary. This is because the road may be digitized in small zig-zagging segments that are not as straight as the actual road. An underlying aerial image is generally utilized during analysis as well and provides a confirmation that the road(s) are not part of the unit.

For this project, however, the soils specialist did a tedious exercise and actually included some of the small road segments that would weave into the unit even though that was not needed. The product can be viewed as a worst case scenario – and still shows that all units satisfy the Forest Plan Standard.

8-28: An additional precaution was added to Unit 224 because the existing disturbance patterns are localized so that equipment will not be able to utilize all existing skid trails since trails may not be in a feasible or advantageous location to use. An additional 1% of disturbance (based on professional judgment by the Forest Soil Scientist) was therefore added to account for potential disturbance in this unit beyond the expected level generally used for ground-based harvest. To further ensure compliance in this unit, skid trail decompaction is scheduled and would be monitored post-harvest to determine if impacts exceed the allowable levels set by Forest Plan and Regional standards (FEIS p.34 Site-specific Design Features).

8-29: Confidence levels (CL) have been incorporated into the FEIS page 175 and 89 percent of the units were at a confidence level of 90 percent while about 9 percent were between CLs of 70 and 80 percent (PF: S-43).

8-30: Detailed transect were taken in 10 units but the results are <u>never</u> utilized to make any statistical evaluation for any given project. The data is used to portray the ranges and, as one can see by the 10 samples, can range from 7 t/ac to 39 t/ac. Based on personal experience, these numbers likely even go further beyond or above which is expected due to with variations in habitat types, aspects, slopes, topography, potential insect or root disease pockets, etc. Additional observations on CWD, though not numerical, were recorded as well during walk-through surveys (S-5).

Knowing beforehand what is available is very valuable but more important is whether we will leave enough material post-harvest to meet requirements for habitat types given in Graham et al. (1994). Soil design criteria as well as built in contract language are therefore established to ensure that enough CWD is left after management activities are completed, making post-harvest monitoring actually more important than the evaluation of existing conditions in regards to CWD (FEIS p 175, S-5).

8-31: The discussion of Forest Plan soils standards in the DEIS was confusing. Since the activities are consistent with the Regional soil quality standard to maintain 85% of the activity areas in acceptable soil productivity potential, they are consistent with the IPNF standard which requires maintenance of 80% of an activity area in acceptable soil productivity potential (FEIS pp. 174-175). The discussion of how roads are considered was clarified in the FEIS (p. 185). Temporary road construction is considered disturbance towards the activity area for which the road is needed and would have detrimental effects. Road calculations used 4.5 acres of detrimental disturbance per mile (FEIS p. 176).

8-32: All proposed units were surveyed in the field for existing soil impacts (DEIS pp. 160, 165; FEIS p. 175). In the FEIS Table 3-49 (DEIS Table 3-49) only lists those proposed harvest units where field surveys showed existing detrimental disturbance. The proposed units that have no indication of existing detrimental disturbance were not included in DEIS Table 3-49 (FEIS Table 3-49). All proposed units are listed in DEIS Tables 3-52, 3-53, 3-61, and 3-62 (FEIS Tables 3-55, 3-57; and S-6, S-7, S-8, S-9), those with no evidence of existing detrimental disturbance show 0.0 acres of existing detrimental disturbance.

8-33: The IPNF Soil Scientist has monitored several restoration activities on the Forest (S-25; S-12) and based on bulk density results and other indicators (i.e. regeneration, presence of weeds, mixing etc.) estimates a 30 to 50% effectiveness range on restoration efforts. In addition, numerous scientific studies (Dykstra and Curran 2000 and 2002; Froehlich 1984; Froehlich and Miles 1984; Heninger and others 2002; Luce 1997) provide additional input on the efficacy of restoration efforts. Some level of net improvement over existing conditions can generally be expected, providing a trend towards recovery for previously impacted soils and in hydrologic function (FEIS pp.177, 185).

8-34: The fact that the IPNF has standards to protect soils is an indication that the Forest Service recognizes the importance of soil ecology. IPNF soil standards consider productivity potential, large woody debris for maintenance of micro-organism populations, and maintenance of sufficient nutrient capital (Forest Plan p. II-32). These components of soil ecology are considered throughout the *Soils* section of the (FEIS p. 174-201)

8-35: The results of implementing either action alternative would be a reduction of roads which would reduce possible effects on the forest below the road. Subsurface flow generally occurs when soils are saturated, so when subsurface flows are occurring, soils would be saturated above and below a road. Megahan (1972) states, “Subsurface flows occur only during large rains and/or snowmelt when large volumes of water are supplied to the soil. Such flows begin, reach a peak, and recede within a short period.”

In addition, water yield and subsurface water flow often increase after management activities due to a reduction in evapotranspiration from the harvest of trees (Hubbart and others 2007). Hubbart and others (2007) also found that “[r]oad construction carried out in 1997 resulted in a statistically significant increase in water yield of 12%, or 68 mm/yr.” Ecological changes, specifically from roads and intercepted subsurface flow, do not appear to be an issue

8-36: Soil sampling training is an on-going process of learning, checking, learning. Each year the IPNF Soil Scientist trains crews (S-3) and some crew members return for more than one season, which adds to their experience level. The work of the people who received training in soil sampling was checked by the IPNF Soil Scientist during field outings after the training session(s) and as some of the folks returned for several consecutive field seasons.

8-37: Soil conditions will be monitored after implementation in all proposed ground-based units that have existing detrimental disturbance (FEIS p.176) and those units in which restoration activities are scheduled, specifically Unit 224 (FEIS pp. 176) and Unit 215 under Alternative B (FEIS pp. 185).

8-38: Soil productivity is recognized and accounted for (DEIS pp. 164-165, 169-176, 181-189, 190-191; FEIS pp. 180-182). Soil disturbance is one of many components considered concerning soil productivity. The EIS states, "Three design and management criteria relate to soil productivity in the project area, they include soil disturbance, amount of large woody debris, organic matter, and nutrients from geologic formations" (DEIS p. 164; FEIS p. 180). It goes on to say, "Retaining coarse woody debris and organic matter is important to maintaining the soil's most productive layer" and "Coarse woody debris …performs many physical, chemical, and biological functions in forest ecosystems …" and "Because coarse woody debris is such a valuable part of a functioning ecosystem, a portion of the material must be maintained to ensure that organic matter is recycled for long-term productivity" (DEIS p. 165; FEIS p. 181). The importance of soil nutrients is recognized and foliar analysis was conducted on the St. Joe Ranger District (DEIS p. 167; FEIS p. 182).

8-39: We do not expect timber yield to be reduced. The EIS states treatment would increase individual tree growth and vigor (FEIS p.171). The action alternatives would meet soil quality standards. Those standards were developed to ensure maintenance of soil productivity FEIS, pp. 180-182).

Potential reductions in timber yield due to cumulative impacts of soil damage are exceptionally difficult to determine because of an array of factors that play a role over the lifespan of a tree or stand. These include soil texture, amount of disturbance and depth, competition with undergrowth, insects, disease, climate, species composition, etc. –separating this complexity is not to just to "simply" [emphasis added] express the "reduction in wood growth over the decades following the Bussel 484 project activities", it requires a level of research that cannot be undertaken by the IPNF.

The most current and applicable research we found that addresses this subject is Powers et al. (2005), which compiles findings of the first decade of the North American Long Term Soil Productivity Study. It states that:

> **"**Forest productivity response to soil compaction depended both on soil texture and on whether an understory was present. Growth tended to be <u>reduced</u> by compaction on clayey soils and <u>increased</u> on sandy soils [emphasis added]. Effects are attributed to losses of aeration porosity on clays and improvements in available water holding capacity on sands. Trees growing without understory competition generally were unaffected by severe soil compaction through the first 10 years. But 10-year production generally was less on severely compacted plots if an understory was present. Presumably, this reflects differential degrees of root competition for soil resources and access to old root channels. In time, compaction effects should be more evident in stands lacking an understory. Even at 10 years the LTSP study is in its infancy**……."**

Miller and others (2004) suggested that forecasts of reduced timber yield from degraded soils are uncertain because tree response to soil disturbance is greatly affected by other site-specific, growth-determining factors.

8-40: In 2005, the IPNF Forest Soil Scientist established bulk density sampling plots for comparison of values with the shovel test. Comparison of the qualitative visual assessment from the shovel test to the quantitative bulk density (BD) samples showed that 91 percent of the time most of the visual observations matched the actual BD results. The incorrect observations actually overestimated disturbances and classified the sample point at higher disturbance levels (Class 3 instead of Class 2) than the quantitatively measures samples (S-41).

8-41: The Bussel 484 EIS follows both the Forest Plan and Regional direction in determining past and existing soil conditions. See response 8-14, 8-21, 8-24, 8-30, 8-31, and 8-32 above.

8-42: In Chapter 3 of the Bussel 484 FEIS, under the Noxious Weed section both Historic and Existing conditions of the Bussel 484 Project area are discussed under the heading *Affected Environment* (p. 145). In part, it states that "this area is designated as having moderate disturbance and established weed populations throughout the LAA with no realistic opportunity for changing broad landscape pattern." Further discussion regarding noxious weed infestations and establishment is discussed by alternative in the Cumulative Effects sections under each alternative, pages 146 and 150.

Weeds in the Bussel 484 Project area and adjoining portions of the St. Joe Ranger District primarily exist along travel corridors, dispersed use areas and other disturbed areas. The St. Joe Geographic Assessment (USDA 1997) indicates that weeds within the project area are likely present in recently disturbed areas and roads. Additional surveys on routes in the Bussel 484 Project Area indicate further weed encroachment into travel corridors (project file, NW-2).

Travel corridors such as roads, by their nature of being highly compacted, and disturbed have low productivity. The sites productivity is not further reduced by noxious weeds. Most invasive species take advantage of sites that have low productivity where out competing native species is most likely.

8-43: The action alternatives would comply with Regional and IPNF soil quality standards (FEIS p. 174). The area committed to roads, trails, and transmission line towers is disclosed (FEIS p. 183). As stated previously, the EIS follows Regional direction in defining the "activity area" as the area used for direct, indirect and cumulative effects. Within the "activity areas" all past, proposed and foreseeable activities are analyzed for ground disturbing activities such as timber harvest, both classified and non-classified and temporary roads, and helicopter and tractor yarded landings. To expand the cumulative effects area to the watershed scale would mask the effects of past disturbance (S-42). Soils may be classified as detrimental disturbed, however, detrimentally disturbed does not always mean permanently damaged.

8-44: The use of BMPs as a means of preventing sediment delivery to the streams is supported by the IPNF Forest Plans and is in full compliance with the State of Idaho Forest Practices Act and the National Clean Water Act. The Idaho Panhandle National Forests Forest Plan outlines standards that meet Forestwide goals and meets or exceeds State water quality standards (IPNF Forest Plan, p. II-33). It requires implementation of project-level standards and guidelines for water quality contained in the Soil and Water Conservation Practices Handbook (FSH 2509.22), including those defined by State regulation or agreement between the State and Forest Service.

40 CFR Part 232 identifies "Exempt Activities Not Requiring 404 Permits" and 232.3(c)(1) identifies that normal silvicultural activities are exempt. 33 CFR Part 323.4 identifies discharges of dredged or fill material that do no require permits under section 404 of the Clean Water Act. For silvicultural activities the discharge of sediment "is not prohibited or otherwise subject to regulation under section 404". 33 CFR Part 323.4(a)(6) identifies that forest roads do not require discharge permits if constructed and maintained in accordance with best management practices where "adverse effect on the aquatic environment will be otherwise minimized".

Idaho State Water Quality Standards has a section for Rules Governing Nonpoint Source Activities (IDAPA 58.01.02.350). This section of the water quality standards identifies that nonpoint source pollution management will occur through the use of best management practices (IDAPA 58.01.02.350.a).

Application of BMPs are designed to protect and will protect aquatic resources as documented above. Design Features (FEIS pp. 30, 33-34) and BMPs are identified (FEIS Appendix B). BMP monitoring and their effectiveness are included in the project file (SW-13, 30).

Idaho DEQ (SW-46 2003 letter p. 2) identifies, for waterbodies with a TMDL, that sediment loading from a timber project should have sediment reductions prior to or occurring in the same time frame as the timber project. The sediment budget as presented shows sediment reductions over the same time frame as the proposed timber project (FEIS Tables 3-74 and 3-76, pages 251and 252 FEIS).

Bussel Creek may currently be supporting beneficial uses even though it is identified as impaired on the 2002 303(d) list. DEQ in their St. Joe Subbasin Assessment and TMDL (DEQ 2003; SW-16 p. 42) conducted a sediment analysis for Bussel Creek. The determination of sediment levels for Bussel Creek is that its sediment level was currently at 33.8% over 'natural' or 'background' levels. The Subbasin Assessment and TMDL (DEQ 2003; SW-16 p 53-54) identifies that sediment levels lower than 50% above 'background' will support beneficial uses. It would appear that Bussel Creek is supporting beneficial uses because its sediment level is below the 50% value.

8-45: The FEIS states that Best Management Practices (BMPs) can help mitigate management effects, not assure water quality will be maintained (FEIS p. 212).

The applications of BMPs are standard procedures for any harvest or fuels reduction project on National Forest System lands. BMPs are a tool with which the State of Idaho implements the Clean Water Act to meet water quality standards. Properly applied, BMPs limit non-point source pollution, the kind of pollution that results from land management activities. Many BMPs are incorporated as contract provisions, others are additional design features. Design features beyond BMPs for the Bussel 484 Project are specified in the FEIS (pp. 29-37). BMPs are monitored routinely by the Timber Sale Administrators and other specialists during project implementation. If they are not effective or required conditions are not being met, operations are suspended until conditions can be met.

BMP implementation and effectiveness monitoring on the IPNF is reported annually in the Watershed and Fisheries Forest-wide Monitoring Report, and has been found to be effective in meeting or exceeding Idaho Forest Practices requirements (IPNF Monitoring Reports 1998-2004).

BMPs are designed and intended to *minimize* adverse effects of management practices and management systems. There will always be a risk associated with most physical disturbances to the land by management; BMPs will usually prevent the direct or cumulative effects of those practices from altering the beneficial use support capability of the water. But there still is a limit and an occasional failure.

8-46: Populations and distribution of wildlife species are addressed: pileated woodpecker (DEIS p. 249, FEIS pp.257-258), goshawk (DEIS p. 252, FEIS pp. 260-261; PF: WL-22), and black-backed woodpecker (DEIS p. 267, FEIS p. 277). The analysis of effects on habitat and populations for all relevant species is documented: pileated woodpecker (DEIS p. 246 – 249, FEIS pp. 259-260), goshawk (DEIS p. 250 – 253, FEIS pp. 262-264), elk (DEIS p. 253 – 255, FEIS pp. 265-266), lynx (DEIS p. 256 – 260, FEIS pp.267-271), gray wolf (DEID p. 260 – 261, FEIS pp. 272-274), fisher and marten (DEIS p. 262 – 265, FEIS pp. 274-276), wolverine (DEIS p. 265 & 266, FEIS pp. 276-277), black-backed woodpecker (DEIS p. 266 – 267, FEIS pp. 277-278), Coeur d'Alene salamander DEIS (p. 268, FEIS pp. 278-279), and western toad (DEIS p. 268 & 269, FEIS pp. 279-280).

8-47: The DEIS (p. 232); FEIS (p. 242) and Project File (WL-2, 3, 24, 43, and 46) document surveys and field reviews that were conducted to validate habitat. These surveys/field reviews included a representation of stands with past treatments as well as untreated stands. The DEIS and FEIS acknowledge and document the effects of past logging on habitat/forest structure – directly (e.g. as seedling, sapling, and pole size stands) and indirectly (e.g. via lack of mature habitat as a function of past logging) (DEIS pp. 232 & 233, 237 & 238, 239, 248, 251, 258, 263, and 267, FEIS pp. 242-243, 247-248, 249, 258, 261, 268, 273, 277). Cumulative effects analyzed for each species includes the effects from past actions including logging (DEIS pp. 238, 242, 248 & 249, 252, 264 & 265, and 267; FEIS pp. 253, 255-256, 259, 262-23, 266, 271, 273-274, 276-280). See also the responses 8-50 and 8-51.

8-48: The wildlife analysis in the DEIS and FEIS displays the Regulatory Framework that provides direction for the management of wildlife habitat. Listed there are Forest Plan standards that refer to viable populations of MIS and old growth associated species (DEIS p. 230; FEIS p. 242). The IPNF Forest Plan sets the general direction for management of resources (DEIS p. 1, FEIS p. 1). The Forest Plan describes the desired conditions for the Forest (p. II-21 – II-23). The EAWS found in the Project File (PD-2) describes desired conditions for the larger landscape consistent with the Forest Plan. It includes desired habitat conditions that would support and contribute to viable populations of wildlife species. The DEIS and FEIS analysis responds to the purpose and need; and analyzes the potential effects of the proposed action(s). The analysis for potential effects on wildlife is documented in the DEIS (pp. 230 – 270) and the FEIS (pp. 242-281); the consistency with the Forest Plan and other regulations is also documented (DEIS p. 270; FEIS p. 281).

8-49: The DEIS (p. 262) documented the similarities in fisher and marten habitat, provided a citation (i.e. Ruggiero and others 1994); and provided the rationale for considering them together. The DEIS (p. 262) and FEIS (p. 274) also provide a brief description of habitat associations. To further clarify why fisher and

marten were combined in the analysis additional explanation and a citation were included in the FEIS (p. 274).

8-50: In the DEIS (p. 232 - 233) the analysis methodology includes a discussion regarding past action influences on the existing condition and states that – for non-NFS land - cumulative effects are evaluated based on past/present practices. For clarification, further discussion on how past actions are considered in the analysis (i.e. influencing the existing condition) was added to the FEIS (pp. 244-245). The effects of past actions are included in the cumulative effects analysis for wildlife in numerous places (DEIS p. 242, 244, 245, 252, 255, 264, 266, 267, and 269; FEIS pp. 253, 255-256, 259, 262-23, 266, 271, 273-274, 276-280). The project files contains additional information on how past actions were addressed in the analysis (PF: WL-18).

8-51: See the response to Comment 8-50. The analysis is – in large part – based on the amount of suitable habitat maintained (DEIS Table 3-79 p. 238, FEIS Table 3-80 p. 259). The analysis documents effects and provides determinations regarding effects on species based on remaining habitat and recommended amounts and distribution of habitat (DEIS p. 239 – 270, FEIS pp. 250-281).

8-52: A discussion was added to the FEIS (pp. 244-245) explaining that there is some level of uncertainty associated with almost any analysis methodology: habitat associations are complex, some variables may be unknown or not described, or wildlife specific data is not available. However, field reviews were conducted by the wildlife biologists to validate data used for the wildlife analysis (PF: WL-2, 3, 24, 43, and 46). This field review paid particular attention to habitat components such as snags, down woody material, and canopy (PF: WL-2). The analysis measures habitat and describes potential effects in a manner that is reliable and accurate. The methodology is commensurate with the existing knowledge, existing data, and the risks associated with the project. See also the response to comments 8-53 and 8-54.

8-53: Data used for the wildlife analysis includes data from stand exams with no record in TSMRS/FSVeg of when it was collected through data collected in 2006. A check of stand exam folders indicates some data was collected in 1979. The majority of the data was collected in various years between 1989 and 2006 (PF: VEG-1). Stand exam data was reviewed and updated for the analysis (PF: VEG -14). Data was field reviewed in 2006 and 2007 (PF: WL-2) to validate the reliability and accuracy of the data for the wildlife analysis. FIA data - upon which the cavity habitat assessment was based - was collected in 2000 – 2002 (PF: WL-5). See also the response to comment 8-52.

8-54: See the responses to Comments 8-52 and 8-53. Canopy closure was one of the habitat parameters included in field review and noted when pertinent to the overall assessment of the stand (Project File WL-2). Aerial photo's/imagery of the analysis area were also reviewed (Project File SW-26, and WL, 39) as well as basal area data for the stands (Project File WL-3). Based on the information (and professional knowledge of the area) it is apparent that canopy closure (at least lack thereof) is generally not a habitat parameter of concern. In north Idaho and the project area stands are dense and lack of canopy closure is generally not an issue in untreated stands. Past actions (that may have reduces canopy closure) are considered in the analysis (DEIS p. 232, FEIS pp. 244-245 and PF: WL-2, and 3). See also the response to Comments 8-50 and 8-51.

8-55: See the response to Comment 8-53. The analysis for cavity habitat and snags (DEIS p. 237 and 238, FEIS p. 249) used a report (PF: WL-5) on estimates of snag densities on the IPNF based on FIA data and an evaluation of existing conditions based on untreated stands and field review where snags are evaluated (PF: WL-2).

8-56: The analysis and decision processes for this project are based on the consideration of the best available science (see response to Comment 8-52). Samson (2006) constitutes an assessment that emphasizes the use of "peer reviewed professional society literature" and "literature published since 2000". It documents the methods, background, and approach used in the assessment. Samson (2006) is a broad level analysis designed to aid in placing a species in context at the larger population level and addressing NFMA requirements. This comment cites no published studies (peer-reviewed or otherwise)

that directly or specifically dispute the findings in Samson (2006). The USFS considers this paper the "best available science" with regard to Region- and Forest-wide viability analyses of Northern goshawk, black-backed woodpecker, flammulated owl and pileated woodpecker.

8-57: The analysis of potential effects on goshawk is documented (DEIS p. 250 – 253, FEIS pp. 260-264; PF: WL-1, 2, 3, 6, 10, 22, and 23). The decision to remove the northern goshawk from the sensitive species list was made at the Regional level (PF: WL-34). This decision was peer reviewed by Forest Service Biologists and based on the Regions 2005 goshawk inventory results as well as Samson (2006).

8-58: See the response to Comment 8-52. Partially in response to this comment and to clarify the analysis, additional discussion of analysis methodology was added between the DEIS and FEIS. This addition includes a discussion on uncertainties associated with the analysis (FEIS pp. 244-245).

8-59: The analysis of potential effects on black-backed woodpeckers is documented (DEIS p. 266 and 267, FEIS pp. 277-278). Included is information on the short-term viability of the black-backed woodpecker and the amount and distribution of habitat in the Northern Region.

The *Black-backed Woodpecker Northern Region Overview* (Bonn and others, 2007) concluded that habitat for the black-backed woodpecker is increasing in the region due to insect outbreaks, fire, and a decrease in the salvage of dead trees. Black-backed woodpecker habitat on the IPNF is estimated at 309,616 acres, more than 30,000 acres of black-backed woodpecker habitat needed in the Northern Region to maintain viability (Bonn and others 2007).

This project does not salvage or harvest burned trees. At the time of the DEIS the disposition of the Elm Street wildfire was unresolved (DEIS p. 266). The FEIS documents, on page 278, that the area burned by the 2007 wildfire would not be salvaged, thereby maintaining its habitat value for black-backed woodpeckers.

8-60: The project and analysis is not based solely on the IPNF snag standards and includes recommendations from such documents as Bull et al. 1997 (DEIS p. 237, FEIS p. 249). The design features for snags (DEIS p. 34, FEIS p. 36) are based on the Northern Region Snag protocol. The Northern Region Snag protocol - an optional snag retention strategy - takes into account recent scientific literature (e.g. Bull et al. 1997) and exceeds the IPNF standards.

8-61: See the Response to Comment 8-60. The analysis does not *rely* on Thomas (1979). The analysis does include a discussion regarding consistency with Forest Plan standards for cavity habitat as well as an assessment based on other scientific literature – e.g. Bull et al. 1997.

8-62: You're right the table did not display a range and we have changed the title of the table to "Historic and Current Vegetation Structure". As stated (DEIS p. 239, FEIS p. 251) the information on historic vegetation is displayed to provide context for the existing condition. The data comes from a wide variety of historic sources (including all available previous forest inventories), fire history research, modeling with VDDT, and findings from the Columbia River Basin Assessment.

8-63: Size class is only one measure of potential impacts measured in the analysis. As stated (DEIS p. 239, FEIS p. 251) the size class discussion is in a section of the analysis that uses a medium-course filter level of analysis. The change in other aspects of habitat is acknowledged (DEIS p. 241, FEIS p. 256). Habitat would be impacted by thinning, however stands would be continue to provide some level of habitat for some species as documented in reference literature (e.g. Bull and Jackson 1995, Samson 2006, and Quesnel and Steeger 2002). The analysis also includes discussion of acres that would succeed naturally (DEIS p. 241, FEIS pp. 252-253). Potential effects are discussed for each relevant species (DEIS pp. 245-270, FEIS pp. 256-281) based on the appropriate habitat associations.

8-64: The connectivity analysis is done at the analysis area scale (DEIS p. 245, FEIS pp. 243-244, 256-257). This provides the proper context for this larger scale parameter. Design feature 14. E. (DEIS p. 34,

FEIS p. 36) would limit effects on connectivity; and the analysis revealed that potential impact on connectivity would not be significant. In an attempt to concentrate on and display the more significant issues the maps for the analysis were referenced in project file (WL-9) as documented (DEIS p. 245, FEIS p. 256).

8-65: The boreal owl and great gray owl are not Management Indicator species on the IPNF nor are they sensitive species, they are not relevant on the IPNF or to this analysis and an analysis for them is not required. There is no direction or biological reason to suggest that analysis specifically for them would be beneficial or is required for an informed decision.

The conclusion that the flammulated owl is not a relevant species in the Bussel 484 analysis area is documented (DEIS pp. 235 and 236, FEIS pp. 246-247) and provides the rationale for that conclusion. The low amount of capable habitat, the lack of suitable habitat and the potential impacts – or lack thereof - on habitat and the species is documented.

8-66: This comment does not explain how the interpretation of Reynolds et al. 1992 may be inconsistent with the requirement to use the best available science. None the less, the analysis for goshawk is documented (DEIS p. 250 and 251, FEIS pp. 260-264 [See also the response to Comment 8-57]). The analysis methodology is not based only on Reynolds (1992) but also references (DEIS p. 250, FEIS p. 261) additional literature (e.g. Kennedy 2003, USDA 1990, Brewer et al. 2007, and Samson 2006) used in the analysis.

8-67: There are no known active territories in the Bussel 484 analysis area (DEIS p. 251, FEIS p. 261). The analysis of potential effects on goshawks, including the foraging area is documented (see table 3-88 DEIS p. 250 – 253, table 3-81 FEIS p. 262). A large number of studies have reported that goshawks use a broad range of habitat conditions in the foraging area (Brewer and others 2007). Goshawk foraging areas are heterogeneous and include a mix of forest and non-forest components (Brewer and others 2007). The analysis in the DEIS documents the protection of the two hypothetical goshawk home ranges – e.g. foraging areas.

8-68: See the response to Comment 8-67. There are no active goshawk nests in the Bussel 484 analysis area (DEIS p. 251, FEIS p. 261). An adequate number and distribution of suitable nesting stands are maintained in the two home ranges (DEIS p. 251 and 252, FEIS pp. 261-262).

8-69: The wildlife section provides two examples of differing/contrary view (DEIS p. 232, FEIS pp. 244-245) merely to acknowledge that we are aware some exist. 40 CFR 1502.9(b) requires the agency to discuss at appropriate points in the final statement any responsible opposing view which was not adequately discussed in the draft statement and indicate the agency's response to the issues raised. It would be unfeasible to say what all the opposing views are before they are actually raised in comments. Many of the responses to comments address opposing views (e.g. 8-52, 8-56, 8-59, 8-60, 8-61, 8-71). Literature cited in comments has been reviewed for applicability to the analysis and the agency response is documented (PI-97). The analysis in the DEIS and FEIS is based on the most appropriate and best science available.

8-70: The analysis address effects on upland habitat for the western toad – a.k.a. boreal toad - (DEIS pp. 268 and 269; FEIS pp. 279-280) to the extent needed to determine potential effects and to make an informed decision. As stated - and supported by the referenced literature, specifically Maxell (2000) and Loeffler (1998) - the primary concern regarding potential effects on western toads is the impacts on wetlands (e.g. breeding habitat) with a secondary concern being the potential for direct mortality of toads dispersing from breeding habitat. The analysis includes potential effects from road storage and the risk of mortality on uplands (DEIS p. 268 and 269; FEIS pp. 279-280).

8-71: The analysis acknowledges the association of pileated woodpeckers with large snags and old growth and mature forest structure (FEIS p. 257) but also acknowledges their use of young forests with abundant remnant old structure (*ibid*). The analysis also documents tree sizes used by pileated woodpeckers for nesting - e.g. minimum of 15" d.b.h. (Samson 2006). The presence of pileated woodpecker use and large trees for pileated woodpeckers was one of the components noted during field

review (WL-2). The analysis documents the effects (or lack thereof) on old growth and mature stands – where large diameter nesting trees are most commonly found. The analysis notes the maintenance of old growth and mature stands and the succession of immature sawtimber size stands to provide large tress now and in the future. The DEIS and FEIS also specifies the number of snags and replacement trees to be retained (FEIS p. 36, 14.D., DEIS p. 34) and provides direction on size (i.e. leaving the largest – e.g. greater than 20 inches d.b.h.).

8-72: It would be extremely difficult to predict how much snag loss would occur, especially when the natural density and distribution varies (Bull and others 1997, USDA 2000), and perceived safety risks will vary among operators. We are bound by law to abide by OSHA regulations, even though we cannot predict the number of snags lost during operations for safety. Regardless, the retention objectives for this project exceed Forest Plan standards/guidelines for managing snag habitat and are consistent with recommendations in scientific literature and the Northern Region Snag protocol.

The DEIS and FEIS acknowledge the loss of some snags from proposed activities (DEIS p. 237, FEIS p. 249). However, design features are provided to minimize these losses (Design Feature 14 D, DEIS p. 34, FEIS p. 36). The estimates of snag densities for the landscape surrounding the Bussel 484 project area also acknowledges and accounts for loss of snags from harvest (WL-5). See also the response to Comment 8-60.

8-73: The validation process used in the Old Growth analysis for this project is described on page 151 of the FEIS. This validation process uses the publication "Old-Growth Forest Types of the Northern Region" by Green and others (2005) for defining and allocating "Old Growth' stands.

8-74: The "adequacy of the 10% old-growth standard" is not analyzed at this project scale. This project is in compliance with the current regulatory direction for management of old growth under the *Forest Plan for the Idaho Panhandle National Forests* (USDA Forest Service, 1987) (FEIS p.154-155). Additional information on the statistical accuracy of the Forest Service Old Growth inventories for the IPNF can be found in "Review of Old Growth Assessments for The Idaho Panhandle National Forests" by Zack (2006), in the project file (OG-8) and is cited in the reference list.

8-75: As discussed on page 154 of the FEIS, the IPNF Forest Plan old growth standard *10a* directed that the definitions of old growth developed by the Regional Old Growth Task Force be applied for all projects developed subsequent to the development of those definitions. The analysis is in compliance with that direction through utilization of the *Old-Growth Forest Types of the Northern Region* (Green and others, 2005) in determining whether stands meet minimum criteria for old growth.

As discussed in that document, there are three <u>minimum</u> criteria applied to stands for determining their old growth status based on habitat type group and forest cover type:

1) minimum age of large trees
2) number of TPA/DBH with a minimum age
3) minimum basal area for trees $\geq$ 5" dbh.

The <u>associated</u> characteristics are relatively broad ranges of other stand characteristics such as canopy layers, snags and down wood but are not included as minimum criteria. These characteristics can be expected to be present, or develop, to some extent in stands meeting the minimum criteria for old growth.

No old growth stands are proposed for harvest in this project (FEIS p. 154).

8-76: The analysis for old growth associated species does not rely on the 10% old growth standard. The analysis for old growth associated species is documented (DEIS pp. 235 – 238, 246 – 253, 262 -265, 266 -267, FEIS pp. 257-264). The analysis includes information on viability for pileated woodpecker (DEIS p. 249, FEIS pp. 259-260), goshawk (DEIS p. 252, FEIS pp. 262-264), and black-backed woodpecker (DEIS p. 267, FEIS p. 277-278). The Northern Region has monitored for goshawk and reference to this report (USDA 2006) has been added to the FEIS (p. 263). This report concluded that the frequency of goshawk presence in the accessible portion of R1 suggests that the goshawk is relatively common and well distributed.

8-77: The analysis documents effects on old growth associated wildlife species and includes discussion on road impacts on habitat (DEIS p. 241, FEIS p. 254). For clarification, further discussion on how past, present, and reasonably foreseeable actions are included in the analysis was added to the FEIS (pp. 244-255, 253). The project file includes a table addressing firewood gathering (PF: WL-18). This table displays that there is no commercial firewood activity and the area is far from sources of demand for firewood. In the analysis area effects from firewood gathering are minimal at the project level.

8-78: The DEIS demonstrates compliance with Standard 10(f) on p.139 and page 153 of the FEIS. The FEIS does not quantify the edge effect from logging next to old-growth habitat, in terms of effectiveness of old-growth species' habitat. The Forest Plan also has standards for size of old growth stands (Forest Plan II-29). The continued fragmentation of the Forest is a major ongoing concern. It is documented that edge effects occur 10-30 meters into a forest tract (Wilcove and others 1986). The size of blocks of interior forest that existed historically before management (including fire suppression) was initiated must be compared to the present condition. Again, this should be a landscape ecology analysis that looks at the larger picture of the fragmentation of habitat in surrounding concentric circles.

In the Bussel 484 project area there are some segments or sections of road that are adjacent to allocated old growth stands or the road bisects allocated stands. The current condition has approximately 10 miles of open roads that are directly adjacent to or bisect allocated old growth stands. With the implementation of the Bussel 484 proposal the amount of open roads that are adjacent to or bisect allocated old growth stands will be reduced to approximately 5 miles. A map showing the difference from the existing condition to proposed condition can be found in the project file (OG-18, OG-19). For additional information on the roads analysis (area and methods) see page 193 through 198 of the DEIS or page 202-208 of the FEIS.

8-79: Townsend's big-eared bats were determined to not be relevant to this project or analysis and the rationale is documented (DEIS p. 236, FEIS p. 248). This conclusion is based on the species strong correlation with cave or cave-like roosting habitat (Pierson and others 1999) and the absence of that habitat in the project/analysis area. There is no information to suggest that large trees are important for maintaining viability for Townsend's big-eared bats in northern Idaho; and this comment provides no information to substantiate this assertion.

8-80: The DEIS and FEIS document the analysis methodology (DEIS pp. 232 and 233, FEIS pp. 244-245), the analysis of potential effects on forest structure (DEIS p. 239 – 242, FEIS pp. 250-253) and on pertinent/relevant old growth associated wildlife species in the project/analysis area (DEIS pp. 246 – 253, 262 – 265, and 266 – 267, FEIS pp. 257-278). Old growth was/is not the sole measure of habitat used to measure potential effects on old growth associated wildlife species. The distribution of habitat was analyzed and displayed (e.g. mapped) when and where appropriate (DEIS pp. 247 – 249, FEIS p. 258). The analysis for old growth includes a discussion on consistency with Forest Plan standards – including patch size (DEIS p. 139 and 140, FEIS pp. 153-154); maps are provide that display the spatial distribution of old growth (DEIS M-13 & M-14 in appendix A, FEIS Appendix A Map 13 and Map 14), and the project file contains information on old growth patch size (OG-10 and OG-11). See also the response to comment 8-76.

8-81: In this project the IPNF has not indicated that fire suppression has caused a tree density problem. The Purpose and Need located on page 4 of the FEIS describes the intent of this project and identifies a reduction in stand density as a need for encouraging resilience to insects, disease, and other disturbances. According to Graham et al (1999) "The best general approach for managing wildfire seems to be managing tree density and species composition with well-designed silvicultural systems that include a mix of thinning, surface fuel treatments, and prescribed fire". The context of the analysis of the historic and current condition for Bussel 484 is described in the Vegetative Analysis section—FEIS pages 132 to 137 (ROD p. 24). The forest vegetation analysis compares the existing condition to the historic condition in the Bussel 484 project area. It is based on multiple resource objectives using direction of the Forest Plan and tiering to data and recommendations from the St. Joe Geographic Area assessment titled, Toward a Forest Ecosystem Approach: An Assessment for the St. Joe Area (IPNF 1997) and the Integrated Scientific Assessment for the Interior Columbia Basin (Quigley and others 1996).

A fire surrogate study being conducted at the University of Montana's Lubrecht Forest is designed to look at non-fire treatments and the effectiveness to mimic fire.

8-82: See the response to Comments 8-76, 8-80 and 8-84.

8-83: See responses to 8-7 and 8-81 above. The Forest Plan provides specific direction of approved management activities in each of the IPNF's Management Areas. The majority of the project area falls within MA-1 and MA-4, for additional information o n these management areas see the Forest Plan (III-2 thru III-6 and III-17 thru III-22 respectively).

8-84: See responses to 8-47, 8-50, 8-51, 8-77, and 8-80.

8-85: Parts of the research listed and cited does apply to this project as it discusses the tree species present in the project area. However, this list of literature does not address early seral long-lived species that are being promoted for in this project as described in the "Purpose and Need" page 1 of the DEIS or page 4 of the FEIS. This project proposes to increase the presence of long-lived early seral species contributing to the desired diversity, increasing the forest resistance to bark beetle attack and infection by pathogens. Commercial and pre-commercial thinning as proposed for this project are being prescribed for the improvement of growth and yield in the residual stand along with favoring long-lived seral species as leave trees when present.

Proposed silvicultural prescriptions are designed to increase the amount of native western white pine and western larch, which generally are more insect and disease resistant and are long-lived when compared to mid to late seral species (Douglas-fir, Grand fir, and western hemlock).

Additional information on diseases can be found in the FEIS page 135 along with cited research.

8-86: See 7-15 above.

8-87: DEIS (pp. 227-228) and the FEIS (pp. 231-233) identifies reductions in sediment (26 to 66 tons/year for Bussel Creek and 7 to 46 tons/year for Bear/Little Bear Creeks). The DEIS (p 40) and FEIS page 42 identifies reductions of road miles (from 62 miles down to 35 miles) for the project area. The commenter is incorrect stating that "[m]ost of the present road network would remain". The reductions in sediment delivery are consistent with the TMDL and will move Bussel Creek toward full support of beneficial uses. DEIS (p 115) and the FEIS (p.116) identifies that aquatic life viability will be maintained with the implementation of the selected alternative.

8-88: The commenter is speculating on future road maintenance and does not present any specific concerns regarding current road maintenance issues for the project area. See Response 3-22 regarding road maintenance.

8-89: The roads located with in the planning area were looked at through the RAPs process FEIS p. 7, 202). During that process roads in the planning area that are contributing to soil and watershed problems, as well as other concerns were considered. National Forest System roads were purposed for removal, long-term storage and reconstruction. Alternatives B and C analyze for implementing the above proposed activities (FEIS pp. 233-241). The road work was not viewed as driving an alternative (FEIS p. 8).

8-90: Alternatives presented in the FEIS, BMPs identified in Appendix B, removal of 27 miles of roads and proposed LWD placement are all designed to improve conditions and move toward full support of beneficial use (FEIS pp. 223-241). Undersize culverts would be replaced with structures that pass the 100-year event to meet Forest Plan Standards which will reduce the risk of crossing failure (FEIS p. 3410.N).

8-91: We agree that wildfire in the Bussel 484 Project area is inevitable. Wildfires are a random event and it cannot be predicted where or when they would occur. It cannot be predicted how much damage would occur. A purpose and need for the Bussel 484 Project is to maintain or improve resilience of the vegetative resources to disturbances such as insects, disease, and *fire* (FEIS p. 4). The proposed watershed restoration activities would reduce the risks to water quality and fish habitat when that inevitable wildfire occurs (FEIS pp.18, 22, 126-130, 72-117, 223-241). See responses to 8-7, 8-81, and 8-83.

8-92: An opportunity exists to explain the difference between BMP applications and existing road conditions. As a result of this comment, the final document will attempt to reduce this ambiguity (FEIS pp. 213-214, 240-241). The road system under discussion was accounted for in the St. Joe Subbasin Assessment and TMDL. The TMDL and assessment conducted by the Idaho DEQ is a cumulative effect analysis and identifies sediment reductions and stream shade increases that would lead to full support of beneficial use. The project will reduce sediment (FEIS pp.232-241; DEIS pp. 225-228) and will not adversely impact stream temperatures. There may be a slight benefit to stream temperatures in the next 10-30 years as a result of planned riparian planting.

8-93: Please see response above in 8-92.

8-94: Please see response above in 8-92.

8-95: On June 2, 2005, Forest Supervisor for the Idaho Panhandle National Forests signed a Decision Notice and Finding of No Significant Impact that amended the Forest Plan to modify or remove objectives, standards, and monitoring requirements pertaining to fry emergence success (IPNF 2005). There are no longer any fry emergence standards and therefore they will not be addressed further.

8-96: See 8-95 above.

8-97: The validation monitoring (actually all of the monitoring) is done at the forest scale. The monitoring done under Appendix JJ is reported in the forest plan monitoring reports. The DEIS (p. 211) and FEIS (pp. 118, 222) discusses rain-on-snow in NE Idaho and identifies that it is climate driven.

8-98: The Forest Plan no longer has a Fry Emergence Standard; therefore, there is nothing to conform to. The relationship between forest harvest and rain on snow is discussed in the Water section of the DEIS (Water Yield pages 210-211). The fisheries and watershed monitoring items are done and at the forest scale and are reported in the Forest Plan Monitoring Report. Those monitoring items are not project scale monitoring. The cumulative effects section and discussion of the FEIS has been enhanced.

8-99: Watershed cumulative effects include Forest and non-Forest Service activities FEIS pages 229, 237-238, 240 (DEIS p 224-227).

8-100: The DEIS never contends that BMPS will completely control sediment. BMPS are intended to be used to manage non-point source pollution (IDAPA 58.01.02.350) and to minimize adverse effects (40 CFR 232). The effectiveness of the various BMPs is presented in Appendix B (PF: SW-13, 30).

Idaho DEQ (PF: SW-46 2003 letter p. 2) identifies, for waterbodies with a TMDL, that sediment loading from a timber project should have sediment reductions prior to or occurring in the same time frame as the timber project. The sediment budget as presented shows sediment reductions over the same time frame as the proposed timber project (PF: SW-A30, A31, A36; FEIS pp. 232-236,238-239 Tables 3-68 and 3-70).

FEIS page 234 (DEIS p. 221) identifies that for Alternative B, WATSED estimates a 9% sediment increase from road construction (PF: SW-23). After all activities are completed there is an estimated 24% sediment reduction from road recontouring and storage (PF: SW-23). Alternative C would not have this 9% increase from road construction, because there is no road construction it would have 0% increase from road construction. Alternative C also has a 24% sediment reduction because this alternative has the same proposed road recontouring and storage. Also see responses to 8-44 and 8-62.

8-101: BMP monitoring is included in the project file (PF: SW-13, 30). Effects from road construction are included in the analysis (FEIS p 232-238).

8-102: The FEIS (pp, 235-236) analyzes estimated peakflow changes and effect to channel process and form. For additional information please see response to 8-13, 8-15 above. The FEIS (p. 222) states "The level of timber harvest and roading* above Calder, Idaho have not led to a trend in peakflow increases at the St. Joe River gauging station (PF: SW-A7)."
*the words 'and roading' have been added to this sentence in the EIS

8-103: See response above 8-102.

8-104: The FEIS pages 217 and 221(DEIS pp. 206, 210) where it is stated that sediment estimates are for comparison between alternatives; or in the FEIS page 216, (DEIS p. 205) where it is stated that the TMDL and WATSED models are used to estimate a sediment budget. The DEIS does not purport that the values are definitive. The FEIS page 215 (DEIS p. 204) identifies that "[m]odels are used for estimating effects…"). FEIS page 216 (DEIS p. 205) identifies that the TMDL model was used in this "analysis to estimate sediment reductions and compare with the TMDL values."

8-105: The FEIS page 215 (DEIS p. 204) identifies that stream crossing culverts were analyzed for passing the 100-year event which is the Forest Plan Standard. This statement has been added to the FEIS "there is always the potential of inlet blockage and subsequent crossing failure" (FEIS p. 215). The FEIS page 215 (DEIS p. 204) identifies that the project file (PF: SW-A4) contains an estimate of the potential sediment in stream crossing fills. FEIS page 212 (DEIS p. 206) identifies the reduction of risk from crossing removals.

8-106: Not a specific comment to the Bussel 484 Project or its analysis. Effects to watershed and aquatic resources are disclosed in the FEIS (pp. 72-117, 223-241).

8-107: Reference conditions discussions for fish populations and fish habitat elements in the analysis area begins on page 70 of the FEIS (DEIS p. 73), additional discussion was added to the FEIS. Existing conditions discussions/analysis of fish populations and habitat elements for the analysis area begins on page 72 of the FEIS (DEIS p. 75). Additional discussion was added to the FEIS.

8-108: Please see page 64 of the FEIS (DEIS p. 68).

The USFWS (1998) developed a list of indicators and measurement parameters (FEIS p. 65 Table 3-7) which can be used to characterize fish habitat elements and assist in the determination of limiting factors for fish (bull trout). Some of these indicators and measurement parameters are shown in Table 3-7 and are described in the existing condition section. They will not be selected for use in assessing subwatershed or segment condition or for analyzing alternatives quantitatively, because they were not suspected to indicate limiting factors (based on an initial review of analysis area information). There was insufficient historic data for use in meaningful quantitative analysis, because they are elements that would not be altered by any proposed activity, for example, the amount of the watershed at a certain elevation would not be altered by any proposed activity. However, the relative concepts of all indicators shown in Table 3-7 are discussed throughout this report qualitatively (which include references to the soils and water reports) as they relate to the condition of and effects to the fisheries resources.

Indicators and subsequent measurement parameters displayed in Table 3-8 (FEIS p. 66) were selected for use in analyzing the existing condition for limiting factors and determining the effects of the alternatives on the fisheries resource and habitat elements within the analysis area. The indicators and measurement parameters, given the available information, were most useful and objective in determining if there are limiting factors of the fisheries resource in the fisheries analysis area.

8-109: All known human caused fish barriers would be removed in the project area in Alternatives B and C (FEIS pp. 18, 22). Alternative A would not remove the barriers (FEIS p. 13).

8-110: The average westslope cutthroat trout density for the proposed project area is considered to be above average (11-fish/100 square meters)" (FEIS p.74). This information was assessed using data collected in 2002-2004 within the project area stream. No older quantitative data exists.

8-111: The water report on page 225 of the FEIS and page 214 of the DEIS identifies the range of conditions that would be considered "reference" or "natural background sediment levels" for sediment yields based on WATSED and TMDL modeling.

8-112: See response to 6-2.

8-113: Large woody debris are recruited to stream channels naturally and periodical when trees within the riparian zones are able to grow, for sometimes up to 500-600 years, then either die and fall in or are wind blown into streams. Much variability exists in stand, geomorphic and climate dynamics that could factor into timing, abundance of recruitment of LWD. Intact RHCAs gives the riparian vegetation protection to grow more naturally thus creating a natural zone of recruitment that can occur periodically overtime. Given the variability estimating when recruitment would again occur naturally at the levels and dynamics it did historically "reference state" would be impossible to accomplish.

8-114: Pools, in stream channels form naturally and periodical overtime in a verity of ways given geomorphic dynamics. As stated in the FEIS (p. 70), The INFS RMO target objective for pool frequency is only a tool or aid in assisting managers in understanding how much may be typical in some types of streams channels and quantitative goals for attainment of wood. RMO's are not meant to be a "cook book" or viewed as "reference condition" scenario (FEIS p. 62). However, RMOs may give some insight (when historic data does not exist) to what a stream may have looked like pre-management. Intact RHCAs gives the riparian vegetation protection to grow more naturally thus creating a natural zone of recruitment that can occur periodically overtime (FEIS p. 68, 70, 81). Given this scenario wood recruited to stream channel could work hydrologicaly within the channels to form pools overtime.

8-115: (16 USC §1604 NFMA §6 (g)(3) (B)) Requires the USFS to "provide for diversity of plant and animal communities". It dose not state "viable populations of native fish species".

"Species Diversity and Distribution on the IPNF" is discussed on page 116 of the FEIS.

8-116: See responses to 8-7, 8-81, 8-83, and 8-91.

8-117: The effectiveness of the rehabilitation of firelines on the Elm Street Fire has not been monitored. The rehabilitation of the fire lines was conducted in September of 2007, so there has been insufficient time to evaluate the effectiveness of the rehabilitation.

8-118: The statement "Fire behavior characteristics such as rate of spread and fire intensity were predicted and utilized to plan and prioritize suppression efforts." (DEIS p. 61) is a typographical error. The phrase "…plan and prioritize suppression efforts." should have read "…plan and prioritize fuels treatments." Behave Plus 3.0.2 was used in the DEIS but the analysis using that model was replaced in the FEIS by the FFE-FVS analysis (FEIS p. 120). The FFE-FVS analysis is focused on the effects of individual types of harvesting in combination with activities assigned to remove or rearrange activity fuels generated by the harvest activities.

The Affected Environment section of the fire and fuels analysis states:

> "Current stand conditions in stands that have had little or no human management are generally thought to be trending toward higher probabilities of stand-replacing fires (crown fire) than they would have prior to the influence of European settlement (Zack and Morgan, 1994; Brown, 2000). The reduction of low and/or mixed-severity fire occurrence, selective logging of old fire resistant trees, climatic influences, and wide spread mortality of western white pine due to blister rust have contributed to this trend (Zack and Morgan 1994)."

8-119: The statement referred to from page 63 of the DEIS was a supposition based on personal experience and is unsupported by empirical data and has therefore been stricken from the FEIS. Furthermore, the regenerated stands referred to in the DEIS are no longer thought to be barriers to fire spread. This is apparent in the discussion of timber harvest and wildfire potential in the Fire and Fuels Analysis of the FEIS (pp. 122-123) which states:

> "The effects of regeneration establishment are apparent in the probability of torching projection for the regeneration harvests (FEIS p. 123 Figure 3 PF: FF3). As regeneration becomes established, around 2017, the model shows a sharp increase in the probability of torching even though flame lengths are decreasing. The decrease in flame lengths is due in part to decomposition of fuels, but most likely to the reduction of surface wind speed due to the establishment of canopy. The probability of torching increases because of the increased area having trees with crowns near the ground that are also considered the primary overstory. This pattern is consistent with discussions severe burns in young post disturbance stands reported by Zack and Morgan (1994) and Thompson and others (2007) that were attributed, in part, to the short, dense, and continuous crown cover of the artificially planted or naturally regenerating forest*."*

8-120: In the discussion of timber harvest and wildfire potential in the Fire and Fuels Analysis of the FEIS (p. 126), the effects of naturally closed canopies are disclosed. "*The proposed harvest and subsequent activity fuel reduction would affect potential fire characteristics within the treated stands by removing and rearranging existing live and dead fuel loads and by changing the influences of wind, temperature, and relative humidity within the harvested stands (Countryman, 1955; Graham and others, 1999; Graham and others, 2004)."* The results of the FFE-FVS analysis also recognize this fact and discuss the potential surface flame lengths, probability of torching, and crowning index, of the proposed harvesting activities and the no action alternative (FEIS pp. 128-129).

8-121: The purpose and need does not in any way infer that the replacement of natural processes, such as fire, is an objective of the project or is even desirable. The first purpose stated for the project is to "*Manage the vegetative resources to maintain or improve resilience to disturbances such as insects, disease, and fire*" (FEIS p. 4).

8-122: The statement "What field data do you have to base this conclusion of "old, open overstory" being the reference conditions?, is tied to the following research: (DEIS p.121; FEIS pp. 135-136): Throughout the Interior Columbia River Basin there has been substantial reduction of older forest structures compared to historic structures (Quigley and others 1996). Over approximately the last 100 years this reduction ranges from 27 to 60 percent from historic levels, depending on the forest type. The *Assessment for Ecosystem Management of the Interior Columbia River Basin* indicates that forest composition and structures have become more homogeneous compared to historic conditions. Within the St. Joe River Basin, as well as within the Bussel 484 Project Area, there has been a shift from historic conditions to a more homogeneous structure and species composition. In addition on page 136 of the FEIS Table 3-40 (DEIS p. 122 Table 3-41) shows the size class distribution comparison of historic condition and current conditions. This table is based on the "Integration of Forest Planning Into Ecosystem Management" (July, 1977) document and can be found in the project file.

8-123: The statement, "Stand structures in the Bussel 484 Project Area include a few stands that have an open overstory of moderately old, large trees with an understory of younger, smaller trees," is based on field reviews and observations of stand conditions by the silviculturist FEID p. 136). This statement relates to observations of how stands developed following mixed severity fires in the Bussel 484 project area.

8-124: The historical condition in this project area was generally even-aged, one- and two-storied stands of moderate to large area" is based on observations made during field visits and is a reflection of the stand exam data that can be found in the project file (V-1).

8-125: The St. Joe Ranger District (South Zone) fiscal year 2008 (FY 08) timber target is approximately 25% of the Timber Target of 49 MMBF. The FY 08 timber target for the Coeur d' Alene River Ranger District (Central Zone) approximately 25% and for the Bonner Ferry, Priest Lake, and Sandpoint Ranger District (North Zone) is 50%. Also see response to 2-1 and PI-85.

8-126: Alternative A would leave the railroad grade in its existing condition (FEIS pp. 13, 170). Alternative C proposes to limit the ATV use to a portion of the grade (FEIS p. 18). Both Alternatives B and C propose closing the Incline Railroad to full size vehicles and ATVs FEIS pp. 17, 21, 173). See response to 4-6 above.

8-127: Damages to the forest via increase in ATV use were measured using changes to conditions and are not described in financial or economic terms for this project (FEIS p. 61)

8-128: Project file citations have been added to the FEIS and the details regarding itemized cost and benefits can be found in project file document E-2 (FEIS p. 61).

8-129: Under Existing Access in Table 3-45 (FEIS p. 167), all 28.41 miles are accessible and legally open to vehicles < 50". There are road segments that have legal restrictions; however, these restrict full-size vehicles from using certain routes, providing a designated ATV route. Alternatives B and C restrict ATV use to 13.97 miles. Designating routes open to ATV use is consistent with the 2005 Travel Management Rule.

8-130: Driving for pleasure, using full-size vehicles and ATV's, is a popular activity in the project area. ATV/OHV use is a valid recreational use of National Forest lands. Providing maps and clearly designated and signed routes, which is the goal of the 2005 Travel Management Rule, will assist Law Enforcement personnel in enforcement of road closures and educate the public in where it is legal to operate motorized vehicles.

8-131: See response 7-32 above.

8-132: See responses 7-31 and 7-32 above.

8-133: ATV use is a valid recreational use of National Forest lands and eliminating this use is not an acceptable management option. See response to comment 7-32.

8-134: Analysis of snowmobile use in the project area is not part of the purpose and need and is not part of this analysis (FEIS pp. 4-5)

8-135: The Bussel 484 Project is consistent with the 2005 Travel Management Rule by proposing the designation of roads, trails, and areas that are open to motor vehicle use within the Bussel Creek area. Proposals can be found under the Access Management sections in the FEIS pages 21-29. These proposed designations would be incorporated into the St. Joe Ranger District Travel Management Plan which is being completed under another process.

8-136: The FEIS does take into account past activities and their effects, for the location in the FEIS refer to response 7-15 above.

8-137: The Bear Bussel Roads Analysis Process (RAPS) was completed in 2004 project file documents PD-3 and PD-4. In 2005 that RAPS was reviewed more specifically for the Bussel Creek area and another RAPS for was completed for the Bussel 484(PF: PD-31). The public has several opportunities to comment on the proposed road changes as described in the introduction and scoping and public involvement sections of the FEIS, page 7.

8-138: A statement has been added to Chapter 3 of the FEIS, page 48 under the "Tree Planting" paragraph, to address this comment.

8-140: The discussion of FOFEM outputs on page 64 of the DEIS was removed because the FFE-FVS analysis conducted between the DEIS and FEIS estimated effects on fuel loading and fuel consumption over time based on stand data from stands within the analysis area FEIS pp. 121-130). The use of the FFE-FVS incorporates a stand growth simulator that accounts for vegetation succession (FEIS pp. 9-120).

8-141: Yes, the costs associated with artificial regeneration include gopher control where it is determined to be necessary. Only acres considered "suitable for timber production" are being proposed for treatment (FEIS p. 1 Table 1-1, Map 16).

8-142: The use of lopping, and all other fuel treatments, was determined on a stand by stand basis by considering factors constraining the removal of fuels from the stands. As described in the FEIS (pp. 119-120), "*Prescribed fire and fuels treatments are based on existing and desired stand conditions, the proposed harvest and regeneration activities, and the fire history of the analysis area. Proposed treatments were developed to facilitate the achievement of the desired condition over time. Considerations included predicted post-harvest stand composition, stand size class, stand structure, estimates of existing fuel loads, calculated predictions of potential fuel loads, and qualitative estimation of potential fire effects based on modeled trends in fuel loading and literature review."* Needs for on site retention of nutrients in the foliage and fine twigs of the harvested was also an important consideration FEIS p. 175-176, 183, 185-188, 191,195).

Simulated burning of lopped slash fuel models in FFE-FVS resulted in reduced flame lengths when compared to the same fuel models that were unlopped (FF-12). Jerman and others (2004) demonstrated that purposefully reducing fuel bed depth by compressing slash after harvesting in a southwesten ponderosa pine stand reduced flame lengths and mortality compared to uncompressed slash during prescribed burning. The experiment conducted by Jerman and others (2004) utilized a small bull dozer to reduce the depth of the slash in their experimental units. We are proposing to reduce the depth of slash in harvesting units to no more than 1.5 feet by physically severing and scattering limbs from the stems of tops that are left in the units. Undocumented personal observations indicate that winter snow loads would further compress the slash. It has been noticed (but unfortunately not documented to our knowledge) that fuels in contact or nearly in contact with the duff or soil on the forest floor typically have higher moisture contents than fuels that are elevated above the forest floor. It is presumed that fuels in close contact with the forest floor are more readily available to soil organisms that are responsible for the decomposition of litter and wood.

8-143: In the FEIS on page 140 through 144 (DEIS pp. 126-129) addresses the species preferences and residual stand structure desired as the residual stand. Some examples include the following statements: "The commercial thinning would maintain and/or increase the percent of long-lived, shade intolerant species in stands proposed for intermediate treatment in both Alternative B and C. There would be a slight increase in early seral representation, predominantly western larch, on approximately 1,122 acres where these species are present but are a minor stand component"; "The seed tree cuts and clearcut w/reserves in Alternative B and C would regenerate 144 acres currently occupied by grand fir and Douglas-fir with potentially long-lived seral species, primarily western larch and western white pine"; and "This harvest treatment would remove smaller trees and favor retention of larger diameter and more vigorous trees. This treatment would increase individual tree growth and vigor. This would result in developing mature/large-sized trees over a shorter time frame than would be expected with no treatment."

8-144: All literature cited within has been reviewed, results of that review can be found in project file document PI-97.

Letter #9 – C. Reichgott, Environmental Protection Agency: April 21, 2008; received April 22, 2008

9-1: Both permanent and temporary roads were analyzed in the logging and road systems. It was determined that there was a need for long-term specified road construction to meet future and recurrent management needs. Temporary roads will be built in lieu of building specified roads in areas were they are not necessary for long term resource management. This was added in chapter 3, pages 202-207 of the Transportation section. The criteria shown in the FSM 7700 and is listed in the Regulatory Framework. The FSM states that roads are not needed for long term resource management can be temporary roads.

9-2: Unit 248 is a commercial thin unit so reentry is planned (FEIS pp. 15, 22). The ground conditions in Unit 248 are broken and ground-based extraction can not be done as easily as the contours on the mapping indicated. By constructing roads in to Unit 248 suspension logging systems can be used and the road system would be used for the second entry at a later date. The roads are considered needed for the long-term management (RX C) (FEIS p. 25) of this area (FEIS, p. 7, PF: PD-4, PD-20, PD-21).

9-3: Design features 9.C. and 9.D. in the FEIS are designed to help deter illegal use. Also see responses to 7-32 and 8-130 above**.**

9-4: ATV use would occur mainly on existing roads. The effects from existing and proposed roads are discussed in the FEIS (p. 232-239). There are two proposed new trails for ATV use.

One of the proposed ATV trails utilizes the old railroad grade that exists in Norton Creek. This railroad grade does not encroach on the stream channel of Norton Creek but there would be one crossing of Norton Creek. No determination of what this crossing will entail has been made, but under consideration is a bridge, an arch pipe, or a hardened ford. The goal with the new crossing would be to minimize any delivery of sediment to the stream.

The other proposed ATV trail would involve new construction to link two existing roads together (Rd 1901 and Rd 3509A). The maps in the FEIS that displays this section of trail just shows a line on the map(FEIS Appendix A Map 8 and Map 9). The actual location will not be within the RHCA buffer so there will be no encroachment of any stream channel.

The potential effects of ATV use in the project area are measured in disturbance/access section of wildlife analysis (FEIS pp. 256-258) where motorized use of trails and road is discussed and effects displayed. The potential effects of motorized trails are also included in the analysis of potential effects on elk i.e. "…approximately 65.3 miles of road and trail affect potential elk use…" (FEIS p. 266). Additional explanation that motorized trails were included in the elk analysis was added to the FEIS (pp. 264-265).

9-5: The long time-frame identified in the FEIS for proposed riparian planting is our estimate of the latest the planting may be completed. It is very likely that planting will be completed sooner. It is possible that some plantings could occur in 2008, because the St. Joe R.D. watershed program has 5000 spruce trees available to plant this year.

Letter #10 – J. Wesley Goodwin; April 26, 2008

10-1: See responses 4-1 and 4-10 above.