Appendix M
Final Environmental Impact Statement
Tripod Fire Salvage Project

Reponses to Comments

Introduction

A 45-day comment period for the Tripod Fire Salvage Project Draft Environmental Impact Statement (DEIS) was provided for interested and affected publics, including appropriate local, state, and federal government agencies, and Tribes. The comment period began with a Notice of Availability in the Federal Register on June 1, 2007. A Public Notice of Opportunity to Comment was also published in The Wenatchee World Newspaper on June 6, 2007. The DEIS was sent or made available to over 300 individuals, organizations, and agencies, as well as to the Confederated Tribes of the Colville Reservation and the Yakama Nation. The DEIS was made available electronically on the Okanogan and Wenatchee National Forests web site at www.fs.fed.us/r6/oka/projects/tripod-salvage.shtml, under Methow Valley Ranger District Projects. A public meeting was held on June 14, 2007, during the comment period, in order to answer questions and take comments on the DEIS. Comments received at this meeting were subsequently incorporated into the written responses received. The 45-day comment period ended on July 16, 2007. 218 responses (and several untimely responses) were received in response to the DEIS. Information received from these sources of public involvement was reviewed by the Interdisciplinary Team (ID Team) to help develop and refine this Final Environmental Impact Statement (FEIS).

The ID Team reviewed the letters with comments on the DEIS and addressed each substantive comment provided. The second part of this Appendix responds to the comment letter from Conservation Northwest. The first part of this Appendix responds to all other comments. The Council on Environmental Quality's implementing regulations permit summarization of comments where a large number of letters are received in response to the DEIS. This first part summarizes and combines comments and responses for similar comments. All letters received, plus comment database information on substantive comments is contained in the project file. Comment letters received from elected officials, and Federal, State and local agencies are published as part of Appendix N of this FEIS.

Reponses to Summarized Comments

This section contains summarized responses from all comment letters on the DEIS except the Conservation Northwest Letter, that follows in the next section.

Air Quality

Air Quality Comment 1

Since you first began this project, new important information has come forth regarding the severity of climate change and the emergency that we are in to stop carbon emissions to the atmosphere. Logging is a significant emitter of carbon to the atmosphere and should not be done. In addition, I am attaching a paper that says that it was not FS practices that caused the increase in fires in recent years but climate change. You need to adapt your practices to reflect this new information and to adapt to this emergency.

Response
Information on climate change, its impacts on air quality and logging generated carbon emissions has been added to the FEIS, Chapter 3.11, Cumulative Effects. Climate change forecast models are not accurate at the Tripod Project level or even the Okanogan & Wenatchee National Forests scale, therefore, it would not be meaningful to analyze the effects of climate change for the Tripod project scale.

Alternatives

Alternatives Comment 1

I request you adopt a modified Alternative C (avoiding lynx habitat) that protects large-diameter live and dead trees, and treats with prescribed fire the fine fuels generated by logging activities.

Response
Alternative E, which would not salvage harvest trees greater than or equal to 21" DBH has been added to the FEIS in Chapter 2 (Alternatives Considered in Detail) and analyzed in FEIS Chapter 3. An alternative that treats with prescribed fire the fine fuels generated by logging activity has been added to the FEIS , Chapter 2, Alternatives Analyzed but Eliminated from Detailed Study. Specific combinations of alternative elements, for example; avoiding lynx habitat and not salvaging large diameter trees are not required to be analyzed

individually. A decision can be made on specific elements as long as they are within the range of what has been analyzed.

Alternatives Comment 2

The preferred alternative leaves too much timber unsalvaged, we should be salvaging more timber. There are lots of roadside trees that can be easily salvaged.

Response
DEIS page 2-2 to 2-3 describes the process used to identify the portions of the Tripod Fire Area that would be considered for salvage harvest. DEIS page 2-5 identified areas that would not be salvaged due to resource values or Forest Plan direction. Alternative D, described in the DEIS pages 2-14 to 2-16, addressed the key issue of economics by providing an increased amount of salvage timber that would be available to local and regional economies. The DEIS also considered the following alternatives, but eliminated them from detailed study: 1) Maximize timber recovery, 2) Salvaging in Blue Buck Creek, 5) Harvesting live green trees, 6) Salvaging trees greater than 28" DBH, 7) Salvaging fire injured trees with moderate probability of survival, 10) Salvaging in IRAs, and 15) Salvaging in Riparian Habitat Conservation Areas (DEIS pages 2-35 to 2-40). All action alternatives propose that a portion of the roadside danger trees felled outside of RHCAs could be removed as firewood or other forest products (DEIS page 2-6).

Alternatives Comment 3

The Blue Buck Creek area has a lot of high value material to harvest.

Response
An alternative was considered but not analyzed in detail that would have salvaged timber in Blue Buck Creek (DEIS page 2-36).

Alternatives Comment 4

The diverse interests group came up with a project that proposed to cut trees less than 21" DBH, that didn't enter lynx habitat.

Response
The Collaborative Action Team alternative was considered but not analyzed in detail (DEIS page 2-37 to 2-38).

Alternatives Comment 5

We ask that a non-commercial logging restoration alternative be analyzed, since the no-action alternative is not a restoration alternative.

Response
The comment is not clear on what kind of restoration should be considered. An alternative was considered but not analyzed in detail that would actively restore riparian areas and wildlife habitat (DEIS page 2-39). BAER actions (DEIS, Appendix L) include road and hillslope treatments to minimize the potential for elevated or concentrated surface runoff, mass erosion and sediment delivery. The purpose and need for this project is economic recovery, danger tree removal and reforestation. Restoration is not part of the purpose and need for this project and is outside the scope of this analysis.

Alternatives Comment 6

Consider restoration mitigation measures to maintain and improve watershed health.

Response
The comment is not clear on what mitigation/restoration measures should be considered. BAER actions (DEIS, Appendix L) include road and hillslope treatments to minimize the potential for elevated or concentrated surface runoff, mass erosion and sediment delivery. Salvage harvest mitigation measures for hydrology, fisheries and soils are listed in DEIS pages 2-18 to 2-24. The purpose and need for this project is economic recovery, danger tree removal and reforestation. Restoration is not a part of the purpose and need for this project and is outside the scope of this analysis

Economics

Economics Comment 1

Why has the area being considered for salvage harvest decreased substantially from the original scoping letter?

Response
The original estimate of 30,000 acres of potential salvage harvest presented in October 2006 was a preliminary estimate based on a cursory mapping exercise with limited information available. The scoping package of January 5, 2007 included a proposed action map and summary which indicated up to 6500 acres of potential harvest. This proposal included many areas of low volume stands, steep, broken ground unsuited to tractor or skyline equipment and yet of insufficient volume and value for economically viable helicopter logging. The Alternative Development Process (DEIS p 2-3), Description Elements Common To All Action Alternatives (DEIS p 2-5) and Alternatives Analyzed but Eliminated from Detailed Study (DEIS p 2-35 to 2-43) and the Analysis Method (DEIS p 3-14) describe the methodology used and considerations made in determining the areas included for potential salvage harvest.

Economics Comment 2

The intent to provide an economic return to the government is an inappropriate objective for this project. Recovering economic value is the issue that should be addressed in the FEIS.

Response
The Final EIS was updated in the Description of the Proposed Action (Purpose and Design) in Chapter 1, and Alternative B - Proposed Action (Purpose and Design) section of Chapter 2 to clarify the intent to recover salvable sawtimber that has a positive net value.

Economics Comment 3

What is the real economic value of salvaged timber from helicopter units? And what would it cost the government to accomplish the removal of helicopter sawtimber if not offered as part of a salvage sale but instead accomplished using appropriated funding?

Response
The value of sawtimber harvested using helicopters has been revised in the Final EIS, Chapter 3.1 Economics, to reflect the minimum rates required in a timber sale offering. The purpose and need is to recover sawtimber while the trees have economic value and so the removal of helicopter volume would only occur if it contributes to meeting that objective.

Economics Comment 4

Salvage values are not worth further damage of the ecosystem.

Response
The recovery of economic value from the Tripod Fire area was designed to accomplish the harvest of sawtimber consistent with the Okanogan Land and Resource Management Plan and amendments and adheres to all Washington State and Federal laws and regulations and includes measures necessary to mitigate environmental effects (DEIS pages 2-5 to 2-35).

Economics Comment 5

Trees over 21 inches in diameter provide only 18 percent of the volume. If those trees were not harvested the value could be made up for by reconfiguring sale units and offering more economical logging opportunities.

Response
Fire-killed and damaged trees over 21 inches DBH identified for harvest make up about 18 percent of the sawtimber by volume but contribute a third or more of the total value. Alternative E of the Final EIS presents a harvest proposal that includes the same acres and logging systems as Alternative B but does not include the harvest of trees 21 inches DBH and larger.

Economics Comment 6

The economic analysis only looks at short term economics and should disclose the long term costs of future fire fighting due to leaving so much fuel in the forest.

Response
The economic analysis is meant to show comparisons of sawtimber recovery value between alternatives. As to the long term costs of not treating fuels within the fire area, there currently isn't a definitive study of the long term benefits of salvage logging as a fuels treatment following a large-scale fire event and attempting to assess the costs of an uncertain future wildfire event and its related suppression would be very difficult. An analysis of the short term effects on reburn hazard and resistance to control following salvage logging is found in Chapter 3.10 Fuels and Fire Behavior (DEIS p 3-327 to 3-328).

Fish/Hydrology

Fish/Hydrology Comment 1

Other than danger trees, no harvest is planned in riparian areas. Doing nothing and leaving all of the potential snags and existing fuel loads creates a substantial problem…. These riparian areas will become fuel corridors linking watersheds and providing "wicks" for the inevitable next generation of fires. The EIS and alternatives must not remain silent on this issue and consequence of doing nothing.

.....leaving all trees in RHCAs will cause riparian areas to burn very intensely in the next fire. It would be valuable to remove some of the dead trees in these areas.

Response
Design criteria for RHCAs listed on DEIS, pages 2-18 and 2-19 are designed to meet Forest Plan standards and guidelines and PACFish Riparian Management Guidelines enumerated in the Regulatory Framework section of 3.3 Fisheries/Hydrology starting on DEIS 3-138. These design criteria and mitigation measures include restricting salvage or removal of snags within the RHCAs to protect stream and riparian values. Due to the design criteria and mitigation measures, all of the alternatives are consistent with the Forest Plan as amended by PACFish (DEIS, pages 3-198 and 3-199).

Currently, estimated post-fire coarse woody debris (CWD) fuel loads are well below the optimum recommended range, and resistance-to-control is non-existent to very low (DEIS, pages 3-316 and 3-317 and Figure 3.10-4). Modeling wildfire in all action alternatives indicates that reburn occurring in the short term (about 15-20 years) in salvaged areas under the action alternatives would have the same impacts on developing stands as under Alternative A. The similarities in tree establishment (by planting or natural regeneration) and small woody fuel loads within and outside salvaged areas would likely result in similar fire behavior and fire effects (i.e. high mortality) regardless of salvage (DEIS, page 3-327). It is

reasonable to assume that potential reburn effects in RHCAs would be similar for the same time period, i.e. no difference between treatment and no treatment. Resistance-to-control ratings for the project area for no-action and all action alternatives are shown in DEIS Figure 3.10-9. As pointed out, from a landscape, project wide perspective, resistance-to-control would change very little as a result of salvage. However, at the 30-year projection, treated areas would move to a low resistance-to-control. So, while treating RHCAs might have the effect of reducing resistance-to-control in treatment sites, it would not reduce reburn potential over the fire area.

Fish/Hydrology Comment 2

This is not an acceptable project because it will likely degrade the watershed.

Response
The effects of action alternatives to watershed condition are discussed at length in EIS Chapter 3.3 Fisheries/Hydrology.

Fish/Hydrology Comment 3

Don't log in fragile watersheds. Logging near streams and rivers causes siltation, raises water temperature, and degrades water quality. The DEIS predicts that all of the watersheds which have been analyzed are at risk from road building and sediment loading….

…logging will harm these fragile watersheds. The DEIS states that all watersheds analyzed for the project are functionally at risk due to sediment delivery, lack of large woody debris and road densities……

Protect, don't log in fragile watersheds. Streams and water courses in the burn area are in need of restoration, not logging. Watersheds are functioning at risk for sediment delivery and road densities. Watersheds are functioning at risk for lack of large wood as well. We should be analyzing what actions we can take to restore and improve conditions in these areas, before creating greater disturbance…….

We are concerned over the extensive miles of roads that are proposed for timber haul. All watersheds of the project area are functioning at risk or functioning at unacceptable risk for road densities. In addition, all watersheds are FUR or FAR for sediment/substrate.

Response
As mentioned in the DEIS, pages 2-18 and 2-19, RHCAs would be identified and mapped prior to implementation, and no salvage harvest would occur within RHCA boundaries. Other design criteria that would be employed to provide for stream and riparian protection are also listed here, including actively restoring landings within RHCAs, and deploying erosion control measures where needed to protect RCHA (DEIS, pages 2-19).

During development of the Proposed Action, salvage in Blue Buck Creek was considered, but removed from consideration in order to avoid impacts to threatened bull trout population, highly-damaged soils, and hydrologic function (DEIS, page 1-22).

As displayed in DEIS Figure 3.3-5, the current conditions of some watersheds are functioning at risk or functioning at unacceptible risk for large wood, sediment delivery and road density. However, large woody debris in RHCAs is expected to increase largely due to the effects of the fire, while design criteria would help maintain the increase (DEIS page 3-181 and Figure 3.3-29).

There would be no new system road construction due to alternative implementation. There would be temporary roads constructed to access landing sites and allow landings to be less visible from roadways. These would typically be less than 500 feet in length and they would be decommissioned after use. Further, currently closed system roads that are opened would be closed following activities, and there are about 7 miles of currently opened road that would be closed following implementation (DEIS 2-12). Road system effects concerning watersheds are further discussed in Chapter 3.3 Fisheries/Hydrology. Action alternatives would essentially result in no net change in total road densities (3-184). There would be an increase in erosion during project implementation (years 1-5) due to hauling on roads as discussed on DEIS page 3-186 and displayed in DEIS Figure 3.3-22. However, this should be compared to the overall sediment delivery resulting from the fire for the same period. As mentioned on DEIS page 3-187, the difference in accumulated sediment delivery between no action and the action alternatives is roughly 0.3%. Along these same lines, DEIS Figures 3.3-23 and 3.3-25 illustrate that the overwhelming majority of the sediment delivered to the stream network for the life of the project occurs in the first three years and is predominately a result of the fire, not project activities.

Fish/Hydrology Comment 4

Logging in the hot summer months is the worst thing that we can do …problems with stream sedimentation.

…….Temporary roads and disturbance from heavy machinery and logging will only increase … run-off. … run-off lowers water quality for fish.

Response

A thorough discussion of erosion, sediment, and their effects on fish habitat is located in Chapter 3.3 Fisheries/Hydrology. The potential interaction of fire and the aquatic environment, roads and the stream network, water quality, sediment delivery and stream temperature are discussed in the Affected Environment section, DEIS pages 3-148 to 3-154. Predicted effects of the no action and action alternatives are discussed and displayed in the Environmental Consequences section. Specifically, as discussed in this section and displayed in Figure 3.3-29, stream temperature is expected to increase as a result of the fire, but there would be no additional changes resulting from alternative implementation. Surface

runoff is expected to increase as result of the fire with only minor additional increases resulting from alternative implementation. However, these small increases in runoff are not likely to be detectable with any confidence. Similarly, there will be increases in sediment delivered to streams as a result of the fire, but again, alternative implementation would result in a very small increase in sediment delivery to stream networks, and an even smaller percentage delivered to spawning habitat. Further, much like surface runoff, increases in sediment delivered to stream networks and spawning habitat resulting from alternative implementation are not likely to be measurable with any confidence.

Fish/Hydrology Comment 5

Under Fisheries, temperature, large woody debris, water yield and loss of uptake by trees are all negatively affected by Alternatives B,C & D

Response

Potential effects to temperatures, and runoff are discussed above. As discussed in Section 3.3, Fisheries/Hydrology under Effects Common to All Action Alternatives, there would be an increase in large woody debris in RHCAs as a result of the fire. Further, there would be no salvage or removal of LWD in RHCAs resulting from action alternatives, so there would be no decrease in LWD resulting from implementation of the action alternatives.

Fish/Hydrology Comment 6

Runoff in Salmon Ck. Watershed is 90 acre ft. in the 1st year, then stabilizes at <30 acre ft. after 5 years (3-179). This suggests not touching burned areas in watersheds.

Response

The chart referenced in the comment (DEIS, Figure 3.3-16), displays the predicted surface runoff for the Salmon Creek subwatershed under Alternative A (no action). First year surface runoff values (approx. 90 acre-ft.) represent the increase in runoff expected resulting from decreases in evapotranspiration and ground cover as a result of the Tripod Fire. As vegetation recovers, both evapotranspiration and ground cover increase, resulting in modeled decreases in surface runoff displayed in Figure 3.3-16.

Changes in surface runoff resulting from alternative implementation are displayed in DEIS Figure 3.3-18. As discussed and displayed, implementation of any of the action alternatives would result in less than a 1% predicted increase in surface runoff for the project area, and that this small predicted increase would not likely be detectable with any confidence.

Fish/Hydrology Comment 7

WEPP predictions, presented as average annual estimates are inappropriate. As the impacts of the various logging alternatives are run in the model, an inaccurate estimation of sediment would emerge that could underestimate changes in sediment production by 25 times.

Response
Discussion of the methodology used for WEPP model runs is discussed on DEIS pages 3-146 and 3-147. The erosion values used for analysis are the 6 year return period results (which correspond to the 5th largest erosion values for the model run), not the average annual estimates. Using the 6 year return period values captures larger climatic events that have a low probability of happening on a yearly basis. Included in this section is a discussion of the potential variability of modeling results.

Forest Vegetation

Forest Vegetation Comment 1

Unfortunately, the remainder of the DEIS does not include "removal" of danger trees. Specifically the proposed action calls for, "Roadside Danger Tree Removal Roadside danger trees would be felled along 47 miles of open roads within the project area to improve safety for road users." The FEIS should address felling and removal of the roadside danger trees.

Response
DEIS page 2-6 states, "A portion of the danger trees felled outside of RHCAs would be removed as firewood or other purposes." Danger tree felling and removal are clarified in the FEIS, Chapter 2 (Mitigation measures and Design Criteria Common to all Action Alternatives, Transportation) and FEIS Appendix F was clarified for this topic. Roadside danger trees would be felled along Forest roads open for public use and roads temporarily opened during implementation of project activities. Danger trees located along open roads within riparian habitat conservation areas (RHCAs) and the Roger Lake Research Natural Area (RNA) would be cut and left to provide coarse woody debris. Danger trees felled outside of RHCAs and the Roger Lake RNA would be available for removal as firewood or other forest products where economically feasible. Tracked or wheeled equipment used to remove danger trees would not be permitted to operate off of roads.

Forest Vegetation Comment 2

We are concerned that the provisions for "roadside danger tree removal" not be used to artificially boost the volume of timber sales, to the detriment of the recovery of the project area. --a Forest Service silviculturist, pathologist, or technician with adequate training should be the one to determine trees with "imminent potential to fall".

Response
Roadside danger tree removal criteria are clarified in the FEIS, Chapter 2, Mitigation Measures and Design Criteria Common to All Action Alternatives (Transportation section) and Appendix F of the FEIS. Roadside danger trees will be identified and evaluated according to the process described in the Field Guide for Danger Tree Identification and Response, Pacific Northwest Region, 2005 (USDA 2005 and USDA 2005a). Qualified persons will identify and evaluate danger trees as required by the field guide. A qualified

person is defined as a person who has knowledge, training, and experience in identifying danger trees, their potential failure zones, and measures to eliminate the danger.

Forest Vegetation Comment 3

Retaining so many dead and dying trees will attract insects. The Tripod area will become an insect center and will then infect adjacent green stands. The EIS should disclose these effects.

Response

Post-fire insect effects are disclosed in the FEIS, Chapter 3.5 Forest Vegetation, Tree Mortality section and the Cumulative Effects section. The Tripod Fire burned a very large area, creating a substantial effect on forest insect habitat in the fire and project areas. Trees that survived the fire will be susceptible to attack by tree-killing bark beetles for up to four or five years after the fire. Surveys conducted after the 1988 fires in Yellowstone suggest that bark beetle population levels can increase in fire-injured trees and then spread into uninjured trees (Amman and Ryan 1991 and Rasmussen et al. 1996). Douglas-fir beetle populations in the Tripod Fire and project areas have the greatest potential for buildup in fire-injured trees and subsequent attack and population expansion in adjacent unburned areas (Mehmel 2007). Susceptible host trees in unburned areas located within one quarter to two miles of bark beetle infestations in the fire area could potentially be attacked. Due to the very large size of the Tripod Fire, none of the alternatives or any amount of salvage harvest that could be practically applied would reduce the likelihood of bark beetle attacks in unburned adjacent forest stands.

***Forest Vegetation* Comment 4**

Under NO ACTION alternative, 75% reforested in < 10 years & remaining 25% reforested in 20-30 years (DEIS 3-235), so salvaging timber to allow for reforesting is not improving the situation.

Response

Effects of tree planting and natural reforestation in the proposed action are disclosed in the DEIS pages 3-237 to 3-239. As a point of clarification, salvage harvesting would not be conducted to ensure or accelerate the rate of reforestation in the project area. Reforestation of salvage harvest units, however, is required within five years after completion of harvest by the National Forest Management Act of 1976. Tree planting in the proposed action would ensure the establishment of regeneration within 10 years after the fire on approximately 4% of the project area. The majority of tree planting would occur in the 25% of the project area that would require 20 to 30 years to regenerate naturally without disturbance after the fire.

Forest Vegetation Comment 5

Under alternative C, salvage harvest on 2247 acres, tree planting on 1533 acres and natural reforestation on 714 acres with 80-100 vigorous trees per acre, but NO CEDARS PLANTED!

Response
Reforestation design criteria common to all action alternatives, including Alternative C, are described in the DEIS on pages 2-25 and 26. Tree planting recommendations for the project are described in the DEIS, Appendix F, page F-8. Cedar seedlings would not be planted in Alternative C, and other action alternatives, because salvage harvesting would not occur on sites where cedar trees were known to be growing prior to the Tripod Fire. Moist sites, including riparian habitat conservation areas, where cedar trees would be expected to grow would be excluded from harvest in Alternative C and other action alternatives in the Tripod Fire Salvage Project.

Forest Vegetation Comment 6

The FEIS should include the methodology used to determine a danger tree and an estimate of how many trees would be removed under this separate purpose and need. What is the buffer used alongside roadside for roadside danger trees? How many acres will be treated for this purpose?

Response
Roadside danger tree removal criteria are described in the DEIS, pages 2-6 and 2-31, and in Chapter 2, Mitigation Measures and Design Criteria Common to All Action Alternatives, Transportation section and Appendix F of the FEIS. Roadside danger trees will be identified and evaluated according to the process described in the Field Guide for Danger Tree Identification and Response, Pacific Northwest Region, 2005 (USDA 2005 and USDI 2005a). Danger trees in the imminent potential to fail category with potential failure zones that include a Forest road open for public use or a road temporarily opened during the implementation of salvage harvest and post-harvest activities would be felled.

As a general rule, the potential failure zone will include the area located 100 feet slope distance above and below the road. The gross area alongside roads that could be treated by danger tree felling in the project area is estimated at 1,100 acres. Recall that only trees with imminent potential to fail would be felled within this area. Tree mortality levels vary widely along roadsides and the economic value of the majority of danger trees will have deteriorated greatly by the time they are felled. Most of the danger trees that would be felled during implementation of the proposed action would not be removed from the forest. The estimated area where felled danger trees would be removed from roadsides is approximately 20% of the gross area or 220 acres. The majority of roadside danger tree material removed would be in the form of firewood, posts and poles, and possibly house logs. Detrimental soil disturbance caused by the removal of felled danger trees would be negligible because tracked or wheeled equipment used to remove danger trees would not be permitted to operate off of roads. Effects of danger tree removal are disclosed in the DEIS on page 3-63.

Forest Vegetation Comment 7

In the past, the Lands Council and others have been critical of the Scott Guidelines for determining post fire tree mortality. The weights given factor B10 are such that, in practice, changes in this factor do not make a substantial contribution to changes in the final score, so its retention is probably

innocuous. We recommend that this factor be eliminated and that the score thresholds then be adjusted downward by about two points.

Response
Appendix K, Vegetation section of the FEIS has been revised and provides a consideration and response to literature that is critical of the Scott Guidelines or proposed as an alternative to the Scott Guidelines. In the context of the Tripod Fire Salvage Project, we believe that the Scott Guidelines are a scientifically researched approach for predicting tree mortality and are more appropriate than any of the proposed alternative models individually. Our basis for this belief is that a comprehensive assessment of tree injury, and any associated prediction of fire-caused tree mortality, must consider the effect of fire injuries on the whole tree rather than just one or more of its parts. The Scott Guidelines provide a methodology for predicting the relative probability of survival for fire-injured trees growing on a wide variety of site conditions, exposed to varying levels of pre-fire factors that can predispose a tree to fire-induced mortality depending upon their severity or magnitude (occurrence of dwarf mistletoe, root disease, and bark beetles), and experiencing widely varying levels of first-order fire effects to their crowns, stems and roots.

Forest Vegetation Comment 8

We recommend that the guideline for trees with DB H below 21 inches be revised (1) to include a treatment of cambial damage in factor B8 similar to that now provided for trees with DB H over 21 inches, and (2) to revise the treatment of crown damage along the same lines as has been done for trees over 21 inches DB H. Thresholds then need to be adjusted to give results in general agreement with the Ryan and Reinhardt work.

Response
See response to Forest Vegetation Comment 7. The Scott Guidelines are continuing to be monitored in the field to validate the accuracy of the rating system and are revised accordingly.

Forest Vegetation Comment 9

Finally, this same work needs to be done for other thick-barked species, grand fir, Douglas-fir, and western larch.

Response
See response to Forest Vegetation Comment 7. The Scott Guidelines are continuing to be monitored in the field to validate the accuracy of the rating system and are revised accordingly.

Forest Vegetation Comment 10

We are concerned that reforestation of units is being used as a substitute for natural regeneration. We ask that the below information be considered:

Burned dead trees are the building blocks of new forests. --- research during the last 30 years has shown the critical role that structures such as snags, logs and woody debris play in the functioning of forest and stream ecosystems including provision of wildlife habitat; long-term sources of energy and nutrients; sites for nitrogen fixation; seedbed for trees and shrubs; and creation of fish habitat.

Response

Reforestation design criteria are described in the DEIS in Chapter 2 on pages 2-25 to 26 and in Appendix F on pages F-7 and 8. Post-harvest tree planting would be conducted only in areas where there is not an adequate seed source to ensure adequate and timely regeneration of conifers. The majority of tree planting would occur in areas that would require 20 to 30 years to regenerate naturally without human intervention after the fire. Effects of the proposed action reforestation treatments are disclosed in Chapter 3.5 of the DEIS on pages 3-237 to 239.

Timber marking guidelines for the Tripod Fire Salvage Project are described in Appendix F of the FEIS. The Implementation/Marking Guide section provides direction pertaining to the retention of burned forest habitat, snags, and coarse woody debris. All down wood lying on the ground during timber marking would be retained on site. All snags less than 10 inches DBH would be retained in all harvest units and all snags less than 12 inches DBH would be retained in lynx habitat units currently in an unsuitable condition. Additionally, the marking guidelines state that all trees (live and dead) greater than 28 inches DBH (greater than or equal to 21 inches DBH in Alternative E) would be retained in all units. All trees greater than 18 inches DBH would be retained in units CE01, CE02, CE03, CE08, GA01, and GA07. Ten percent of the area within salvage harvest units would be designated as non-harvest retention patches where all trees (live and dead) and down wood would be retained. No salvage harvest would occur within Riparian Habitat Conservation Areas (RHCAs) and roadside danger trees felled within RHCAs would be left on site to provide coarse woody debris.

The importance of burned dead trees with regard to ecological processes and burned forest recovery are considered in the DEIS in Chapters 3.2, 3.3, 3.4, 3.6, and 3.10. Effects of proposed salvage harvesting and the removal of burned dead trees are disclosed in the DEIS on pages 3-181, 3-218 to 219, and 3-271 to 272, and in Chapter 3.2, Burned Forest and Snag Habitat section and Chapter 3.10, Environmental Consequences section of the FEIS.

To summarize from Chapter 3.10 of the FEIS, implementing any of the action alternatives would remove about half or more of the coarse woody debris (CWD) that snags could provide in harvested areas. Within 15 to 30 years after the fire, all areas harvested would attain recommended CWD levels that are determined to provide desirable biological benefits to soil productivity, soil protection, and wildlife without creating an unacceptable fire hazard or high-severity reburn potential.

Forest Vegetation Comment 11

We ask that a Forest Service silviculturist, pathologist, or technician with adequate training should be the one to determine the trees with "imminent potential to fall", and Forest Service employees should mark such trees accordingly and not take any trees that pose no danger to the road corridor or traffic.

Response

See response to Forest Vegetation Comment 2.

Forest Vegetation Comment 12

We encourage the Forest Service to give additional consideration to where and how post-fire planting is conducted, and how future fire risk might be mitigated through planting design.

Response

Reforestation design criteria are described in the DEIS in Chapter 2 on pages 2-25 to 26 and in Appendix F on pages F-7 and 8. Post-harvest tree planting would be conducted only in areas where there is not an adequate seed source to ensure adequate and timely regeneration of conifers. Tree planting criteria were developed to re-establish forest vegetation and provide for resource management objectives including fuels management. These criteria are based on experienced seedling survival rates and anticipated natural regeneration establishment. Recommended tree planting densities in the dry and mixed conifer forest types are greatly reduced compared to historic tree planting densities in the Tripod Salvage project area. Tree seedling planting rates would be 40 to 60 percent lower than on comparable dry and mixed conifer forest sites that were planted in the past. We believe that planting fewer seedlings would reduce elements of future fire risk on these sites when trees attained sufficient size to become fire resistant. Recall that the dry and mixed conifer forest types are associated with low and mixed severity natural fire regimes.

Recommended tree planting densities in montane forest type areas are designed to attain minimum acceptable tree stocking levels. Projected seedling establishment rates in areas where natural reforestation occurs in the montane forest type typically would be higher than areas where tree planting occurs. With regard to tree stocking levels, the future fire risk of montane plantations would be lower than or comparable to adjacent naturally reforested areas in a forest type associated with a high severity natural fire regime.

Chapter 3.10 of the FEIS has been revised and discloses the effects of salvage harvest and reforestation activities on fuels and potential reburn hazards. Wildfire modeling indicates that a reburn occurring within 15 to 20 years in areas where salvage logging and tree planting were conducted would have the same impacts on areas that were left alone and naturally reforested following the Tripod Fire. Predicted fire behavior (high intensity fire) and fire effects (high tree mortality levels) would be similar in the developing stands of small, fire susceptible trees within and outside of salvage harvested areas during this time.

Forest Vegetation Comment 13

There will always be uncertainty associated with any probabilistic rating system (such as the Scott Guidelines). This uncertainty could be addressed in part by monitoring survival of fire-damaged trees across the Tripod burn (both inside and outside of the sale units). Results from these monitoring efforts could be used to help validate and calibrate the Scott Guidelines.

Response

The U.S. Forest Service Pacific Northwest Region has established a comprehensive series of validation monitoring plots that will be used to evaluate and adjust the Scott Guidelines. Approximately 10,000 individual tree plots have been installed on 18 different fires (wildfires and prescribed fires) in the Pacific Northwest Region as of August 2007. Fire severity parameter data have been collected on each plot, and each tree sampled will be revisited annually for five years to determine survival or death. In the eastern Washington area, 1,590 trees located in five different fires (including 190 trees on the Fischer Fire of 2004) have been sampled for the purpose of validating the Scott Guidelines. Locally, 415 trees have been sampled in a 2004 prescribed burn on the south end of the Methow Valley Ranger District, and 365 trees on the 2005 Pearrygin Fire (located adjacent to the Tripod Fire) have been sampled to validate the Scott Guidelines (Connie Mehmel, pers. comm. 2007).

Forest Vegetation Comment 14

Compaction can impair seedling regeneration.

Response

Effects of soil compaction on seedling regeneration are disclosed in the DEIS pages 3-239 and 3-240.

Forest Vegetation Comment 15

It has been demonstrated that a forest rejuvenates faster and healthier when the downed timber is left in place.

Response

Timber marking guidelines for the Tripod Fire Salvage Project are described in Appendix F of the FEIS. The Implementation/Marking Guide section provides direction pertaining to the retention of burned forest habitat, snags, and coarse woody debris. All down wood lying on the ground during timber marking would be retained on site. All snags less than 10 inches DBH would be retained in all harvest units and all snags less than 12 inches DBH would be retained in lynx habitat units currently in an unsuitable condition. Additionally, the marking guidelines state that all trees (live and dead) greater than 28 inches DBH (greater than or equal to 21 inches DBH in Alternative E) would be retained in all units. All trees greater than 18 inches DBH would be retained in units CE01, CE02, CE03, CE08, GA01, and GA07. Ten percent of the area within salvage harvest units would be designated as non-harvest retention patches where all trees (live and dead) and down wood would be retained. No

salvage harvest would occur within Riparian Habitat Conservation Areas (RHCAs) and roadside danger trees felled within RHCAs would be left on site to provide coarse woody debris.

Effects of proposed salvage harvesting and the removal of burned dead trees on forest regeneration and health are disclosed in the DEIS on pages 3-218 to 3-219, 3-237 to 3-240, and 3-271 to 3-272, and in Chapter 3.10, Environmental Consequences section of the FEIS. To summarize from Chapter 3.10 of the FEIS, implementing any of the action alternatives would remove about half or more of the coarse woody debris (CWD) that snags could provide in harvested areas. Within 15 to 30 years after the fire, all areas harvested would attain recommended CWD levels that are determined to provide desirable biological benefits to soil productivity, soil protection, and wildlife without creating an unacceptable fire hazard or high-severity reburn potential.

Fuels

Fuels Comment 1

On June 11, 2007, Spies, Thompson, and Giano published a paper entitled "Reburn severity in managed and unmanaged vegetation in a large wildfire". The conclusions from their original paper and their clarification should be considered and displayed in the final EIS.

Response
This paper is discussed in the Final EIS, Chapter 3.10 (Environmental Consequences for Alternatives B, C, D, E, Reburn Hazard). Conclusions from the paper are mentioned, as are the results of modeling done specifically for the Tripod Fire Salvage project.

Fuels Comment 2

Other than danger trees, no harvest is planned in riparian areas. Doing nothing and leaving all of the potential snags and existing fuel loads creates a substantial problem…. These riparian areas will become fuel corridors linking watersheds and providing "wicks" for the inevitable next generation of fires. The EIS and alternatives must not remain silent on this issue and consequence of doing nothing.

Response
Design criteria for RHCAs listed on DEIS 2-18 and 2-19 are designed to meet Forest Plan standards and guidelines and PacFish Riparian Management Guidelines enumerated in the Regulatory Framework section of 3.3 Fisheries/Hydrology starting on DEIS 3-138. These design criteria and mitigation measures include restricting salvage or removal of snags within the RHCAs to protect stream and riparian values. Due to the design criteria and mitigation measures, all of the alternatives are consistent with the Forest Plan as amended by PacFish (DEIS 3-198 and 3-199).

Currently, estimated post-fire coarse woody debris (CWD) fuel loads are well below the optimum recommended range, and resistance-to-control is non-existent to very low (DEIS 3-316, 3-317 and Figure 3.10-4). Modeling wildfire in all action alternatives indicates that reburn occurring in the short term (about 15-20 years) in salvaged areas under the action alternatives would have the same impacts on developing stands as under Alternative A. The similarities in tree establishment (by planting or natural regeneration) and small woody fuel loads within and outside salvaged areas would likely result in similar fire behavior and fire effects (i.e. high mortality) regardless of salvage (DEIS 3-327). It is reasonable to assume that potential reburn effects in RHCAs would be similar for the same time period, i.e. no difference between treatment/no treatment. Resistance-to-control ratings for the project area for no-action and all action alternatives are shown in DEIS Figure 3.10-9. As pointed out, from a landscape, project wide perspective, resistance-to-control would change very little as a result of salvage. However, at the 30-year projection, treated areas would move to a low resistance-to-control. So, while treating RHCAs might have the effect of reducing resistance-to-control in treatment sites, it would not reduce reburn potential over the fire area.

Fuels Comment 3

The logging proposal does not include any fuel treatments for small-diameter (<10" diameter), or for logging slash (except for some fuels in units where feller-bunchers may be used). The EIS does not disclose the impacts associated with leaving fuels untreated in logging areas.

Response

Refer to DEIS, Chapter 3.10, pages 3-322 to 3-327 for the effects of salvage logging on slash loading (0-3" diameter fuels) and coarse woody debris loading (>3" diameter fuels) in dry, mixed conifer, and montane forests. The resulting effect of these fuel loadings on future resistance-to-control is described in the DEIS pages 3-327 to 3-329. The FEIS, Chapter 2, Alternatives Analyzed but Eliminated from Detailed Study, #25, includes discussion of an alternative that would utilize prescribed fire to treat small fuels from logging slash.

Fuels Comment 4

[This project] will not do anything to improve actual forest health and strengthen the forest's ability to respond to environmental stresses (including future fires). Fire risk reduction should focus on preventing harm to communities and existing structures and on wildlife habitat, especially for endangered/threatened species such as the spotted owl and lynx.

Response

The primary purpose and need of this project was economic recovery, not specifically improving forest health (See Purpose and Need Section (Comment 1) of this Appendix). One effect of salvage that may strengthen the forest's ability to respond to environmental stresses is described in DEIS, Chapter 3.10, where modeling indicates that salvage may help bring coarse woody debris to recommended levels more rapidly than where no salvage occurs, in all forest types where helicopter or skyline logging methods were used. The benefits of this component of forest structure are described on page 3-64 of the DEIS.

Fuels Comment 5

Your preferred alternative proposes to remove large trees that survived the fire quite nicely, thank you. This alternative goes directly against science, which has proven that large trees must remain to make a forest fireproof.

Response

This comment does not give any specifics regarding how large trees must remain to make a forest fireproof. However, the DEIS page 2-5 specifies trees under consideration for harvest: "Only dead trees and fire-injured trees expected to die within one year of project implementation would be considered for harvest." DEIS pages 3-319 to 3-320 disclose the effects of not salvaging (Alternative A) on future fire behavior. The Scott Guidelines (Scott et al. 2002, 2003, 2006), a scientifically researched and validated approach, were used to determine the probability that trees are dying (DEIS page 2-8).

Fuels Comment 6

The preferred alternative will leave too much fuel behind. The next fire will burn more intensely. Ensure the EIS discloses this fuel effect.

Response: Fuel loading, fire hazard, and reburn hazard created by proposed salvage logging in this project is described in the DEIS on pages 3-322 through 3-329.

Fuels Comment 7

Please provide replicated studies in the Tripod ecosystem to support your claim that leaving 10-28 inch trees will increase burn severity or increase the potential for reburn.

Response: No studies on burn severity or potential for reburn have been done in the Tripod ecosystem. Refer to the DEIS, pages 3-310 to 3-312 for discussion of methods used to develop fuel loading profiles resulting from this project's no-action and action alternatives in various forest types. Clarification of reburn effects for Alternative A, where 10-28" DBH trees are left, is in the FEIS Chapter 3.10.

Fuels Comment 8

Artificial tree plantations can actually increase the future risk of fire.

Response

DEIS pages 2-12, 2-14, 2-15, and FEIS, Alternatives Considered in Detail for Alternative E discusses proposed reforestation for each alternative. DEIS page 2-25 to 2-27 and DEIS Appendix F further defines reforestation proposals to meet minimum tree stocking guides developed for this project. Recommended tree planting densities in the dry and mixed conifer forest types are greatly reduced (40 – 60%) compared to historic tree planting densities in the Tripod area. Refer to FEIS Chapter 3.10 (Environmental Consequences for Alternatives B, C, D, E, Reburn Hazard) for a revised discussion of re-burn hazards including artificial reforestation.

Invasive Plants

Invasive Plants Comment 1

Logging in the hot summer months is the worst thing we can do to the soils as it increases weed dispersal.

Response
Weed dispersal during summer logging activities will be minimized through a Prevention and Management Strategy as described in Chapter 3, the Effects Analysis portion of the DEIS, pages 3-284 through 3-287. The Prevention and Management Strategy consists of four elements for invasive species management. These four elements outline how prevention, early detection and rapid response, control and management, and rehabilitation and restoration would help decrease the risk of invasive plant dispersal.

Appendix G of the DEIS, "Noxious Weed Analysis for Tripod Fire Salvage", also identifies post-fire conditions and habitat within the project boundary that would decrease the risk of invasive plant spread. Appendix G also explains that guidelines set forth by the Forest Plan will be followed during project activities to minimize invasive dispersal.

Inventoried Roadless Areas

Inventoried Roadless Areas Comment 1

The opening of roads for salvage may provide OHV access to area not currently used by OHV recreationists. They would change the character of nearby Inventoried Roadless Areas.

Response
OHV use on open roads is prohibited by regulation. Re-opened roads would only be open to salvage operation vehicles during project operations. They would be closed at the end of haul or prior to seasonal shutdown, DEIS page 2-20. The effect of opening roads adjacent to Undeveloped Areas on the character of these areas has been added to the FEIS, Chapter 3.9., Environmental Consequences. Though open roads would not be open to OHV traffic, there would be some short term loss of opportunity for solitude adjacent to opened roads and salvage activities.

Purpose and Need

Purpose and Need Comment 1

My concern centers around soils, habitat and ecosystem connectivity, I fail to see why this project purpose can't be "ecosystem recovery" rather than to "recover economic value of dead and dying trees"…..It is too focused on economic recovery and doesn't do enough to protect the watershed…..We have some concerns around the narrowly defined purpose and need for this project, which precludes the consideration of any kind of active restoration.

Response

The project purpose and need is the underlying reason why a proposed action is developed. DEIS pages 1-3 to 1-4 detail the background of the Tripod Fire, which burned over 163,000 acres of the Okanogan and Wenatchee National Forests. The purpose and needs that the Forest Service has decided to pursue within the Tripod Fire Area are listed on DEIS page 1-20 to 1-21; economic recovery of dead and fire injured trees expected to die within one year, improve safety along roads open to the public, and reforest trees in salvage harvest units. These purposes and needs would be accomplished while protecting and maintaining ecosystem values. Design features and mitigations to protect ecosystem values are listed in DEIS pages 2-5 to 2-7, and 2-16 to 2-35. Effects to the ecosystem components are detailed in DEIS Chapter 3. It is not clear what kind of recovery/restoration the comment refers to. BAER activities (DEIS Appendix L) are intended to minimize the potential for elevated or concentration of surface runoff, mass erosion and sediment delivery from roads and hillsides. The Tripod Fire restored habitat for some wildlife species such as grizzly bear, primary excavators and lynx and further recovery would often not be warranted. Restoration is not part of the purpose and need for this project and is outside the scope of the analysis.

Purpose and Need Comment 2

It is much more important to thin forest stands in roaded forest that may otherwise become victims of future forest fires……National Forest resources must be focused on protecting areas around cities and towns surrounded by the forest.

Response

An alternative that emphasized continuation of the green timber sale program, which would focus on fuel reduction treatments in the wildland urban interface was considered in the DEIS page 2-38. This proposal would concentrate Forest Service efforts in the green forest, rather than expend resources in the burned forest. This proposal is outside the scope of this project. However, this project's effects to the one WUI within the Tripod Fire Salvage Project (Ramsey Creek) are detailed in DEIS page 3-328.

Purpose and Need Comment 3

We encourage the Forest Service to consider expanding the purpose and need to reduce road density in those areas currently exceeding plan standards.

Response
The project purpose and need is the underlying reason why a proposed action is developed. The DEIS pages 1-3 to 1-4 detail the background of the Tripod Fire, which burned over 163,000 acres of the Okanogan and Wenatchee National Forests. The purpose and needs that the Forest Service has decided to pursue within the Tripod Fire Area are listed on the DEIS page 1-20 to 1-21; economic recovery of dead and fire injured trees expected to die within one year, improve safety along roads open to the public, and reforest trees in salvage harvest units. Reducing road density is an example of one need for this portion of the National Forest, but one that is not being pursued at this time. In addition, road closures are a very complex topic, with high public interest, involving a complex public outreach and analysis which could have slowed down the analysis of the salvage proposal.

Range

Range Comment 1

For mitigations measures listed in fig. 3.13-6. …need to also consider impact to "allotments in nonuse" that would be substituted for range taken out of production because of the Tripod Fire. The allotments in nonuse may not have recent grazing…no drift control fencing…little or no improvements…and minimal access. Any proposal to reopen such rested allotments must be subject to NEPA analysis and open to public review.

Response
The allotment fire recovery measures pertaining to this comment are listed on DEIS pages 3-357 to 360. To clarify, the "allotments in nonuse" are or would be allotments where the permittee has requested not to graze for personal convenience. The allotments in nonuse are or would be recently active allotments with good access. The structural improvements (fences and water troughs) are being maintained or would be maintained prior to livestock turn-on. No allotments rested for the reason of resource protection are or would be grazed as a substitute for range taken out of production and no closed allotments would be reopened for grazing. The process used by the Ranger Districts to assess range condition to determine when to allow grazing to occur is not part of the Tripod Salvage project, but is displayed in the EIS to help analyze the cumulative effects of grazing in the project area.

Recreation

Recreation Comment 1

Snowmobiles and lynx don't mix. A winter plan with guidelines from the Forest Service recreation and wildlife specialists needs to be made public and provided to snowmobile clubs, with area closures designated and an enforcement plan included.

Response
If winter salvage logging occurs, several existing groomed snowmobile routes would be closed for public safety (DEIS, Chapter 3, pages 3-300 through 3-302), thus eliminating any potential for snowmobile conflicts. Outreach to the public would occur at that time.

Sensitive Plants

Sensitive Plants Comment 1

Mitigation measures do not appear to involve building barriers to prevent livestock access to sensitive plant populations. Please add such a mitigation.

Response
Loss of barriers preventing cattle access into sensitive species habitat is widespread throughout the Tripod Fire. There are no Sensitive species known to exist in any Tripod Salvage harvest unit and any potentially suitable habitat would be excluded from harvest activity. Therefore, harvest activities, in themselves, would not pose any risk to known Sensitive species. Within harvest units, mitigation #85 on page 3-30 of the DEIS addresses 1) minimizing disturbance of natural barriers and 2) creation of them where appropriate to deter cattle movement into sensitive habitats. This would further reduce risk to Sensitive species.

As stated in the DEIS, page 3-368-369, the greatest concern for cattle trespass into sensitive plant habitat is in the Tiffany Mountain area. This area is not within the Tripod Fire Salvage Project Area and miles away from any proposed harvest unit. But the cattle expected to trespass into Tiffany Mountain do come from an allotment within the project area. However, given the expansive nature of the Tripod Fire, harvest activity would not noticeably add to the bigger cumulative effect of cattle movement and use on this post-fire landscape.

There would be no direct effect to Sensitive plant resources resulting from implementation of any of the action alternatives. Development of mitigation measures such as barriers to regulate grazing is not part of this projects purpose and need and is outside the scope of this project.

Soils

Soils Comment 1

The area already has problems from soil compaction

Response
Existing soil compaction was addressed by analyzing past sale activity. This analysis is contained in DEIS Appendix E and summarized in the soils cumulative effects analysis in the DEIS pages 3-221 through 3-226.

Soils Comment 2

Logging and the use of heavy equipment must be restricted to months of snow cover.

Response
Winter logging is a mitigation listed in DEIS Chapter 2 #35 pages 2-21 and is discussed in DEIS page 3-216. Winter logging is optional and not required. Winter logging would allow salvage operations to proceed in the timeliest manner for economic recovery. Winter logging would be done if salvage operations occur during the winter operating season.

Soils Comment 3

Salvaging timber will impact soils-compaction and reduced productivity (soils health)…. Temporary roads and disturbance from heavy machinery and logging will only increase compaction…… Logging will not harm "fragile" soils .

Response
This is discussed in DEIS Soils Effects Common to All Action Alternatives on pages 3-211 through 3-226. The analysis discloses that salvage operations would impact soils. DEIS pages 3-221 to 3-226 summarize the active restoration necessary to meet the Okanogan Forest Plan standard and guidelines 13-10 of 15% detrimental soil standards. DEIS Appendix E also contains information on soil compaction by alternative.

Soils Comment 4

Units which have over 20% high severity severely burn, which logically correlates to the severely burned soils described should be eliminated from alternatives.

Response
Detrimentally burned soils are defined (Forest Service Manual 2500, R6 Supplement 2500-98-1) as when the mineral soil surface has been significantly changed in color, oxidized to a reddish color, and the next one-half inch blackened from organic matter charring by heat conducted through the top layer. The detrimentally burned soil standard applies to an area greater than 100 square feet, which is at least five feet in width. High severity burn (DEIS

page 3-207) is defined as where more than 40% of the polygon exhibit soil features likely to increase runoff and erosion, such as absence of duff layer and discoloration. However, high severity burns do not correlate, acre-by-acre, to detrimentally burned soil. These soils occur incidentally throughout the high severity burn areas, usually associated with burned out stumps or piles of existing fuels. DEIS page 2-3 identified that areas with high soil damage would not be harvested. DEIS page 3-217 discloses that equipment would avoid these areas.

Soils Comment 5

We request that the DEIS have a soil analysis after any winter logging to see what impacts have been and post logging monitoring should be conducted to determine if changes in logging systems need to be made.

Response
Soil monitoring is detailed in DEIS page 2-33. The Soil Scientist works closely with the Sale Administrator during the sale which is implementation monitoring. Adjustments are made at this time to minimize detrimental soil. Post logging monitoring also occurs and is reported in Annual Soil Monitoring Reports (DEIS , page 2-33).

Soils Comment 6

Logging in hot summer months is the worst thing that we can do to the soils as it increases compaction.

Response
Soil compaction is discussed in DEIS Soils Effects Common to All Action Alternatives on pages 3-211 through 3-226. The analysis discloses that there would be soil impacts from salvage harvest. DEIS pages 3-221 to 3-226 summarizes the active restoration necessary to meet the Okanogan National Forest standards and guideline 13-10 of 15% detrimental soil standards.

Soils Comment 7

The attached paper gives ten recommendations on avoiding damage during salvage logging. We ask that these recommendations be followed on the Tripod Fire Salvage Project area (The Effects of Post Fire Salvage Logging on Aquatic Ecosystems in the American West. James Karrer e tal., November 2004, Vol. 54, No. 11, BioScience p. 1029).

Response
This paper is part of the literature cited on page 19 of the DEIS and these recommendations were considered. Mitigations for soils are found in the DEIS, pages 2-20 to 2-24. This also is discussed in DEIS Soils Effects Common to All Action Alternatives on pages 3-211 through 3-226. Soils would be protected as described. The Cumulative Effects section summarizes the active restoration necessary to be within the allowable 15% detrimental soil standards. DEIS Appendix E also contains information on soil effects.

Soils Comment 8

We do not support new or temporary road construction on burned soils and concerned that this was not analyzed in the DEIS.

Response
The proposal for temporary roads is described on the DEIS page 2-12 for Alternative B. Temporary roads are discussed in the DEIS Soils Chapter 3 on page 3-218 and in the DEIS Chapter 2 Soil Mitigations. Pages 2-20 to 2-21 provide restoration for any temporary roads. The DEIS, page 2-40, considered, but did not analyze in detail an alternative that would build no new roads.

Transportation

Transportation Comment 1

It is not clear why Alt C should have a different mileage of roads to be closed by a "previous NEPA decision" than Alts B or D (Figure 3.12-2)

Response
Roads that would not be used under the Tripod Salvage contract would not be closed or opened through this project. DEIS Appendix J lists the roads and the length of road that would be used under each Alternative. Some of the roads that would fall under "a previous NEPA decision" are not being proposed for use under Alternative C and therefore would not be closed.

Transportation Comment 2

It goes counter to common sense and fiscal responsibility to pursue a proposal that increases road miles at a time when the forest service cannot even maintain many roads currently in inventory!

Response
No new permanent roads would be constructed under any alternative (DEIS page 2-3). Both system and unauthorized roads were opened during the Tripod Fire for access to help with fire management activities. This project would utilize some of these roads and close or decommission them after use. A properly closed road rarely requires maintenance. The travel analysis (DEIS page 3-337) identified unauthorized roads that would be needed for future management. A road becomes part of the transportation system if it has been determined that there is a future need for it. The DEIS, page 2-40, considered, but did not analyze in detail an alternative that would build no new roads.

Transportation Comment 3

…we are curious why more road closures were not done as part of this project.

Response
As stated in DEIS page 1-13, the purpose and need of this project "is not to manage roads differently" and "in most cases open roads would remain open and closed roads would remain closed". A travel analysis is required when proposing road closures, and given the need and timing of this project an analysis of all the roads within the project was not needed. DEIS pages 3-337, 3-338 discuss the travel analysis method used for this project.

Transportation Comment 4

It would be helpful to know why there is .7 miles of unauthorized road that will be kept open and put on the system after the project and where it is.

Response
The unauthorized road that would be kept open is one that was open before the fire and showed signs of use. Putting this road on the system is a means to keep track of it until the need for it to be part of the transportation system can be evaluated in a future travel analysis. This road is at the end of road 5009100 as shown on the maps in DEIS Appendix A (A-10, A-11, A-13).

Transportation Comment 5

Of continuing concern is the mileage of reopened road and the associated public recreational activities that may develop around these roads in the interim period before closure can be implemented. The appropriate mitigation measure for temporary roads is an equivalent mileage of temporary or permanent road closures so as to avoid increasing the overall road density level in accordance with the Forest Plan.

Response
Closed roads that are opened for use with this project would have restricted access while the sale is operating and are closed to public access during periods of seasonal inactivity (Chapter 2, 2-20 #26). As stated in Chapter 1, Planning Framework, page 1-13 the purpose and need of this project "is not to manage roads differently" and "in most cases open roads would remain open and closed roads will remain closed". Road density consequences are described in DEIS Chapter 3.2 Wildlife, page 3-31, and Chapter 3.12 Transportation, page 3-341. None of the management areas would exceed Forest Plan standards for road density except for the two management areas that already do (MAs 14-05 and 26-04). These temporary increases would be partially mitigated by allowing only project use. Post project activities would bring MA 14-05 into compliance with Forest Plan standards. Re-opened roads would be closed at the end of hauling operations or prior to seasonal shutdown (DEIS page 2-20).

Transportation Comment 6

Retain trees & snags to fall into streams & ephemeral draws EXCEPT posing hazards for driveable roads (1-13). Instead, why not place warning signs or close roads?

Response
This was an alternative analyzed but eliminated from detailed study as discussed in the DEIS Chapter 2, page 2-41 # 17. Further closure of these roads would not be appropriate since access to this area was determined to be needed through the Forest-wide Roads Analysis. Safety is the predominant consideration in road operation (Forest Service Manual 7733.03)

Transportation Comment 7

We further encourage the Forest Service to require substantial barriers to be erected near the start of each temporary (or reopened) road. When decommissioning roads, please require that large slash be placed in strategic locations near the start of each decommissioned road in order to discourage snowmobile and off-road vehicle use (p. 2-10, item 24).

Response
Placing large slash is not always possible depending on what material is available at each specific road. As stated in mitigation measure #24 on DEIS page 2-20, returning a road to similar land contours and soil conditions as the natural surroundings is a very effective way of eliminating wheeled motorized traffic. The DEIS page 2-29 also lists specifications for road closures. Snowmobile use is not discouraged on the Forest except where specific areas or roads are closed to snowmobile use.

Transportation Comment 8

For reasons of soil compaction, sedimentation in nearby streams, and recreational impact on floral and faunal species recovery, closure of existing roads and dropping plans for new roads must be reconsidered before the final EIS is issued.

Response
As stated in Chapter 1, Planning Framework, page 1-13 the purpose and need of this project "is not to manage roads differently" and "in most cases open roads would remain open and closed roads will remain closed". A Travel Analysis is required when proposing road closures, and given the need and timing of this project an analysis of all the roads within the project area would not have met the purpose and need. Chapter 3.12, Transportation (pages 3-337, 3-338) discusses the travel analysis method used for this project (DEIS page 2-3). There is no new permanent road construction proposed for this project. The DEIS, page 2-40, considered an alternative that would build no new roads and an alternative that would close roads to provide for public safety. The effect of roads on soil compaction is disclosed in the DEIS, page 3-218. The effect of roads on sedimentation is disclosed in the DEIS, pages 3-183 and 3-196. When roads are re-opened for salvage harvest, recreational access would be restricted. These roads would be closed when hauling is completed.

Transportation Comment 9

..are concerned that reconstruction in burned areas was not analyzed in the DEIS.

Response
The effects of temporary spurs on burned soils was analyzed in the DEIS Chapter 3, Soils, page 3-218. In Chapter 2 of the DEIS, soil mitigations provide restoration for any temporary roads (pages 2-20, 2-21). There is no road reconstruction proposed for this project.

Other Comments

Other Comment 1

Appendix K is not an unbiased use of current post-fire treatment science. All I ask is that you please give this science fair and unbiased consideration. I will also expect to see an unbiased analysis for legitimacy and relevancy of the publications …contained in Appendix K of the DEIS. Nowhere in Appendix K is the term "credible source" defined, not is there any list of characteristics that a publication must have to be considered credible.

Response
Several of those who responded to the Proposed Action in January 2007 included references to literature in their comments. Appendix K evaluated the scientific credibility of that literature using standards established by the Pacific Northwest Region (Devlin 1988a) as described in DEIS pages K-1 and K-2. Assumptions about a publication's review process were stated. Papers that were published in a peer-reviewed, scientific journal were considered credible. Other papers were not considered credible, even though they might have been written by well-respected scientists. That evaluation did not include contacting the editorial boards of the various publications for their specific review process.

In addition to their scientific credibility, Appendix K addressed the relevance of these papers to the Tripod Fire Salvage analysis. Each article's key points were summarized in the context of the Tripod Fire Salvage Project. This summary was followed by a discussion of how some the recommendations and /or research were incorporated into the Tripod Fire Salvage project design and analysis. It also discusses how potential conflicts between some recommendations in the literature and the project's design were analyzed using specific scientific protocols such as DecAID (Mellen and others 2006).

Other Comment 2

"…nowhere in your EIS do you include any legitimate science supporting your science. Not only is there no legitimate supporting science…there is no science at all.

Response
Refer to the "Literature Citations" section of the FEIS for the scientific literature considered for this project. It includes what the IDT resource specialists consider the "best available science".

Other Comment 3

The striking outlier to your credibility determination is "Beschta et al., 2004". No rating is given.

Response
The journal "Conservation Biology" (which published the article by Beschta et al., 2004) is referred to throughout DEIS Appendix K as a "credible source". This evaluation would certainly apply to the issue containing the 2004 Beschta paper. The FEIS Appendix K has been updated to make this clear for the Beschta article. In addition, DEIS Appendix K specifically indicates that the Beschta paper is accorded the same credibility as the Noss and Lindenmayer (2006) paper. As noted in the DEIS, Appendix K, "Their (Beschta et al.) enumeration of potential effects associated with active post-fire management is, almost literally, the negative image of the positive actions recommended by Noss and Lindenmayer." The idea being that, as with a photographic negative, the content is the same although it is displayed differently.

Other Comment 4

..the only sources cited in the DEIS (Appendix K) that were labeled "credible" were those source (sic) that displayed science that did not disagree with post-fire harvest."

Response
Appendix K does not disclose that any of the "scientifically credible" papers, including the one by Beschta et al, "disagree" with post-fire harvest. On the other hand, they make a strong case for a cautionary approach to salvage. That cautionary approach was considered for the Tripod Fire Salvage project and is summarized for each paper in Appendix K.

Other Comment 5

You threw out opposing science because you said it was "too general".

Response
Appendix K does not disclose that any of the "scientifically credible" papers are "opposing science". Rather they are thoughtful and informed interpretations of research, conducted by widely respected scientists, who recommend a cautionary approach to post-fire salvage logging. An approach that was incorporated, in part, in the Tripod Fire Salvage project as summarized in Appendix K.

Many, but not all, of the "general" characterizations in the relevance discussion were followed by acknowledgement that "general" relevance is applicable at the right scale and context, e.g. Dellasala et al (2004), Franklin et al (1981), Lindenmayer and Franklin (2002), Donato et al (2005) and Lindenmayer et al (2004). How that relevant information was applied was discussed as well. In the case of Beschta et al vis-à-vis Noss and Lindenmayer, the former seemed to focus more on soil and water issues and its literature citations included few references to Pacific Northwest vegetation while the latter paper seemed to focus more on vegetation issues and its literature citations included many references to the Pacific Northwest vegetation. Consequently, the latter seemed more relevant.

Other Comment 6

You threw out opposing science because you claimed it applied to locations that were different than the Tripod sale area. Of course the location is not exact, but the concepts apply perfectly.

Response
Appendix K does not disclose that any of the "scientifically credible" papers are "opposing science". Rather they are thoughtful and informed interpretations of research, conducted by widely respected scientists, who recommend a cautionary approach to post-fire salvage logging. An approach that was incorporated, in part, in the Tripod Fire Salvage project as summarized in Appendix K.

Where site-specific research was cited from locations that were demonstrably different than the Tripod Fire area they were considered less relevant, e.g. citations from Ingalsbee (2003) for the Klamath Basin--which is dominated by pumice soils—and southwest Oregon with a Mediterranean climate and predominantly old, clay soils. On the other hand, general concepts were not rejected, rather they were applied broadly to guide the project design and analysis. Examples from Appendix K follow:

1. Dellasala et al (2004): "This article is relevant…only in the broadest sense… It is…discussion based on general conceptual references. Primary post-fire approaches…were retention of biological legacies and (avoiding) "rapid establishment of dense conifer stands". As discussed in Appendix K both of these issues, legacies and forest regeneration, were addressed and analyzed using site-specific historical data and science protocols such as DecAID.
2. Franklin et al (1981), " It is not directly relevant to the Tripod….because it addresses the characteristics of old-growth forest in the Douglas-fir region. *However, the discussions of spatial heterogeneity, biological legacies…are generally relevant (italics added)*. Further, the ID Team addressed these issues in a more site specific context."
3. Lindenmayer and Franklin (2002): "The relevance of this book to the Tripod Fire Salvage Recovery is similar to that of "Forest Stand Dynamics" (Oliver and Larson 1996) and Fire Ecology of Pacific Northwest Forests (Agee 1993) which are frequently referred to in documents addressing unburned forest management projects. As discussed for other articles, the ID Team based much of the Proposed Action (Chapter 2) on many of the post-fire management principles presented by these authors.

Other Comment 7

I will be looking forward to reading your analysis of each of the scientific sources contained in the attachment to this cover letter when they are added to Appendix K in the FEIS.

Response

These sources that were attached to the DEIS comment letter lacked any specific comments concerning Tripod Fire Salvage, so no response here is required. However, they are generally covered by the publications already reviewed in FEIS Appendix K.

Other Comment 8

Appendix K contains a sentence that summarizes the entire DEIS: "Any lack of concurrence with this paper is not surprising, as it addresses ecosystem goals while the Tripod Fire Salvage project has a purpose and need to recover economic value."

Response

This sentence has been removed from FEIS Appendix K. Ecosystem goals were included in project design and mitigation in order to assure that ecosystem goals were met, consistent with the Forest Plan. As discussed throughout Appendix K, the FEIS proposes a project to recover economic value while addressing ecological values.

Other Comment 9

If the Forest is going to ignore priority projects and move ahead with a Tripod Fire Salvage Project, then at the minimum full Beschta screens need to be employed.

Response
The FEIS has been updated to document more clearly the ID Team's analysis of the Beschta recommendations in Chapter 2, Alternatives Analyzed but Eliminated from Detailed Study #24.

Wildlife – Birds

Wildlife-Birds Comment A

The large old trees are also important to the many varieties of birds and mammals who use them to nest in cavities.

Response
The Forest Service approach that allows managers to consider hundreds of wildlife species found on a particular National Forest is using Management Indicators Species to represent a larger group of species. A group of Management Indicator Species (Primary Cavity Excavators) specifically designed to account for the larger group of wildlife (cavity users) was analyzed in the DEIS. DEIS pages 3-34 to 3-36 and 3-37 to 3-68 describe the effects of the alternatives to cavity users in detail. The summary on pages 3-35 and 3-65 of the DEIS state that "…abundant large snag habitat would remain and some of the largest snags will persist for as long as 80 years." and "…these conditions will provide abundant habitat for a wide array of species, including all Management Indicators cavity nesters for at least 20 years."

The DEIS page 3-62 discusses the effect of alternatives on large trees. The DEIS states there that "…at least 88% of the large snags in Dry Forest, 92% of the large snags in Mixed Conifer Forest, and 98% of the large snags in Montane Forest habitat would be retained."

Wildlife – Burned Forest/Coarse Woody Debris

Wildlife - Burned Forest /Coarse Woody Debris Comment A
The Forest Service has proposed to concentrate the majority of its logging on these highly degraded forests, and has proposed eliminating some of the rarest and most ecologically important and valuable habitats.…over 70% of the logging is proposed in the most degraded forest types in NE Washington and the entire Columbia Basin.

Response
The source of the statement that the forests in the Tripod area are highly degraded is not specified. A section dedicated to evaluating and disclosing the effects to burned forest was included in the DEIS

(pages 3-37 to 3-68). A description of effects for the Columbia Basin was added to the FEIS in Chapter 3, Section 3.2, Primary Cavity Excavators, Summary and Consistency Finding, and Chapter 3, Section 3.2, Burned Forest and Snag Habitat, Summary and Consistency Finding. The statement made in the FEIS referring to cavity users is: "The broad scale trends for these species identified by Lehmkuhl et al. (1997) would be locally improved and habitat would be abundantly available for all 10 MIS cavity users identified in the Forest Plan. This project does not negatively influence any of these trends for the Columbia Basin."

Wildlife – Burned Forest/Coarse Woody Debris Comment B

…yet the issue of retaining even more than the minimum forest plan standard and guideline requirements for snags per acre continues to be an issue. Within the units planned for salvage, the proposed action and all other alternatives will require maintaining "patches" of snags within harvest units.

Response

The effects of retaining patches of snags within harvest units is described on page 3-61 of the DEIS. The Forest adopted new guidance on July 3, 2007 to incorporate recent science and identify the snag numbers needed to insure the continued viability of cavity users in post fire salvage harvest projects. FEIS Chapter 3, Section 3.2, Burned Forest and Snag Habitat, Regulatory Framework describes this guidance. The guidance letter is included in Appendix D of the FEIS. All alternatives are required to meet the amended guidance.

Wildlife – Burned Forest/Coarse Woody Debris Comment C

I would ask you to please take into account the overall ecological health of these forest lands and the huge role that dead wood plays.

Response

A section dedicated to evaluating and disclosing the current science regarding the ecology of forests that are burned and the effects of alternatives on species that rely on dead wood is included in the DEIS (pages 3-37 to 3-68).

Wildlife - Lynx

Lynx Comment A

We appreciate that measures will be taken to survey for suitable lynx habitat. This should be expanded to include surveying for burned lynx habitat so that it can be avoided in unit layout.

Response

Surveys are planned for all alternatives. DEIS page 3-104 states, "Habitat conditions for lynx would be field-verified prior to any action". The FEIS has been clarified in Chapter 3, Section 3.2, Endangered, Threatened, and Sensitive Wildlife, Canada Lynx, Environmental

Consequences and states, “If Alternative C is selected, field verification would occur to document that the units proposed are not capable of becoming lynx habitat”.

> ***Lynx Comments B & C***
> *…this is no time to be logging in lynx habitat (capable or otherwise) and delaying lynx habitat recovery……. We question why any burned lynx habitat is to be logged when this animal is listed as a threatened species….. Logging burned lynx habitat will alter the ability of the habitat to re-grow to be suitable for lynx and its prey.*

Response
An alternative was included in the DEIS (Alternative C) that would avoid logging in lynx habitat. It is described on DEIS pages 2-13 and 2-14. The effects of Alternative C have been clarified in the FEIS in Chapter 3, Section 3.2, Endangered, Threatened, and Sensitive Wildlife, Canada Lynx, Environmental Consequences.

Mitigation measures were included in all alternatives to insure lynx habitat conservation. They are described on DEIS page 2-17.

All recommended conservation measures from the Lynx Conservation Assessment and Strategy (LCAS - the unified strategy for conserving lynx across federal agencies in the United States) that apply to the Tripod project would be implemented under all alternatives. Referring to the conservation measures, LCAS states,”…projects that implement them are generally not expected to have adverse effects on lynx.”

The DEIS page 3-238 states, “Salvage logging would have little or no effect on the residual conifer seed source in harvest units because only dead trees and fire injured trees expected to die within one year after the onset of logging would be removed”. Monitoring on the Bitterroot Fires in Montana revealed no difference in conifer seedling abundance on salvage logged and unlogged areas (Kolb 2006). Natural conifer regeneration of Montana Douglas fir plant communities similar to portions of Mixed Conifer and Montane Forest habitat in the affected environment was closely correlated to the occurrence of a seed source. The majority of lodgepole pine seed production would be retained in salvage harvest units because all trees (live or dead) less than 10 inches DBH would not be harvested. All trees less than 12 inches DBH would be retained in harvest units within lynx habitat currently in an unsuitable condition, increasing the likelihood that lodgepole pine seed is retained on site and natural regeneration would occur. “

“Salvage harvest operations would likely be completed within two years after the fire and there would be little or no logging damage to post-fire natural regeneration (McIver and Star 2001). Soil disturbed by logging would provide favorable conditions for the establishment of natural regeneration because disturbed mineral soil generally produces the best germination and seedling survival for all conifer species that would re-establish after the fire (Lotan and Perry 1983, Burns and Honkala 1990). Soil disturbance attributed to salvage logging is not expected to impede natural regeneration establishment because seedling stocking on skid trails often reaches higher levels than on undisturbed areas (Smith and Wass 1976).”

The FEIS has been clarified in Chapter 3, Section 3.2, Endangered, Threatened, and Sensitive Wildlife, Canada Lynx, Environmental Consequences to restate the above information from the Forest Vegetation section in the Canada Lynx section, and add a statement that reads, “The difference between alternatives that harvest dead and dying trees in lynx habitat (B, D, and E) and those that don’t (A and C) is not substantial, and in 20 years there would not be a measurable difference for lynx or hare population recovery for any alternative”.

The FEIS has been revised in Chapter 3, Section 3.2, Endangered, Threatened, and Sensitive Wildlife, Canada Lynx, Consistency Finding and Determination of Effect to include, “Based on the USFWS review and concurrence with this analysis, a review of all recent scientific literature on hares and lynx relevant to this project, discussions with top lynx experts regarding the effects of this project, the consistency of the project with the LCAS, and the author’s personal experience with lynx and lynx habitat in north central Washington since 1989, it is determined that none of the alternatives proposed for this project threatens the viability of lynx in or near the project area”.

Lynx Comment D

Removing the only aid to recovery for this (lynx) *habitat by logging for short term economic benefits makes no sense and is contrary to the letter and spirit of the Endangered Species Act. Recovery and protection must remain top priorities.*

Response
The scientific basis of the statement ‘the only aid to recovery’ or to what it is referring is not clear. Lynx habitat responds very favorably to fire (in about 20 years in north central Washington) and, as described in the response above, salvage would have little effect on that positive response. The analysis described in the DEIS pages 3-101 to 3-112 concluded that each of the action alternatives were “not likely to adversely affect lynx”, consistent with ESA direction. The FEIS has been clarified as follows, “The difference between alternatives that harvest dead and dying trees in lynx habitat (B, D, and E) and those that don’t (A and C) is not substantial, and in 20 years there would not be a measurable difference for lynx or hare population recovery for any alternative”. The Tripod project is consistent with all LCAS conservation measures. The LCAS is the document that helps implement the Endangered Species Act for lynx until a recovery plan is finalized. The economic benefits of each alternative are shown in Figure 2.3 on page 2-45 of the DEIS.

Lynx Comment E

Impacts of winter logging on lynx could be reduced by rotating the location of winter logging activities and roads and trails cleared for such activities so that in any one winter season only a small portion of the timber sale is being accessed.

Response
DEIS page 3-108 notes that only a fraction of lynx habitat in a suitable condition would be subject to disturbance at any point in time and because all of the potentially harvested acres is currently unsuitable for lynx, there is a greatly reduced likelihood that lynx would be present. The DEIS page 3-108 also states: "The disturbance from logging would last at most one season for any individual harvest unit and would more likely last from a few days to a few weeks." Logging would not necessarily occur in the winter. The DEIS page 3-108 also states that temporary displacement of individual lynx would have no consequence for lynx populations.

Lynx Comment F

…loss of downed wood and a potential increase in noise and snowmobile activities accompanying logging can be harmful to lynx.

Response
The DEIS page 3-108 includes a description of Noise Disturbance and notes "…elevated noise levels may temporarily displace lynx from these areas. Only a fraction of lynx habitat in suitable condition would be subject to this kind of noise disturbance at any point in time, however, and because all of the potentially harvested acreage is currently unsuitable for lynx, there is a greatly reduced likelihood that lynx would be present. The disturbance from logging would usually last one season for any individual harvest unit and would actually amount to a few days to a few weeks. Temporary displacement of individual lynx would have no consequence for lynx populations".

The Forest Travel Plan prohibits snowmobile travel in the areas planned for harvest in lynx habitat that is currently unsuitable for lynx. The DEIS page 107 states "Snowmachines are restricted to roads and routes designated for use in the Okanogan National Forest Travel Plan. This analysis assumes use outside these routes is minor and not measurable."

The FEIS in Chapter 3, Section 3.2, Endangered, Threatened, and Sensitive Wildlife, Canada Lynx, Environmental Consequences has been clarified," Down wood cover would continue to increase over time in treatment areas for all alternatives due to fall of burned trees that would be left (those smaller or larger than the diameter limit and damaged trees not highly likely to die which in fact do die and fall). Treated areas would provide highly productive hare habitat and superior foraging conditions for lynx within approximately 20 years due to dense regeneration of conifer trees (particularly lodgepole pine).

Lynx Comment G

I am writing to strongly protest the current plan to log large trees from the Tripod burn area, knowing they are critical habitat for Canada Lynx.

Response
The effect of harvesting large trees in lynx habitat was considered in the analysis for this project. The FEIS in Chapter 3, Section 3.2, Endangered, Threatened, and Sensitive Wildlife, Canada Lynx, Environmental Consequences has been clarified to include the following

language: “Burned stands where harvest is proposed would not be favorable for lynx or hares for about 20 years. Few lynx will use these areas until they recover sufficiently to provide cover for hares and lynx taller than the average snow depth. Under alternatives B and D, removal of standing dead and dying trees in burned lynx habitat would reduce (but not eliminate) future log cover for hares in regenerating stands. It would also reduce future down wood cover for lynx kittens. Nevertheless, in 20 years enough snags, logs, and conifer tree regeneration would be present in each 20-acre neighborhood where harvest occurred to provide fully for lynx and hare recovery.”

The FEIS includes an alternative that retains all snags and trees expected to die greater than or equal to 21 inches DBH. The FEIS in Chapter 3, Section 3.2, Endangered, Threatened, and Sensitive Wildlife, Canada Lynx, Environmental Consequences states: “Alternative E would harvest trees from the same number of acres as alternative B, but would leave the dead and dying trees 21 inches and larger meaning there would be, on average, 2.2 more snags per acre. Until these trees fell there would not be a measurable effect of retaining these dead trees for lynx or hares. When they did fall there would be a slight increase in cover for lynx and hares.”

Lynx Comment H

The Salmon Ck. drainage is the key linkage east-west for wolf, wolverine, lynx, and grizzly (3-114). Another reason for not messing with this watershed.

Response
Harvesting dead and dying trees is not likely to impact the ability of large carnivores to move through any area. The DEIS pages 3-98, 3-116, and 3-124 state that none of the alternatives would impact the ability of carnivores (wolf, grizzly bear, or wolverine) to move through the Salmon Creek linkage area. A section entitled ‘Key linkage areas for lynx’ has been added to the FEIS in Chapter 3, Section 3.2, Endangered, Threatened, and Sensitive Wildlife, Canada Lynx, Environmental Consequences which states, “Because lynx have demonstrated the ability to move through openings (especially those with ‘islands’ of habitat retained as designed for this project), because suitable habitat that was not impacted by the fire would not be affected in any alternative, and because conservation measures from the LCAS are incorporated to minimize impacts to lynx, none of the alternatives is expected to affect the ability of lynx to move through key linkage areas in Okanogan County.”

Lynx Comment I

We ask that the final EIS have a full cumulative effects analysis of lynx impacts throughout the Tripod Area including the impacts of corridor fragmentation, disturbance by logging and log haul equipment, and changes in the prey base due to the proposed action.

Response
Cumulative effects considered in the DEIS for lynx included timber sales, firewood cutting, fuels treatment, tree planting, suppression rehabilitation and BAER treatments, restoration

activities, invasive plants, livestock grazing, recreational use, mushroom gathering, transportation system, WDFW activities, and timber stand improvement. These are described on pages 3-110 and 3-111 of the DEIS. The cumulative effects conclusion states that "together with the past actions noted in the Affected Environment section and the Direct and Indirect effects described for the project alternatives, the cumulative effects described here do not jeopardize lynx or pose a negative outcome for lynx habitat" (DEIS page 3-112).

The FEIS in Chapter 3, Section 3.2, Endangered, Threatened, and Sensitive Wildlife, Canada Lynx, Environmental Consequences clarifies that, "Burned stands where harvest is proposed (whether harvested or not) will not be favorable for lynx or hares for about 20 years. Few lynx will use these areas until they recover sufficiently to provide lynx and hare cover taller than the average snow depth."

Harvesting dead and dying trees is not likely to impact the ability of large carnivores to move through any area. The DEIS pages 3-98, 3-116, and 3-124 state that none of the alternatives would impact the ability of carnivores (wolf, grizzly bear, or wolverine) to move through the Salmon Creek linkage area. A section entitled 'Key linkage areas for lynx' has been added to the FEIS in Chapter 3, Section 3.2, Endangered, Threatened, and Sensitive Wildlife, Canada Lynx, Environmental Consequences which states: "Because lynx have demonstrated the ability to move through openings (especially those with 'islands' of habitat retained as designed for this project), because suitable habitat that was not impacted by the fire will not be affected in any alternative, and because conservation measures from the LCAS are incorporated to minimize impacts to lynx, none of the alternatives is expected to affect the ability of lynx to move through key linkage areas in Okanogan County."

The DEIS page 3-108 includes a section entitled 'Noise Disturbance' which assesses the effects of heavy equipment, motorized vehicles, and chainsaws for all alternatives and concludes "Under alternatives B and D, patches of unburned or lightly burned lynx habitat – still in a suitable condition – adjoin some treatment areas, and the elevated noise level may temporarily displace lynx from these areas. Only a fraction of lynx habitat in suitable condition would be subject to this kind of noise disturbance at any point in time, however, and because all of the potentially harvested acreage is currently unsuitable for lynx, there is a greatly reduced likelihood that lynx would be present. The disturbance from logging would usually last one season for any individual harvest unit and would actually amount to a few days to a few weeks. Temporary displacement of individual lynx would have no consequence for lynx populations".

The FEIS in Chapter 3, Section 3.2, Endangered, Threatened, and Sensitive Wildlife, Canada Lynx, Environmental Consequences has been clarified to state "Under alternatives B and D, removal of standing dead and dying trees in burned lynx habitat would reduce (but not eliminate) future log cover for hares in regenerating stands. It would also reduce future down wood cover for lynx kittens. Nevertheless, in 20 years enough snags, logs, and conifer tree regeneration would be present in each 20-acre neighborhood where harvest occurred to provide fully for lynx and hare recovery."

"Little negative consequence for lynx habitat recovery is expected. In approximately 20 years, when young trees have attained heights that protrude above snow, the lynx habitat

that burned would provide abundant forage and protective low cover for snowshoe hares. Hare populations will thrive under these conditions."

Wildlife – Salvage Of Snags Greater Than or Equal to 21"DBH

Wildlife-Snags 21" Comment A

The proposal to cut down old growth Ponderosa pine, Douglas fir, larch and other large-diameter trees and snags runs contrary to longstanding scientific consensus…… Preserve some of the big trees……. We feel that logging big trees will further destabilize the area and make recovery harder……..Protect, do not log large live trees. Cutting large trees ignores the sound science supporting current regulations, which limit the cut of larger diameter trees in the first place.

Response

Some of the best current science regarding post-fire ecology is documented in the work of Beschta et al. (1995), Beschta et al. (2004), Hutto (2006), and Lindenmeyer and Noss (2006). The design criteria for the action alternatives followed the principles suggested by these scientists. The DEIS page 3-49 notes that "Most of the recommendations from Lindenmeyer and Noss (2006 – page 955) and Hutto (2006 – page 990) were incorporated in the design for this project." The underlying rationale for their recommendations is habitat retention and preserving biological and physical processes.

This project does not propose to harvest any trees that are expected to survive. As stated on page 2-5 of the DEIS, "Salvage logging would focus on removing dead trees and fire killed trees that are expected to die within one year of project implementation."

As stated in the DEIS page 3-49: "Alternatives were designed to retain large portions of the fire area, the watersheds, subwatersheds, and neighborhoods completely as they are; keeping the largest dead trees, all pre-fire snags, and all down logs; while acknowledging that some areas would be harvested and would resemble stands 10 or 20 years post fire where snag attrition has already occurred and the species that favor these (open) habitats would be provided for 10-20 years earlier than if they were not harvested (Hutto 2006).

As reported in the DEIS pages 3-49 to 3-62, no less than 95% of the burned portion of any watershed (Figure 3.2-18), 89% of the burned part of any habitat type (Figure 3.2-19), 86% of the burned habitat in any subwatershed (Figures 3.2-21, 22, and 23), and 76% of all habitat in any 100-acre neighborhood (Figures 3.2-28, 29, and 30) would be retained as it occurs after the fire (including all stages of fire-related plant mortality and all levels of previous harvest).

The FEIS in Chapter 3, Section 3.2, Burned Forest and Snag Habitat, Background Information has been clarified, "Snags and logs provide crucial ecological functions including multiple hydrologic functions, nutrient storage and release, microclimate moderation (such as

is needed for winter or summer habitat for many species), restriction of soil movement, sites for feeding, breeding, germination, growth, and decomposition, and terrestrial and aquatic hiding cover (Laudenslayer et al. 2002, Rose et al. 2001, Stevens 1997). Snag and log retention is a key feature of the design of the alternatives for this project." The approach adopted for this project retains habitat and preserves biological and physical processes.

At the harvest unit scale, burned habitat would be altered to be more open. This would provide breeding, feeding, and hiding areas for a different group of species as reported on page 3-62 of the DEIS. The FEIS in Chapter 3, Section 3.2, Burned Forest and Snag Habitat, Environmental Consequences has been further clarified to note that, within harvest areas, habitat would be available for species that prefer openings after the removal of dead and dying trees.

An alternative that limited the harvest of dead and dying trees to those less than 21" DBH was added to the FEIS (Alternative E). The FEIS, in Chapter 3, Section 3.2, Burned Forest and Snag Habitat, Environmental Consequences, draws the conclusion that: "Because most cavity users prefer larger snags, and because larger snags persist longer, the most important benefit of Alternative E could be that snag habitat within salvage harvest units would be available for a longer period of time. This alternative would also be more consistent than the other action alternatives with the recommendations from Beschta et al. (1995) for leaving large trees."

As reported in the DEIS (Figure 3.2-31 - which was revised for the FEIS to include alternative E) a very large proportion of the large snags (greater than 20" DBH) would be retained in all alternatives.

Finally, on page 3-63 the DEIS concludes: "After the harvest of dead trees and dying trees with a low chance for survival, many snags of various sizes, many live trees of various sizes, and many dying trees of various sizes would be left at all scales. These snags, live trees, and dying trees would provide adequately to support ecological processes of regeneration, regrowth, and recovery throughout the fire and salvage area."

Wildlife-Snags 21" DBH Comment B

We do not feel that logging of trees or snags larger than the 21 inch limit of the Eastside Screens is warranted…. We do not support a Forest Plan amendment to harvest live trees over 21 inches DBH……Leave the largest, oldest trees standing.

Response

This project does not propose to harvest any trees that are expected to survive. As stated on page 2-5 of the DEIS "Salvage logging would focus on removing dead trees and fire killed trees that are expected to die within one year of project implementation." On page 3-63 of the DEIS the result of the removal of snags and trees expected to die is summarized in the statement: "After the harvest of dead trees and dying trees with a low chance for survival, many snags of various sizes, many live trees of various sizes, and many dying trees of various sizes would be left at all scales. These snags, live trees, and dying trees would

provide adequately to support ecological processes of regeneration, regrowth, and recovery throughout the fire and salvage area.

The purpose and need for this project is to recover a portion of the fire killed and injured trees (that are expected to die within one year of project implementation) while they have economic value. Each alternative would also meet all Forest Plan requirements for resource management. DEIS pages 3-14 to 3-20 detail the economic value of each alternative. The FEIS includes an alternative that retains all snags and trees expected to die greater than or equal to 21 inches DBH (Alternative E). A Forest Plan amendment to allow the removal of dying trees greater than or equal to 21 inches DBH would not be needed if Alternative E were selected. The FEIS in Chapter 3, Section 3.2, Burned Forest and Snag Habitat, Environmental Consequences states: "Alternative E provides a different approach to habitat retention within the harvest units. On average it would provide 2.2 more large snags per acre within the areas harvested compared with alternatives B, C, and D. At the harvest unit scale, this alternative would provide more options for cavity users and species that require down wood, especially those benefiting from open conditions like Lewis' woodpeckers. More foraging, roosting, and nesting habitat would be provided on the 2,748 acres considered in this alternative. Because of home range size and territorial competition, more snags would not necessarily equate to more cavity users. Because most cavity users prefer larger snags, and because larger snags persist longer, the most important benefit of alternative E could be that snag habitat within salvage harvest units would be available for a longer period of time. This alternative would also be more consistent than the other action alternatives with the recommendations from Beschta et al. (1995) for leaving large trees."

Wildlife – Snags 21" DBH Comment C

Forest Plan and Regional standards for snags and Eastside Screens require you to leave trees……. The minimal extra volume gain and supposed economic gain of offering this large diameter timber comes at the cost of violating the Eastside Screens and all the ecological benefits that retaining large trees, snags, and logs on the landscape provide.

Response

Under the Eastside Screens interim wildlife standards, the intent is to maintain and/or enhance LOS components by (in part) maintaining remnant late and old seral and/or structural live trees greater than or equal to 21" DBH. Harvesting dying trees with a low probability of survival, from stands that were impacted in the Tripod Fire, would not limit the ability of those stands to develop late and old characteristics at some point in the future (many decades from now).

A July 3, 2007 Okanogan-Wenatchee National Forest letter of guidance (FEIS Appendix D) documents the process that was used to determine snag levels for post-fire salvage logging projects, using the best available science. The intent of the guidance provided in this letter is to provide habitat conditions in post-fire environments (snag abundance and distribution) that contribute towards the viability of primary cavity excavators and secondary cavity nesters, recognizing that past management practices have reduced the number of large snags and down logs in managed stands. The letter provided snag management guidance that was

used to design the Tripod project. The intent of the Tripod Fire Salvage Project is to only salvage dead and fire-injured trees that are expected to die within one year of project implementation. Generally, any tree that is expected to live would be retained on the landscape. This is consistent with the intent of the Eastside Screens to maintain or enhance late and old structural stages on the landscape.

As stated on page 2-5 of the DEIS "Salvage logging would focus on removing dead trees and fire killed trees that are expected to die within one year of project implementation." On page 3-63 of the DEIS the result of the removal of snags and trees expected to die is summarized in the statement: "After the harvest of dead trees and dying trees with a low chance for survival, many snags of various sizes, many live trees of various sizes, and many dying trees of various sizes would be left at all scales. These snags, live trees, and dying trees would provide adequately to support ecological processes of regeneration, regrowth, and recovery throughout the fire and salvage area.

The Design Criteria around which each alternative was designed are detailed on pages 3-41 and 3-42 of the DEIS. The criteria were developed to support the ecological processes of regeneration, regrowth, and recovery and were designed specifically to meet Regional Standards and Forest Plan guidance as amended by the Eastside Screens. On page 3-42 of the DEIS, the statement is made: "These criteria, taken together, allow the project to meet current Forest Plan direction." Eastside Screen guidance is met in all alternatives.

Snags 21" DBH *Comment D*

Do not log large live trees greater than 18 inches in diameter…… We would suggest a diameter cap of 18" to protect the recovery and stand development process required after a wildfire.

Response

It is not clear what basis the reviewer used for suggesting an 18 inch diameter limit. This project does not propose to harvest any trees that are expected to survive. As stated on page 2-5 of the DEIS "Salvage logging would focus on removing dead trees and fire killed trees that are expected to die within one year of project implementation." The project, as proposed, protects vegetation and wildlife recovery and allows for regeneration of forest stands along normal successional pathways. The FEIS includes Alternative E which would not salvage harvest any tree greater than or equal to 21" DBH.

Wildlife – Northwest Forest Plan

Wildlife – Northwest Forest Plan Comment A

The Northwest Forest Plan says, "management should focus on retaining snags that are likely to persist until late successional conditions have developed and the new stand is again producing large snags."

Response: The Tripod project is not within the Northwest Forest Plan area, however, the design criteria listed on pages 3-41 and 3-42 of the DEIS describe the retention of a variety of snags including all of the largest snags (> 28" DBH) which have the highest likelihood of persisting for the longest possible amount of time. Snag persistence for all alternatives is described on page 3-47 of the DEIS.

Wildlife – Other

Wildlife – Other Comment A

The proposed Forest Plan amendments to allow salvage operations in MA 12 and to allow live trees greater than 21 inches dbh to be salvage harvested should not be adapted. These proposed amendments would have significant negative environmental (habitat) impacts.

Response

The Forest Plan amendments were considered carefully and the effects completely assessed. In MA 12, based on the fact motor vehicles would be allowed in places where there is already little lynx habitat because of the fire, and that no logging activity would occur within lynx habitat that is in a suitable condition, the DEIS on page 3-109 states that even with an amendment to allow motorized access for timber harvest operators: "Lynx habitat would be perpetuated and current and future habitat needs would be met."

The FEIS in Chapter 3, Section 2.3, Burned Forest and Snag Habitat, Environmental Consequences, has been clarified to include a further description of the analysis for amending the Forest Plan to allow the harvest of dying trees 21 inches DBH and larger. It states: "…considering the intent of the Screens to provide for the retention and enhancement of late and old structural stages in eastside forests, harvesting dying trees with a low probability of survival, from stands that were impacted in the Tripod fire, would not limit the ability of those stands to develop late and old characteristics at some point in the future (many decades from now)."

"Wildlife that benefit from late and old structural conditions in live forests were affected severely by the fire. The harvest of dead and dying trees (including some dying trees greater than or equal to 21 inches DBH) within stands that do not have late and old structural conditions, would have little impact on these species since they are unlikely to be present. Even with the amendment proposed that would allow the harvest of fire-injured trees greater than or equal to 21" DBH that would be dead within one year, the intent of the Eastside Screens interim wildlife standard (to provide for old-growth species) would be met."

Wildlife – Other Comments B

The plan to retain 40 acres of unharvested forest habitat that is representative of post-fire conditions is unclearly stated.

The design criteria on page 3-41 of the DEIS describe the retention of 40 acres of habitat representative of existing post-fire conditions in all 100-acre 'neighborhoods' within and surrounding harvest units. The FEIS, in Chapter 3, Section 3.2, Burned Forest and Snag Habitat, Background Information, includes a clarification of neighborhoods which reads: "In the Wildlife section, 20 acre and 100 acre 'neighborhoods' of analysis are described. These area sizes were employed to approximate the home ranges of many of the species being considered. This is an analysis method that facilitates the examination of habitat components and allows the determination of effects at the smallest scale, in a fashion similar to the Lynx Analysis Unit method employed for lynx. Neighborhoods would be like a 'roving window' through which the analysis area could be viewed, or could be described as a looking glass of a particular size that could be moved anywhere at random and the standards described would still be met."

Wildlife – Other Comments C

Loss of habitat and wildlife opportunities on the proposed logged acres should be analyzed.

Response
Habitat changes that would occur in response to salvage harvest are noted throughout DEIS Chapter 3.2 Wildlife.

Specifically DEIS page 3-61 describes the effects of the harvest activities within the harvest units on wildlife. It states: "It is not intended for the area within harvest units to provide optimum habitat for all cavity nesters. In fact, black-backed woodpeckers, mountain bluebirds, and other species that exhibit a preference for burned forest are not likely to use these harvested stands. A variety of wildlife species (dusky flycatchers, chipping sparrows, house finches, mule deer, black bears, wild turkeys, tree swallows, Western bluebirds, Nashville warblers) that benefit from forest openings, including some that use snags, would be provided for in these areas."

The FEIS in Chapter 3, Section 3.2, Burned Forest and Snag Habitat, Environmental Consequences has been amended, describing the effects within harvest units that reads: "Small mammals (chipmunks, deer mice), some amphibians and reptiles (long-toed salamanders, rubber boas, western skinks, Western fence lizards), and possibly some unknown invertebrates would likely be limited in these areas for a number of years", referring to the effect of salvage harvest on these animals.

Wildlife – Other Comment D

We ask that an analysis of the transportation system identify which roads might be closed to compensate for species at risk from greater visibility and loss of cover from hiding.

Response
As stated in DEIS page 1-13, the purpose and need of this project "is not to manage roads differently" and "in most cases open roads would remain open and closed roads would

remain closed". A travel analysis is required when proposing road closures, and given the need and timing of this project an analysis of all the roads within the project was not needed. DEIS pages 3-337, 3-338 discuss the travel analysis method used for this project. Any roads opened for salvage harvest would be closed when operations are complete or prior to seasonal shutdown.

Response to Conservation Northwest Comment Letter

Substantive comments 1-46 below are from Conservation Northwest

Comment 1

While many important aspects of the collaborative group's proposal were adopted by the Forest Service, it inexplicably rejected reasonable protections for ecologically important large diameter live and dead trees, and lynx habitat. As a result, the Forest Service proposal to log old trees and delay the recovery of lynx habitat is highly controversial and unsupportable on legal and scientific grounds

Response 1

This project does not propose to harvest any trees that are expected to survive. As stated on page 2-5 of the DEIS "Salvage logging would focus on removing dead trees and fire killed trees that are expected to die within one year of project implementation."

As stated in the DEIS page 3-49: "Alternatives were designed to retain large portions of the fire area, the watersheds, subwatersheds, and neighborhoods completely as they are; keeping the largest dead trees, all pre-fire snags, and all down logs; while acknowledging that some areas would be harvested and would resemble stands 10 or 20 years post fire where snag attrition has already occurred and the species that favor these (open) habitats would be provided for 10-20 years earlier than if they were not harvested (Hutto 2006).

DEIS pages 3-49 to 3-62 assess the effects of the action alternatives on snags and wildlife habitat and disclose that no less than 95% of the burned portion of any watershed (Figure 3.2-18), 89% of the burned part of any habitat type (Figure 3.2-19), 86% of the burned habitat in any subwatershed (Figures 3.2-21, 22, and 23), and 76% of all habitat in any 100-acre neighborhood (Figures 3.2-28, 29, and 30) would be retained if it occurs after the fire (including all stages of fire-related plant mortality and all levels of previous harvest).

The FEIS in Chapter 3, Section 3.2, Burned Forest and Snag Habitat, Background Information has been clarified to include the following: "Snags and logs provide crucial ecological functions including multiple hydrologic functions, nutrient storage and release, microclimate moderation (such as is needed for winter or summer habitat for many species), restriction of soil movement, sites for feeding, breeding, germination, growth, and decomposition, and terrestrial and aquatic hiding cover (Laudenslayer et al. 2002, Rose et al. 2001, Stevens 1997). Snag and log retention is a key feature of the design of the alternatives for this project." The approach adopted for this project retains habitat and preserves biological and physical processes.

An alternative was included in the DEIS (Alternative C) that would avoid logging in lynx habitat. It is described on pages 2-13 and 2-14. The effects of Alternative C have been

clarified in the FEIS in Chapter 3, Section 3.2, Endangered, Threatened, and Sensitive Wildlife, Canada Lynx, Environmental Consequences.

Mitigation measures were included in all alternatives to insure lynx habitat conservation. They are described on DEIS page 2-17.

All recommended conservation measures from the Lynx Conservation Assessment and Strategy (the unified strategy for conserving lynx across federal agencies in the United States) that apply to the Tripod project would be implemented under all alternatives. Referring to the conservation measures, LCAS states "…projects that implement them are generally not expected to have adverse effects on lynx."

The DEIS page 3-238 states: "Salvage logging would have little or no effect on the residual conifer seed source in harvest units because only dead trees and fire injured trees expected to die within one year after the onset of logging would be removed. Monitoring on the Bitterroot Fires in Montana revealed no difference in conifer seedling abundance on salvage logged and unlogged areas (Kolb 2006). Natural conifer regeneration of Montana Douglas fir plant communities similar to portions of Mixed Conifer and Montane Forest habitat in the affected environment was closely correlated to the occurrence of a seed source. The majority of lodgepole pine seed production would be retained in salvage harvest units because all trees (live or dead) less than 10 inches DBH would not be harvested. All trees less than 12 inches DBH would be retained in harvest units within lynx habitat currently in an unsuitable condition, increasing the likelihood that lodgepole pine seed is retained on site and natural regeneration would occur. "

"Salvage harvest operations would likely be completed within two years after the fire and there would be little or no logging damage to post-fire natural regeneration (McIver and Star 2001). Soil disturbed by logging would provide favorable conditions for the establishment of natural regeneration because disturbed mineral soil generally produces the best germination and seedling survival for all conifer species that would re-establish after the fire (Lotan and Perry 1983, Burns and Honkala 1990). Soil disturbance attributed to salvage logging is not expected to impede natural regeneration establishment because seedling stocking on skid trails often reaches higher levels than on undisturbed areas (Smith and Wass 1976)."

The FEIS has been clarified in Chapter 3, Section 3.2, Endangered, Threatened, and Sensitive Wildlife, Canada Lynx, Environmental Consequences to restate the above information from the Forest Vegetation section in the Canada Lynx section, and add a statement that reads "The difference between alternatives that harvest dead and dying trees in lynx habitat (B, D, and E) and those that don't (A and C) is not substantial, and in 20 years there would not be a measurable difference for lynx or hare population recovery for any alternative".

A statement has been added in the FEIS in Chapter 3, Section 3.2, Endangered, Threatened, and Sensitive Wildlife, Canada Lynx, Consistency Finding and Determination of Effect: "Based on the USFWS review and concurrence with this analysis, a review of all recent scientific literature on hares and lynx relevant to this project, discussions with top lynx experts regarding the effects of this project, the consistency of the project with the LCAS,

and the author's personal experience with lynx and lynx habitat in northcentral Washington since 1989, it is determined that none of the alternatives proposed for this project threatens the viability of lynx in or near the project area".

Comment 2

In addition to this comment letter, I incorporate here by reference my past comments submitted to your office on this project in November 2006, December 2006, and January 2007 including the proposed action we submitted referenced above, a number of attachments from legal and scientific experts, and many research papers cited herein. I request that you consider and respond to all our input.

Response to 2
Comments sent in November and December 2006 and January 2007 were considered in the development of the DEIS.

Comment 3
We strongly oppose the proposal to amend the Forest Plan and to cut down and remove ecologically valuable large-diameter trees. The proposal directly conflicts with best available science and runs contrary to well-established scientific consensus. The analysis of impacts, including threats posed to the viability of snag dependent wildlife, and discussion of the controversial proposal to logging live, dead, and dying old-growth trees does not comport with the National Environmental Policy Act, National Forest Management Act, Administrative Procedures Act, and other federal environmental laws and regulations.

The narrow focus of this project and rationale for the amendment does not meet the "intent" of the Eastside Screens and amendments do not comport with exceptions considered by the screens.

Response to 3
The Eastside Screens document acknowledges that: "Outside of LOS, many types of timber sale activities are allowed." The goal of the Screens Interim Wildlife Standard is retention of habitat for old growth related wildlife and retention of snag habitat and down wood habitat for the variety of cavity users and down wood users in areas where timber harvest is planned.

The Eastside Screens noted that salvage sales located out of currently mapped old growth will not be subject to the interim ecosystem standard (which requires characterization of the sale area for patterns of stand structure by biophysical environment and compare to the historic range of variability). The Tripod Fire Salvage Project is a salvage sale and does not enter currently mapped old growth. However the Tripod Fire Salvage project is subject to the interim wildlife standards. Under the interim wildlife standards, Scenario A, 2) the intent is to maintain or enhance LOS components by maintaining remnant late and old seral and /or structural live trees and not harvest any stands that currently meet the definition of late and old structure in Scenario A. (The Tripod project does not enter any stands that meet the

definition of late and old structure, DEIS page 1-35 to 1-36). Under the Interim Standards, Scenario A, 4) the intent recognizes that most (if not all) wildlife species rely on moderate to high levels of snags and down logs for nesting, roosting, denning and feeding and require that sales maintain snags and green tree replacements (for future snags) greater than or equal to 21" DBH at the 100% population level for primary cavity excavators, which should be determined using the best available science.

A July 3, 2007 Okanogan-Wenatchee National Forest letter of guidance (FEIS Appendix D) documents the process that was used to determine snag levels for post-fire salvage logging projects, using the best available science. The intent of the guidance provided in this letter is to provide habitat conditions in post-fire environments (snag abundance and distribution) that contribute towards the viability of primary cavity excavators and secondary cavity nesters, recognizing that past management practices have reduced the number of large snags and down logs in managed stands. The letter then provided snag management guidance that was used to design the Tripod project. The intent of the Tripod Fire Salvage Project is to only salvage dead and fire-injured trees that are expected to die within one year of project implementation. Any tree that is expected to live would be retained on the landscape. This is consistent with the intent of the Eastside Screens to maintain or enhance live trees greater than or equal to 21" DBH on the landscape. The Scott Guidelines (DEIS pages 2-8, 2-24 to 2-25, FEIS Appendix K and Appendix M) were used to determine those trees expected to die within one year, that is, trees with a low probability of survival. Any tree with a moderate or high probability of survival would be retained on the landscape. Since trees with a low probability of survival are still living at this time, the DEIS (page 2-7 to 2-8) proposed a project-specific, non-significant amendment to the Forest Plan to allow live trees greater than or equal to 21" DBH to be salvage harvested. This amendment would allow economic recovery of those fire-injured trees greater than or equal to 21" DBH with a low probability of survival. The Ninth Circuit Court recently confirmed that a Forest Plan amendment of the 21" DBH upper limit on live trees was appropriate (DEIS page 2-8). The 2000 implementing regulations for the National Forest Management Act of 1976 (36 CFR 219.3(b)(2)) state that, "(t)he Forest or Grassland Supervisor is the responsible official for a plan amendment or revision, except to the extent the Regional Forester or Chief decides to act as the responsible official". The National Environment Policy Act of 1969 requires federal agencies to utilize a systematic, interdisciplinary analysis of federal actions, and include in every report the environmental impact of the proposed action and alternatives. The analysis documented in this EIS meets the National Environmental Policy Act of 1969 and it's implementing regulations and Forest Service policy, to inform the public of the proposed actions and alternatives and to disclose the effects of implementation.

Comment 4A

In an attached 2003 letter to this forest regarding guidelines for implementing this policy from Regional Forester Linda Goodman's Office, she states that while emerging science on eastside forests has evolved "these finding reinforce the importance of retaining and recruiting large, old trees in the eastside landscape." Forest plan amendments are encouraged "where this will meet LOS objectives by moving the landscape toward HRV, and providing LOS for the habitat needs of associated wildlife species…Economic

considerations are important but are not considered adequate justification alone for conducting harvest activities in LOS stands."

The Forest Service proposal to eliminate protections provided by the eastside screens is not compatible with federal policy and law. As noted in the Regional Forester's Forest Plan Amendment #2 (1995) the eastside screens are meant to address a profound deficiency in late or old forest structures. This document is explicit in stating that the prohibition against logging live trees >21"DBH is necessary to meet the Forest Service's legal obligations under NFMA. If the Forest Service changes this clear management direction to allow live trees >21" DBH to be logged, than they will violate NFMA, absent a compelling analysis as to why the agency doesn't violate the statute.

Response 4A
See Response to Comment 3

Comment 4B
The DEIS refers to this amendment as "non significant" because of the snag retention in the large acreage left untreated and for the retentions within treated areas. This determination of significance in the analysis does not take into account the species of trees removed through this amendment and their abundance on the landscape, nor the cumulative impacts of fire suppression and safety tree removal along roadways on large trees and snags. These inadequacies need to be addressed. We appreciate the level of analysis done by your staff at a 5-watershed scale by Plant Association Groups as reflected on Pg 3-48 in a table and discussions.

The plan amendment is significant for the following reasons:

A. It places economic objectives over ecological objectives which fundamentally shifts the balance among competing objectives in the forest plan in a way that is inconsistent with the east side screens;

B. Post-fire logging will create more of an already over-abundant forest type (dense young stands with little legacy component) while reducing an under-represented forest type (complex young stands with abundant legacies).

C. Logging large dying trees is not just inconsistent with the letter of the screens, it is inconsistent with the intent of the screens, which is to restore under-represented old forest features and preserve options for future management. Conducting logging that further reduces an already depleted feature of old growth forests (large trees live or dead) is plainly inconsistent with the intent of the screens;

D. This plan amendment is precedent setting;

E. This plan amendment is not limited in scope. The FS says that this plan amendment would cover nearly 40,000 acres while the logging is proposed for only 3,400 acres. This seems far from limited in geographic scope;

F. This plan amendment is contrary to an October 2, 1997 guidance memo from the regional forester reiterating the importance of large trees and the need for compelling rationale to justify their removal.

Response to 4B

The 2000 implementing regulations for the National Forest Management Act of 1976 (36 CFR 219.3(b)(2)) state that." the Forest or Grassland Supervisor is the responsible official for a plan amendment or revision, except to the extent the Regional Forester or Chief decides to act as the responsible official". If the change resulting from the amendment is determined not to be significant for the purposes of the planning process, the Forest Supervisor may implement the amendment following appropriate public notification and satisfactory completion of NEPA procedures. For the Tripod Fire Salvage Project, the intent to amend the Forest Plan was identified in Notification of Intent to Prepare an EIS, in the initial scoping letter sent to the public, in news releases announcing the project and in the Draft EIS. The Forest Service Manual 1926.5 (1/31/2006) lists the reasons for a need to amend a land management plan, which include, "Desired implementation of projects or activities outside the scope of the land management plan". The Tripod Fire Salvage Project is project which proposed four activities that were outside the scope of the Okanogan Forest Plan. Forest Service Manual 1926.52 identifies changes to a Land Management Plan that are not significant which include, "Actions that do not significantly alter the multiple use goals and objectives for long term land and resource management." FEIS Chapter 2, Forest Plan Amendment section, has been updated to display the reasons that the amendment to allow salvage harvest of trees greater than or equal to 21" DBH that are expected to die is not significant.

Comment 5

The summary following the table states that due to this large scale analysis, it is concluded that there are sufficient snags in all PAG's on the landscape. This is valuable information, but what about a further refined analysis at the project level done by species specific PAGs? For example, by clumping ponderosa pine and Douglas-fir into a category of "dry forests" the analysis obscures and fails to disclose direct, indirect, and cumulative impacts and does not demonstrate that sufficient snags exist to ensure the viability of wildlife dependent on specific tree species.

Response to 5

The wildlife analysis was conducted at the project level based on Habitat Types that were described in the DEIS on page 3-21. The following paragraph was added to the FEIS in Chapter 3, Section 3.2, Affected Environment: "Stratification of the vegetation communities within each project area is an important process that allows the determination of effects for the species associated with each community. For the Tripod project, habitat groupings were chosen intentionally to reflect the specific wildlife species present, the distinction in habitats

used by the wildlife assessed in this analysis, and the different biophysical environments that exist within the Tripod project area."

Comment 6A

According to follow-up emails I had with ID Team staff, this analysis is done over 540,000 acres covering the Lower Chewuch, Middle Methow, and Salmon Creek. These numbers could mean that there are patches of high densities of large snags in certain areas, while also not accounting for large areas within this nearly ½ million acres with very low densities. Therefore, it doesn't tell us the connectivity between the large snag areas or the site specific project level snag data. To maintain viability of species through proper distribution of these large snags and live trees, it is critical to analyze at multiple scales prior to any actions and disclose findings in NEPA documents.

Response to 6A

The DEIS pages 3-49 and 3-40 describe the sources of the Tripod-specific inventory information for snag densities used for analysis. Pages 3-49 through 3-62 describe the multiple scales, multiple fire mortality levels, multiple tree and snag sizes, multiple habitats, and multiple levels of previous harvest analyzed and disclosed in the DEIS.

Comment 6B

It will take a long time before replacement trees grow from the regeneration and re-plantings of this proposed action to become large and await disturbance to become beneficial snags to the system. This must be disclosed in NEPA documentation.

Response 6B

Recent science regarding the 'gap' of snags that occurs following wildfire was reviewed and cited on page 3-47 of the DEIS. The DEIS (page 3-47) states: "For all alternatives, including 'no-action', a substantial gap of snag habitat will occur in the areas burned with stand replacing mortality as described in Agee (2002)."

The consequences of the removal of snags within harvest units where the snag gap would be increased (and habitat for species that prefer open conditions would be improved) is described in the DEIS on page 3-61. The FEIS in Chapter 3, Section 3.2, Burned Forest and Snag Habitat, Environmental Consequences has been clarified to read: "Harvest would hasten the period when some snags would be absent from the acres where logging occurred. As stated by Hutto (2006) these areas would emulate a later stage of succession; something like a forest 10 years after a fire. The period of snag dearth would be approximately 20 years longer than the adjacent unharvested areas".

Comment 7

There is not sufficient analysis to demonstrate viable populations of wildlife will be maintained well distributed across the areas proposed for logging.

Response to 7

DEIS pages 3-33, 3-36, 3-67, 3-72, 3-92, 3-101, 3-112, 3-118, 3-121, 3-125, 3-127, 3-129, 3-131, 3-133, and 3-136.disclose the summaries and consistency findings for different species and groups.

Comment 8A

The Forest Service has an obligation to incorporate the findings of ICBEMP into all future projects. The ICBEMP analysis showed that traditional salvage logging that removes large trees (live or dead) is not compatible with ecosystem management.

Can salvage timber sales be compatible with ecosystem-based management?
Our findings suggest that this type of harvesting is not compatible with contemporary ecosystem-based management. Ecosystem-based management would emphasize removing smaller green trees with greater attention to prevention of mortality rather than removal of large dead trees.

Quigley, Thomas M., tech. ed. 1996; The Interior Columbia Basin Ecosystem Management Project: Scientific Assessment.) Gen. Tech. Rep. PNW-GTR-382; Page 178.

The Forest Service has entered into an MOU promising to apply this new science into plan amendments and project implementation:

The Purpose of this Memorandum of Understanding is to cooperatively implement the attached "The Interior Columbia Basin Strategy" to guide the amendment and revision of forest (FS) and resource management (BLM) plans and project implementation on public lands administered by the Forest Service and Bureau of Land Management throughout the Interior Columbia Basin. This strategy incorporates the scientific assessment information in, "An Assessment of Ecosystem Components in the Interior Columbia Basin and Portions of the Klamath and Great Basins" (Volumes I through IV - PNW GTR-405, 1997), the analyses supporting or developed as part of the ICBEMP, the "Integrated Scientific Assessment for Ecosystem Management" developed by the Interior Columbia Basin Ecosystem Management Project (ICBEMP) as guidance for implementation, and all reports generated by the ICBEMP project; all hereinafter referred to as the ICBEMP Science.
http://www.icbemp.gov/html/mou.pdf

Response to 8A

The comment that salvage timber sales are not compatible with ecosystem based management is not specific to the Tripod Fire Salvage Project.. However, the project does meet the goal of ecosystem management by maintaining biological diversity and ecosystem processes. On page 3-63 of the DEIS the result of the removal of snags and trees expected to die is summarized in the statement: “After the harvest of dead trees and dying trees with a low chance for survival, many snags of various sizes, many live trees of various sizes, and many dying trees of various sizes would be left at all scales. These snags, live trees, and dying trees would provide adequately to support ecological processes of regeneration, regrowth, and recovery throughout the fire and salvage area.”

The Interior Columbia Basin Strategy that the commenter cited states (page 4, under Planning Principles and Guidance), “The land and resource management plans provide the explicit programmatic direction that governs management and/or permitted actions on these federal lands. Until administrative unit plans are amended or revised utilizing the ICBEMP Science in this Strategy, management will continue under current plans. This will include interim PACFISH, INFISH direction and applicable consultation and biological opinions, as well as the Eastside Screens for Oregon and Washington National Forests.”

The appropriate source habitat information for the Interior Columbia Basin (Wisdom et al. 2000) was consulted for this project and cited in the DEIS Chapter 3.2. The DEIS Appendix D, Figure D-2 lists broadscale trends for Management Indicator Species based on Lehmkuhl et al. 2001 and Wisdom et al. 2000. The Interior Columbia Basin Ecosystem Management Project, Eastside DEIS, Volume 1 (USDA and USDI 1997a) and other source documents (Lehmkuhl et al 1997) were also considered and cited in the DEIS. The DEIS page 3-36 and page 3-67 displays broad scale trends for primary cavity excavators and users in the Columbia Basin (Lehmkuhl et al. 1997). The project is consistent with the Forest Plan as amended by Regional forester Amendment # 2, and the memorandum referenced above.

The “Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin and portions of the Klamath and Great Basins (Quigley et al.)”, was reviewed and noted in the DEIS Appendix K.

Comment 8B

Further evidence of the significance of this plan amendment is the fact that removing large trees (live or dead) after a moderate or severe fire will unavoidably exacerbate the future "snag gap."

Response to 8B

The description of the ‘snag gap’ is in DEIS page 3-47.

The consequences of the removal of snags within harvest units where the snag gap would be increased (and habitat for species that prefer open conditions would be improved) is described in the DEIS on page 3-61. The FEIS in Chapter 3, Section 3.2, Burned Forest and Snag Habitat, Environmental Consequences has been clarified to read: “Harvest would

hasten the period when some snags would be absent from the acres where logging occurred. As stated by Hutto (2006) these areas would emulate a later stage of succession; something like a forest 10 years after a fire. The period of snag dearth would be approximately 20 years longer than the adjacent unharvested areas."

The DEIS on page 3-61 states: "It is not intended for the area within harvest units to provide optimum habitat for all cavity nesters. In fact, black-backed woodpeckers, mountain bluebirds, and other species that exhibit a preference for burned forest are not likely to use these harvested stands." In addition: "After harvest, these units would resemble clear-cuts with scattered, small reserve islands surrounding individually selected wildlife snags, occasional live trees, and occasional burned trees greater than 28" dbh. Reserves would amount to 10% of the area within harvest units being retained in a representative condition."

The FEIS has been clarified to include further description of this habitat change in Chapter 3, Section 3.2, Burned Forest and Snag Habitat, Environmental Consequences, stating: "A variety of wildlife species (dusky flycatchers, chipping sparrows, house finches, mule deer, black bears, wild turkeys, tree swallows, Western bluebirds, Nashville warblers) that benefit from forest openings, including some that use snags, will be provided for in these areas."

See Response to Comment 4B for a discussion of the significance of the Forest Plan Amendment.

Comment 9

The main point of the east side screens is to protect large trees and ensure that management moves stands toward rather than away from the historic range of variability. Salvage logging is a loophole in this requirement and through actions like Tripod the Forest Service is expanding that loophole to allow logging not only of large dead trees but also large dying trees. Expanding this loophole undermines one of the core purposes of the east side screens.

Response to 9

See response to comment 3 above.

The FEIS in Chapter 3, Section 2.3, Burned Forest and Snag Habitat, Environmental Consequences, has been clarified to include a further description of the analysis for amending the Forest Plan to allow the harvest of dying trees 21 inches DBH and larger. It states: "…considering the intent of the Screens to provide for the retention and enhancement of late and old structural stages in eastside forests, harvesting dying trees with a low probability of survival, from stands that were significantly impacted in the Tripod fire, would not limit the ability of those stands to develop late and old characteristics at some point in the future (many decades from now)."

"Wildlife that benefit from late and old structural conditions in live forests were affected severely by the fire. The harvest of dead and dying trees (including some dying trees greater than or equal to 21 inches DBH) within stands that do not have late and old structural conditions, would have little impact on these species since they are unlikely to be present.

Even with the amendment proposed that would allow the harvest of fire-injured trees that would be dead within one year, the intent of the Eastside Screens interim wildlife standard (to provide for old-growth species) would be met."

Comment 10

On June 11, 2003 the Regional Forester issued Guidance for Implementing Eastside Screens to Forest Supervisors highlight new information about the large size of snags needed by certain wildlife and saying,

"These findings reinforce the importance of retaining and recruiting large, old trees in the eastside landscape, particularly (but not only) in Forests historically dominated by single-story LOS. It is critical that silvicultural prescriptions provide for large snags in adequate numbers (as indicated by DecAID and other tools) through time to provide habitat for these species." This amendment will exacerbate the expected future deficit of large snags, known as the "snag gap."

This will push the forest ecosystem further from the historic range of variability in violation of the intent of the east side screens.

Response to 10

See the response to comment 3. The comments noted from the Regional Forester reference the retention of green trees for future snags. For the Tripod project, trees expected to survive more than one year would be retained.

DecAID was consulted for this project as described at length on pages 3-53 to 3-59 of the DEIS. However, the guidance for the design criteria developed specifically for the Tripod alternatives for snag and down wood habitat was the Forest Plan as amended by Regional Forester Amendment # 2 and interpreted by the Forest guidance letter of July 3, 2007.

Comments 11,12,13,14

The agency must recognize the asymmetric nature of snag dynamics after fires. High rates of snag fall would be expected in the decades following fire, while low rates of snag recruitment would be expected in the decades following a fire. This unavoidably results in a serious deficit of snags at some point in the future.

In order for the NEPA analysis to fully address the snag habitat issue it must look carefully at the snag gap from both ends.

> *The snag gap begins when too many of the current snags are gone. So the snag gap is exacerbated on the front end by salvage logging which removes too many large snags.*

The snag gaps ends when the next stand grows to the point that it contains large trees and some of them die, so the snag gap is exacerbated on the back end if there is a significant delay in tree regeneration.

Salvage logging which retains only enough snags to meet snag requirements after harvest will not meet snag requirements in a few years after those few retained snags fall.

The NEPA analysis must account for snag fall rates and figure out how to minimize the snag gap. Every day that the "snag gap" is lengthened by salvage logging is a violation of the RMP. Models that may be used to analyze snag dynamics can be found here: http://www.for.gov.bc.ca/hre/deadwood/DTmod.htm

There is a strong correlation between the size of the snag and the length of time it is likely to remain standing, so salvage must be designed to retain all the large snag and only remove trees from smaller size classes.

Consider this example: Assume that the stands currently have 30 large trees/acre and 24 of those will be removed via salvage logging while 6 trees/acre will be retained for snag habitat. Further assume that in 50 years 2 percent of the large snags will remain standing as snag habitat. Two percent of 6 trees/acre is FAR LESS than 2 percent of 30 trees/acre, so there is a virtual statistical certainty that salvage logging will exacerbate the snag gap.

Responses to 11, 12, 13, 14

As stated on page 3-47 of the DEIS: “For all alternatives, including ‘no action’, a substantial gap of snag habitat will occur in the areas burned with stand replacing mortality as described in Agee (2002). The snag gap is a natural event that has occurred for millennia following fire. Species are adapted to the snag gap as it is simply another form of habitat. There are no serious adverse consequences after snags fall down. Succession is the way ecosystems function.

Snag persistence is described in the DEIS on page 3-47.

The FEIS in Chapter 3, Section 3.2, Burned Forest and Snag Habitat, Environmental Consequences has been revised, “After harvest, these units would resemble forest openings with scattered, small reserve islands surrounding individually selected wildlife snags, occasional live trees, and occasional burned trees greater than 28” dbh. Reserves would amount to 10% of the area within harvest units being retained in a representative condition. Small mammals (chipmunks, deer mice), some amphibians and reptiles (long-toed salamanders, rubber boas, western skinks, Western fence lizards), and possibly some unknown invertebrates would likely be limited in these areas for a number of years.

Harvest would hasten the period when some snags would be absent from the acres where logging occurred. As stated by Hutto (2006) these areas would emulate a later stage of

succession; something like a forest 10 years after a fire. The period of snag dearth would be approximately 20 years longer than the adjacent unharvested areas.

It is not intended for the area within harvest units to provide optimum habitat for all cavity nesters. In fact, black-backed woodpeckers, mountain bluebirds, and other species that exhibit a preference for burned forest are not likely to use these harvested stands. A variety of wildlife species (dusky flycatchers, chipping sparrows, house finches, mule deer, black bears, wild turkeys, tree swallows, Western bluebirds, Nashville warblers) that benefit from forest openings, including some that use snags, will be provided for in these areas

It is instead considered that the 10% of the area remaining within salvage harvest units, described in the design criteria above (for Dry Forest and Mixed Conifer Forest), would allow for some foraging and nesting use by common cavity nesters like chickadees and nuthatches, but would be of limited value to the species that require greater snag densities. Other species that prefer more open conditions will thrive in these harvest units."

Abundant high-density snag habitat would be available outside harvest units.

Comment 15

The agency cannot take a hard look at the issues of snag habitat and complex young forests without considering the dynamics of snags and dead wood. Spies et al. (1988) reported that amounts of CWD were high in the youngest successional stages, were lowest in 60-80-year-old forests, and were high in old stands (< 500 years). After 500 years CWD amounts declined to an intermediate level. Spies and Franklin (1988) reported that CWD input may be low in young stands because of the small size of dead and dying stems. Volumes in these stands are often high, however, due to residual CWD from the previous stand.

Response to 15

Refer to the DEIS pages 3-316 to 3-317 and pages 3-222 to 3-227 for discussion of large woody fuel loadings (equated in this analysis with coarse woody debris, or CWD). Modeling CWD used site-specific snag and decay equations as noted in the DEIS, page 3-311. Snag and down wood discussion is also found on DEIS Pages 3-46 to 3-67 and was revised in the FEIS Chapter 3.2, Environmental Consequences.

Comment 16A

A concern with the marking guidelines allowed for within the DEIS, it that they are guided by the project's objective to distinguish economic assets, not desirable genetic traits that are the biological legacies that should continue in future forests. ID Team biologists should plan to pre-mark trees within the sale units as leave trees that provide important legacies or wildlife habitat traits.

Response to 16A
FEIS Appendix F, Implementation/Marking Guide describes the marking guidelines for the Tripod Fire Salvage Project. Additional direction pertaining to the retention of burned forest habitat, snags, and coarse woody debris have been added to the marking guidelines in the FEIS. Methods and criteria for designating non-harvest retention patches that would include ten percent of the area within salvage harvest units are described in greater detail in the FEIS, including criteria for retaining snag dependant wildlife habitat. All trees (live and dead) would be retained within the retention patches.

Additionally, the marking guidelines state that all trees (live and dead) greater than 28 inches DBH (greater than or equal to 21 inches DBH in Alternative E) would be retained in all units. All trees greater than 18 inches DBH would be retained in units CE01, CE02, CE03, CE08, GA01, and GA07. The genetic traits and biological legacies, including defective live trees and snags, of these larger trees would be retained in the future forest stands that develop in proposed salvage harvest units.

The marking guidelines also provide for the retention of all fire damaged trees with a high or moderate probability of survival (estimated at greater than 25% probability of survival). A large proportion of these trees are expected to survive injuries sustained during the Tripod Fire and have survived all previous fires that they may have experienced. The genetic traits, including fire resiliency in some instances, and biological legacies, including damaged or defective boles, crowns, or roots, of these "leave" trees would be retained in the future forest stands that develop in proposed salvage harvest units.

Comment 16B

Lastly, on pages 2-42 and 2-43, the DEIS states that "a Forest Plan Amendment is proposed that would allow salvage of those live trees that were damaged by the fire and have a 'low' probability of survival in the next year…An action alternative that did not salvage harvest trees greater than 21 inches DBH would not realize the economic recovery value. The action alternatives would meet the intent of the Eastside Screens…" The economic value of trees over 21" DBH in the project area is estimated to be approximately 18% of the total volume, which is 22.8 mmbf. Therefore, retaining the rare and inordinately important large dead trees would result in a sale with approximately 18.696 mmbf by this estimation, which remains a substantial sale for any national forest in Washington. Considering that through the forest planning process your staff have used estimates of anticipating 10 mmbf a year from each district, a reduction in volume to reduce lasting environmental impacts and controversy seems wise.

Response to 16B
The FEIS, Chapter 2, Alternatives Considered in Detail section, has been revised to include an Alternative E which would not salvage harvest any trees that are greater than or equal to 21" DBH. FEIS Chapter 3 displays the effects of this alternative

Comment 17

Leading experts in tree physiology, pathology and ecology all agree that the Forest Service's model are inadequate for predicting tree mortality, especially in larger fire resistant tree species. We recognize that your staff has taken this into consideration during project design, but we remain concerned about any certainty that your agency can reach in their marking.

As stated by Dr. Franklin in his April 18 comments on a similar post-fire logging project:

I find it surprising that the Forest Service is proposing to remove living trees of any size—and most certainly old-growth trees—based on a set of guidelines (Scott et. al.), that have no basis in sound, peer-reviewed scientific study and have, in fact, been shown to be grossly inaccurate in their prediction of death in at least 4 case studies. The Forest Service's use of the Scott guidelines is not justified on scientific grounds. Absent credible scientific criteria with high predictive capability, there is no basis for assuming imminent death of any old-growth tree with live meristems or cambial tissue.

According to Dr. Richard Waring, OSU Distinguished Professor (Emeritus) of Forest Science (in April 23, 2007 comments on the similar FSEIS):

The modified Scott's guidelines, like other empirical logistic regression models, are based on superficial classification of injury with different, often questionable, weighing factors. If the goal is scientific integrity, this classification system does not fit that bill.

And, according to Dr. James Karr, University of Washington Professor (Emeritus) of Biology (in April 19, 2007 comments on the similar FSEIS):

…the debate about the meaning 'live' stimulated by recent Forest Service actions is yet another effort to parse words until clarity, logic and common sense are lost. Sadly, a bogus scientific justification is formulated to justify this loss of common sense… Judge King wisely reached the same conclusion when he noted that 'the plain meaning of 'live' is still living, in other words, not dead…

The unsophisticated and not comprehensively validated marking approach of the Forest Service does not meet even a minimum scientific standard.

Response to 17

The listed comments of Dr. Franklin, Dr. Waring, and Dr. Karr are not specific to the Tripod Fire Salvage Project, however we have considered similar literature and comments that are critical of the criteria that would be used to harvest fire-injured trees expected to die. FEIS Appendix K, Vegetation section includes a consideration of and response to literature that is critical of the Scott Guidelines (Scott et al. 2002, 2003; Scott and Schmitt 2006) or proposed

as an alternative to the Scott Guidelines. Rationale for using the Scott Guidelines to predict survival of fire damaged trees in the Tripod Fire Salvage Project is provided in Appendix K of the FEIS.

Pacific Northwest Regional Forester Linda Goodman issued a letter in 2005 referring to the Eastside Screens Oversight Team letters (Devlin 1998a, 1998b) and stating that:

> "These 'Scott' guidelines establish a scientific basis for determining the relative probability of post-fire tree survival. They describe conditions that result in tree death or will lead to delayed tree mortality and hence, implicitly define tree mortality."

It is our judgment that this administrative policy and direction means that:

1) The Regional Forester states that the Scott Guidelines establish a scientific basis for determining the relative probability of post-fire tree survival. (Goodman 2005);
2) The Scott Guidelines were prepared by entomologists and a pathologist assigned to the Forest Health Protection group, so they qualify as a Forest Pest Management-written standard;
3) Although dead trees are used to meet the snag and down wood requirements, most of the Eastside Screens amendment applies to live trees only (Norris 2005, USDA Forest Service 1995a);

In the context of the Tripod Fire Salvage Project, we believe that the Scott Guidelines are a scientifically researched approach for predicting tree mortality and are more appropriate than any of the proposed alternative models individually. Our basis for this belief is that a comprehensive assessment of tree injury, and any associated prediction of fire-caused tree mortality, must consider the effect of fire injuries on the whole tree rather than just one or more of its parts (Dieterich 1979, Fowler and Sieg 2004, Johnson and Miyanishi 2001, Lynch 1959, Regelbrugge and Conard 1993, Ryan 1990, Wagener 1961, Weatherby et al. 2001). The Scott Guidelines provide that comprehensive assessment. It is possible for a tree to survive if the cambial tissue is destroyed on only a portion of its circumference (Peterson and Arbaugh 1986,1989, Peterson and Ryan 1986, Durcey et al. 1996, McHugh and Kolb 2003), but the combined effects of root, crown, and stem damage may kill a tree, even if the stem itself is not completely girdled (Ryan 2000, Dickinson and Johnson 2001, McHugh and Kolb 2003).

Chapter 2 of the DEIS pages 2-7 & 2-8 and Appendix K, Vegetation section of the FEIS discuss the rationale for harvesting dying trees. The Tripod Salvage Project FEIS is proposing a non-significant Forest Plan amendment which would allow live trees greater than or equal to 21 inches diameter at breast height (DBH) to be salvage harvested. The intent of the Tripod Fire Salvage Project is to cut only dead and fire-injured trees expected to die within one year of project implementation. Determination of the probability that trees are dying will be made with the Scott Guidelines. Using the Scott Guidelines, as adjusted for this project, dying trees are described as those with a "low" probability of survival; only these and dead trees would be included in the salvage harvest. This Forest Plan Amendment would allow salvage harvest of those fire-injured trees greater than or equal to 21 inches DBH with

a low probability of survival. It acknowledges that these trees are currently living and that a small percentage of these trees that are identified as having a low probability of survival might actually survive. This amendment would allow economic recovery of those fire-injured trees 21 inches DBH and larger with a low probability of survival.

Comment 18

The marking system used under the Scott Guidelines is an arbitrary methodology. The Scott Guidelines produces results that are demonstrably inaccurate. I have attached to these comments the work of Dr. Richard Waring and Dr. Ed Royce (Exhibit A, E, G), which clearly demonstrate that application of the Scott Guidelines to trees on the Easy and High Roberts timber sales on the Prairie City Ranger District led to marking of numerous trees that were neither dead nor dying, but were in fact, "healthy and thriving." (see Exhibit E) In particular, these field tests indicate that the Scott Guidelines substantially overestimate mortality probabilities in mature trees – especially ponderosa pines – exactly the type of trees intended to be protected under the Eastside Screens.

Careful examination of the Guidelines in light of peer-reviewed literature, including especially the literature used in developing the Scott Guidelines and new research published since the release of the Guidelines, by Dr. Waring and Dr. Royce indicate that the authors of the Scott Guidelines made several fundamental errors in translating predictions from published literature into field marking guides.

Dr. Waring's work on the High Roberts timber sale began with a site visit on September 20, 2005 (see Exhibit A), more than three years after the High Roberts fire. Dr. Waring, a distinguished professor emeritus of forest science at Oregon State University, is a leading authority on the physiology of tree health and mortality. Dr. Waring set out to examine the hypothesis that trees that otherwise appeared healthy, and had suffered only minor crown scorch, were "dying" due to damage to the roots. Waring did this by measuring water stress using two simple and widely used physiological tests: midday water tension in tree foliage and sapwood relative water content. These tests directly measure the ability of trees to conduct water from their roots through their sapwood to their foliage. If the roots or other conducting tissues were damaged, this would show up in elevated measures of water stress.

What Dr. Waring found instead was that all of the "dying" trees he measured showed all signs of physiological health. Dr Waring shared these results with Dr. Kevin Ryan of the Forest Service's Rocky Mountain Research Station (who, according to Don Scott, is the leading expert on fire effects and delayed mortality – see Ex. J). Presented with the data from the Waring Report, Dr. Ryan wrote, "I concur with your opinion (see Ex. B)." Drs. Waring and Ryan are collaborating to present a workshop this summer on improved physiological

techniques for determining likelihood of post-fire tree mortality, and Dr. Don Scott has been invited to participate.

Given that recent research in the Blue Mountains by Thies et. al. (see Exhibit F) found that mortality in the fourth season after fires on the Emigrant Creek Ranger District was indistinguishable from mortality in unburned controls, Dr. Waring concluded that "Based on these observations we have made, we can conclusively reject the hypothesis that the Scott Guidelines accurately predict delayed post-fire mortality in mature ponderosa pine trees in the High Roberts timber sale area. The trees we have measured are healthy four years after the High Roberts fire, and are not more likely to die than any other tree on the Malheur National Forest."

Dr. Waring's scrutiny of the literature cited in the Scott Guidelines, as well as Dr. Royce's examination, provide an explanation of why the Scott Guidelines, which cite much of the best literature in the field of fire effects, produce predictions at variance with that literature (and with reality). The models cited in the Guidelines are logistic regression models. They seek to correlate observed data on statistically independent variables with their effects on a dependent variable – in this case probability of tree mortality. The models select which independent variables have the strongest correlations, and assign specific coefficients to different variables, based on their contribution to the overall variability.

The Scott Guidelines select an arbitrary grouping of these variables, including several variables that are not independent, resulting in double counting of several factors, and also including several variables that do not have demonstrated predictive abilities, or which have only been tested on small trees and would not reasonably be expected to have the same predictive capacity for larger specimens. The Guidelines then assign points to each of these variables in an arbitrary manner that does not reflect the weighting in the original models.

As a result, the Guidelines substantially overestimate mortality probabilities, especially for mature trees. As Dr. Royce shows (See Exhibit F, p. 41), large ponderosa pines that would be ranked in the Ryan and Reinhardt (1988) model with a 13% probability of mortality and a 4% probability of mortality by both the McHugh and Kolb (2003) and Stephens and Finney (2002 see Exhibit P) models, are ranked by the Scott Guidelines as having between a 25% and 75% probability of mortality. In other words, at its best, the Scott Guidelines have doubled the probability of mortality from the models which they are supposedly based on. At worst, they have increased the probability by 19 times.

Response to 18

FEIS Appendix K, Vegetation section of the final environmental impact statement (FEIS) display the rationale for using the Scott Guidelines to predict survival of fire damaged trees in

the Tripod Fire Salvage Project. Appendix K includes a consideration of and response to literature that is critical of the Scott Guidelines or proposed as an alternative to the Scott Guidelines. The reports by Dr. Waring and Dr. Royce attached to this comment are not specific to the Tripod Fire Salvage Project; however we have considered and responded to their relevance in Appendix K of the FEIS. See the response to the previous comment (Comment 17) for a summary of why we believe that the Scott Guidelines are a scientifically researched approach for predicting tree mortality and are more appropriate than any of the proposed alternative models individually.

As a matter of clarification, Dr. Waring's reports addressed ponderosa pines greater than 21 inches DBH and the Scott Guidelines as they were written at the time of his evaluations (Scott et al. 2002, 2003). Dr. Royce's review and comments contained in his declaration submitted to the U.S. District Court also were based on the same version of the Scott Guidelines. The comparison of the Scott Guidelines and alternative tree mortality prediction models made by Dr. Royce and referred to in your comment (Exhibit F, p.41) was based on the aforementioned version of the guidelines. The Scott Guidelines were amended in 2006 after these evaluations had been prepared by Dr. Waring and Dr. Royce. Amendment 2 of the Scott Guidelines (Scott and Schmitt 2006) was issued on August 30, 2006 and included changes to bole scorch sampling criteria and modified the suggested decision classes for ponderosa pines greater than or equal to 21 inches DBH and usually greater than 180 years old. Dr. Royce prepared a critique of Amendment 2 in September 2006. In the critique Dr. Royce states that the changes made for ponderosa pines over 21 inches DBH "…bring the guidelines generally into agreement with some of the most credible results found in the peer-reviewed literature." In this critique, Dr. Royce compared the amended Scott Guidelines with three alternative tree mortality prediction models including Ryan and Reinhardt (1988), McHugh and Kolb (2003), and Stephens and Finney (2002).

Comment 19

Even if there were no Eastside Screens, the use of this methodology to determine whether trees would die would be inadequate– but in this case, the proposed action would take trees that the law clearly states may not be cut while they are "live," and cut them based on a 4-13% probability that they might die. The Scott Guidelines have not been tested in the field or against any data set, other than the fairly limited tests done by Waring and Royce. During earlier stages of litigation over the High Roberts timber sale, Dr. Scott and Dr. Chris Niwa maintained that they were undertaking a field test of the Scott Guidelines' applicability at the Monument Fire. However, we were recently informed by the Regional Office that "Dr. Niwa's Monument Fire Study is not an assessment of the Scott Guidelines." This means that to our knowledge, there are no active attempts to assess the accuracy of the Scott Guidelines on real data in field conditions.

Response to 19

The Tripod Salvage Project FEIS is proposing a non-significant Forest Plan amendment which would allow live trees greater than or equal to 21 inches diameter at breast height

(DBH) to be salvage harvested. The rationale for harvesting dying trees is provided in pages 2-7 & 2-8 and Appendix K, Vegetation section of the FEIS. The intent of the Tripod Fire Salvage Project is to cut only dead and fire-injured trees expected to die within one year of project implementation. This Forest Plan Amendment would allow salvage harvest of those fire-injured trees greater than or equal to 21 inches DBH with a low probability of survival, as determined by the application of the current version of the Scott Guidelines which includes Amendment 2 (Scott and Schmitt 2006). The proposed Forest Plan amendment acknowledges that these trees are currently living and that a small percentage of these trees that are identified as having a low probability of survival might actually survive. This amendment would allow economic recovery of those fire-injured trees 21 inches DBH and larger with a low probability of survival. The Ninth Circuit Court recently confirmed that amendment of the 21 inch diameter upper harvest limit for live trees was appropriate.

The Scott Guidelines have been monitored in the field to validate the accuracy of the rating system for predicting survival of fire-damaged trees. Amendment 1 to the guidelines was prepared following field validation of the rating system conducted in 2003 (Scott et al. 2003). Amendment 2 was prepared following field observations on two wildfires on the Malheur National Forest (Scott and Schmitt 2006). The U.S. Forest Service Pacific Northwest Region has established a series of validation monitoring plots that will be used to evaluate the Scott Guidelines. Approximately 10,000 individual tree plots have been installed on 18 different fires (wildfires and prescribed fires) in the Region as of August 2007. Information collected on the monitoring plots includes fire severity parameter data, and each tree sampled will be revisited annually for five years to determine survival or death. In the eastern Washington area, 1,590 trees located in five different fires (including 190 trees on the Fisher Fire of 2004) have been sampled for the purpose of field testing the Scott Guidelines. Locally, 415 trees have been sampled in a 2004 prescribed burn on the south end of the Methow Valley Ranger District, and 365 trees on the 2005 Pearrygin Fire (located adjacent to the Tripod Fire) have been sampled to test the Scott Guidelines (Connie Mehmel, pers. comm. 2007).

Comment 20

This is particularly disturbing in light of the serious departures the Scott Guidelines make from the literature they cite. Under the Scott Guidelines, trees are assigned points in a number of different areas. Trees with more points are rated as more likely to die. As previously mentioned, many of the categories are not statistically independent, many have little to no evidence supporting their use, and many have points awarded in a way not consistent with data-based models which the Guidelines cite, and thus appear to be based on. In the following paragraphs I will lay out these problems for the methodology used for marking mature and over mature ponderosa pine, which award a total of 27 points based on ten criteria.

The first factor is season of fire. The Scott Guidelines award zero points for early seasons spring prescribed fire, one point to any fire occurring after August 1st, and two points for spring or early summer wildfires. The only source cited for this is Wagener, 1961 (see Ex. L), a 45 year old, unpublished, anecdotal Forest Service report from California. As pointed out

by Dr. Waring (see Ex. E), Wagener only studied wildfires, and thus provides no basis for expecting early season wildfires to differ from early season prescribed fires. While Wagener found that late season fires had fewer significant effects than early season fires, he provides no evidence to think that they are twice as bad, which is the assumption made by the Scott Guidelines in awarding twice as many points to early wildfires than late ones.

The second factor is "Pre-fire vigor, growth rate, and site quality." Again, the only source cited is Wagener, who devotes all of a paragraph to describing how vigorous, young, growing trees are more likely to survive fires than slow-growing, over mature trees. There are several reasons to doubt Wagener's conclusions aside from the fact that they are forty-five years old, unpublished, and unsupported by any data. Numerous more recent research papers have found the opposite conclusion – that older trees, particularly of species such as ponderosa pine, Douglas-fir, and grand fir, are more likely to survive fire than their younger counterparts due to their thick bark and elevated canopy (see for example, the discussion of historic fire patterns on p. IV-4 and IV-5 of Gast et al. (1991) – a paper coauthored by none other than Don Scott.

Furthermore, the Wagener paper was written during a time period when the Forest Service's official policy was to replace old, inefficient forests with young, thrifty, quickly growing forests, and to suppress all fires. There was little interest in the protection of fire-dependent or old-growth ecosystems. Wagener reflects this prejudice, and provides no data to support it. The Forest Service should be relying on its more recent research, and not on these outdated observations from an era when forests were managed for different purposes using different understandings of forests.

The third factor in the Scott Guidelines is "Arrangement or Distribution of Down Woody Material." The only source cited is Scott, 2002, which is an unpublished anecdotal account of Scott's observations made on prescribed fires in the Emigrant Creek Ranger District. While Scott did observe that down material influenced the extent of local fire effects, he did not quantify it, nor did he determine that the distance "one-half the crown diameter beyond the drip-line of the tree," had any significance. Further, his observations on a small number of prescribed fires on one ranger district can hardly be extrapolated to cover any fire occurring at any time of year over a broad region.

The fourth factor in the Scott Guidelines is "Dwarf Mistletoe Occurrence", and the fifth factor (which is not used for ponderosa pines) is "Root Disease Occurrence." Both of these problems are strongly correlated with tree vigor and growth rate. The cited sources, (Hawksworth and Wiens, 1996, Shaw and Kile, 1991) do not actually address whether, nor to what extent, these diseases increase mortality in the post-fire context. It appears that the

connection is merely speculation that anything that reduces vigor and growth rate will increase mortality, but neither dwarf mistletoe infection nor root disease kills trees in isolation – rather they decrease growth rate and make trees more vulnerable to other causes of death. Counting both these factors and vigor and growth rate (factor 2) is akin to counting the same phenomena twice. In the language of statistics, these events are not independent. Their use as indicators of potential mortality is not supported in the Scott Guidelines.

The sixth factor in the Scott Guidelines is "Bark Beetle Pressure." The only cited source is an unpublished report by Dr. Scott from 1996 on evaluating susceptibility of stands to bark beetles. This report mentions fire and bark beetles once, in the following sentence: "Often trees that are injured or forced into a state of stress from factors such as drought (Craighead 1925; St. George 1930), disease (Barbosa and Wagner 1989), wind (Jacobs 1936), fire (Barbosa and Wagner 1989), temperature (Barbosa and Wagner 1989), defoliating insects (Gast et al. 1991; Graham 1963), and overstocking or competition (Barbosa and Wagner 1989; Gast et al. 1991) become high risk to attack by bark beetles." This sentence is hardly basis for concluding, as the Scott Guidelines do, that a tree within .25 miles of a beetle infestation is 3 times more likely to die post-fire than a tree that is 2.0 miles from a beetle infestation. The cited source, Barbosa and Wagner, is a general textbook on forest insects, and does not provide any further specifics on the interrelationship between beetle outbreaks and fire.

The factors described above are used for all species and size classes of trees (with the exception of factor five, which applies only to Douglas and true firs). In total, they award up to ten points, enough to earn a moderate probability of mortality. Yet, as outlined above, there is no evidence in the Scott Guidelines that indicate that any of these factors have ever been correlated with increased risk of post-fire mortality. A methodology which determines that a tree should be cut based on a "moderate" risk rating, as this methodology is being applied on the Tripod Fire, but has no evidence to support that finding is clearly arbitrary.

Response to 20

Appendix K, Vegetation, in the FEIS displays our rationale for using the Scott Guidelines to predict survival of fire damaged trees in the Tripod Fire Salvage Project. Tree mortality following fire depends on the type and degree of fire-caused injuries, initial tree vigor, and the post-fire environment, which includes the influence of insects, diseases, and weather (Amman and Ryan 1991, Hood and Bentz 2007, Rasmussen et al. 1996). As fire injuries increase, the probability of tree death increases (Amman and Ryan 1991, Rasmussen et al. 1996). Trees that are only moderately injured by fire and capable of recovery can subsequently be attacked and killed by bark beetles (Furniss 1965). The Scott Guidelines provide a methodology for predicting the relative probability of survival for fire-injured trees growing on a wide variety of site conditions, exposed to varying levels of pre-fire factors that can predispose a tree to fire-induced mortality depending upon their severity or magnitude

(occurrence of dwarf mistletoe, root disease, and bark beetles), and experiencing widely varying levels of first-order fire effects to their crowns, stems and roots.

The Implementation/Marking Guide in Appendix F of the FEIS describes how Factors 1, 2, 4, 6, and 9 of the Scott Guidelines would be applied to predict the survival of fire injured trees in the Tripod Fire Salvage Project. Factor 4 "Dwarf Mistletoe Occurrence" would not be applied for the rating of ponderosa pine, subalpine fir, and Engelmann spruce in proposed salvage harvest units.

As a matter of clarification, the DEIS specifies that dead and fire-injured trees rated by the Scott Guidelines with a "Low" probability to survive Decision Class would be salvage harvested (pages 2-24 & 2-25). A rating of "Low" approximates 25% or lower probability of survival. No trees with a moderate or high probability of survival as determined by the locally adapted Scott Guidelines would be salvage harvested.

The Implementation/Marking Guide in Appendix F of the FEIS describes how the Scott Guidelines would be implemented to predict the survival of fire injured trees that are not dead at the time of timber marking. Figure F-1 displays the scoring guide for rating tree survival in the Tripod Fire and the survival probability decision classes for tree species and size classes. Composite scores used to define young and immature ponderosa pine trees less than 21 inches DBH with a "low" probability of survival were locally adjusted. The adjustment was made to correlate "low" probability of survival with a mortality probability of 75% or higher as described in the ponderosa pine mortality tables in Appendix 1 of the Scott Guidelines. The Appendix 1 tree mortality tables were created with the Behave Plus model (Andrews and Bevins 1999). Behave Plus uses the logistic regression equations of Ryan and Reinhardt's (1988) tree mortality prediction model to compute probability of fire-induced tree mortality (Scott and Schmitt 2006). With the adjustment, fire damaged ponderosa pines less than 21 inches DBH must have scorch heights associated with a 75% or higher probability of mortality in Ryan and Reinhardt's (1988) model and have a composite rating scores that place them in a low probability of survival decision class in order to be salvage harvested.

Comment 21

Furthermore, according to Dr. Waring, "the primary measurement used, chopping the root crown cambium, measures coarse root damage, while duff burning would be expected to primarily impact fine roots." The major roots of ponderosa pines are generally deep in the soil, while the fine roots extend upwards into the duff to take advantage of nutrient availability, and it would take an unusual fire to reach deep enough to kill these major roots. There is no evidence to suggest that this occurred on extensive areas of the Tripod Fire.

What the Scott Guidelines ignore is almost as serious as what they include. Fire, as has long been pointed out by authors including Don Scott himself (Gast et. al., 1991), is the major reason why ponderosa pines continue to play an important ecological role in areas that might otherwise be dominated by grand and Douglas-fir. Ponderosa pines are adapted to

fire, and as stated by Dr. Waring, "Rather than causing delayed mortality, fires that do not kill large ponderosa pines frequently make them healthier. Large pines that survive fires can take advantage of substantial nutrient pulses, and are freed from competition from smaller neighboring trees, as they would be when stands are prescribed for thinning (Stone et al, 1999, Exhibit N; Skov et al., 2004, Exhibit O).

Even if they have suffered moderate damage from fire or insect attacks, they are likely to increase their growth. Growth previous to fire or insect attack is also known to affect tree mortality (Larsson et al., 1983; van Mantgem et al., 2003; Skov et al., 2004, Exhibit O)." The Scott Guidelines ignore these positive effects of fire on the growth of surviving trees, which, among other things, make survivors more resilient to pest invasion. In a situation like this one, where field tested, data based, peer-reviewed models are available for assessing the probability of tree mortality, there is simply no excuse for the Forest Service relying on the Scott Guidelines, which have serious statistical problems, and have been demonstrated to be unreliable. Some examples of models which the Forest Service should consider using are those developed by Kevin Ryan (i.e. Ryan & Reinhardt, 1988, Ryan et. al., 1988, Ryan & Frandsen, 1991) and Walt Thies, 2006 (see ex. F).

Ironically, while the Scott Guidelines were developed as a technology transfer to make scientific models more accessible, they actually make the situation more complicated. While the Guidelines measure ten or eleven factors, most data based logistic models of post-fire mortality find that many fewer factors are necessary to accurately predict post-fire mortality. Thies et. al. (2006, see Ex. F) found that a model containing only five factors was just as accurate at predicting post-fire mortality as a model containing all nine factors they measured. In addition, they found that a model using only two factors, crown volume scorch and bole scorch, was nearly as accurate as the five factor model. In this case more is not better. By adding in irrelevant factors, the Scott Guidelines artificially inflate the probability of tree mortality, and simultaneously make life more difficult for tree marking crews.

Response to 21

The comments referred to by Dr. Waring are not specific to the Tripod Fire Salvage Project. As a matter of clarification, however, when applying the Scott Guidelines, chopping the root crown cambium is conducted primarily to measure basal girdling at the root crown (Don Scott, pers. comm. 2007). Amendment 2 of the Scott Guidelines (Scott and Schmitt 2006) changed the location of root crown cambial sampling to the recesses formed at the interstices between major lateral roots of ponderosa pines 21 inches DBH and larger, rather than on the roots themselves. Root crown or root-collar cambium tends to be protected from fire by thicker bark at the revised sampling locations, and this change was made to improve the accuracy of estimating the amount of bole circumference affected by basal girdling.

Appendix K, Vegetation section of the FEIS includes a consideration of and response to literature that is critical of the Scott Guidelines (Scott et al. 2002, 2003; Scott and Schmitt 2006) or proposed as an alternative to the Scott Guidelines. Rationale for using the Scott Guidelines to predict survival of fire damaged trees in the Tripod Fire Salvage Project also is provided in Appendix K of the FEIS. We believe that the Scott Guidelines are a scientifically researched approach for predicting tree mortality and are more appropriate than any of the proposed alternative models individually including Ryan and Reinhardt (1988), Ryan et al. (1988), and Thies et al. (2006). Ryan and Frandsen (1991) studied the effect of smoldering fires and duff consumption on basal injury (cambium mortality at the root crown) of mature ponderosa pines. The authors did not produce a tree mortality prediction model based on this research.

FEIS Appendix K, Vegetation section of the final environmental impact statement (FEIS) includes a consideration of and response to literature relating to the response of large ponderosa pines following wildfire cited in the comment including Stone et al. (1999) and Skov et al. (2004). In the Tripod Fire Salvage Project, the intent is to harvest fire damaged trees determined to have a low probability of survival and a high expectation of being killed by fire related damage. Fire damaged trees determined to have a high or moderate probability of survival would be retained. It is anticipated that a high proportion of these trees would not experience delayed mortality from fire injuries and are expected to respond favorably to post-fire conditions and reduced levels of inter-tree competition.

FEIS Appendix K, Vegetation section includes a consideration of and response to literature relating to the effect of pre-fire tree growth on post-fire tree vigor and mortality cited in your comment including Larsson et al. (1983), vanMantgem et al. (2003), and Skov et al. (2004). The Scott Guidelines recognize this relationship and collectively consider pre-fire vigor and growth rate and site quality (which affects tree growth and vigor) when estimating the survival potential of fire damaged trees.

Comment 22A

The DEIS spends time discussing the value of burned habitat for wildlife species that are snag and disturbance dependent, but does not fully address the site and species specific importance of snags for wildlife.

Response to 22A

The DEIS, Chapter 3, Section 3.2, Burned Forest and Snag Habitat, cites 41 current scientific studies that document the importance of snags for wildlife. DecAID is one of the most comprehensive sources of information on the importance of snags for wildlife. Noting that DecAID was consulted to help address the importance of snags for the wildlife species within the Tripod fire, on page 3-37 the DEIS states: “DecAID is a summary, synthesis, and integration of published scientific literature, research data, wildlife databases, forest inventory databases, and expert judgment and experience. The information presented on wildlife species’ use of snags and down wood is based entirely on scientific field research, and does not rely on modeling the biological potential of wildlife populations.”

Furthermore, in the same section: “DecAID (Mellen et al. 2006) is an advisory tool to help managers evaluate effects of forest conditions and existing or proposed management activities on organisms that use snags and down wood. DecAID can also help managers decide on snag and down wood sizes and levels needed to help meet wildlife management objectives.” DecAID was consulted to help develop the design criteria for project alternatives that insured each alternative met Forest Plan standards as amended by Regional Forester Amendment #2.

The FEIS in Chapter 3, Section 3.2, Burned Forest and Snag Habitat has been clarified to include: “Snags and logs provide crucial ecological functions including multiple hydrologic functions, nutrient storage and release, microclimate moderation (such as is needed for winter or summer habitat for many species), restriction of soil movement, sites for feeding, breeding, germination, growth, and decomposition, and terrestrial and aquatic hiding cover (Laudenslayer et al. 2002, Rose et al. 2001, Stevens 1997). Snag and log retention is a key feature of the design of the alternatives for this project. This section focuses on the value of burned forest and burned snags and logs, especially for the Management Indicator Species that have management standards to be adhered to, but many of the benefits of retaining snags and logs will also apply to a variety of birds, mammals, reptiles, amphibians, and invertebrate species not specifically acknowledged here. “

Many snags *are* proposed for removal from harvest units. This does not render the forest uninhabitable by all birds, mammals, reptiles, amphibians, and invertebrates. It simply changes the suitability of the habitat from one group of species to another. All units would have snags retained sufficient to meet ecological needs and legal requirements dictated by the Forest Plan as amended by the Eastside Screens.

Another important principle that was included in snag retention design was providing adequate dead wood within home ranges of species being considered. In the Wildlife section, 20 acre and 100 acre ‘neighborhoods’ of analysis are described. These area sizes were employed to approximate the home ranges of many of the species being considered. This is an analysis method that facilitates the examination of habitat components and allows the determination of effects at the smallest scale, in a fashion similar to the Lynx Analysis Unit method employed for lynx.

Comment 22B

The NEPA analysis must account for all the values provided by snags and down wood and the effect of removing these legacy structures. The NEPA analysis must recognize that mechanical treatments unavoidably reduce snag habitat, if for no other reason than the habitual removal of snags for safety reasons.

Response 22B

See the responses to Comment 22A and Comment 8B

Comment 22C

Given the current extent of the road network and the historic extent of logging, the cumulative effects analysis must recognize the inherent conflict between "forest management" (past, present and future) and snags and all their values.

Response to 22C

The DEIS, page 3-44 states: "Timber sales noted in Figure 3-1 reduced habitat for snag and downed wood dependent species. This amounted to more than 20,000 acres in and around the Tripod Fire Salvage project affected in the previous 40 years. Snags were removed for safety reasons and for a period snag cutting was part of a campaign of fire protection and insect and disease reduction."

The DEIS pages 3-65 to 3-67 described the cumulative effects that were considered for the effect on snag habitat including timber sales, firewood cutting, fuels treatments, tree planting, suppression rehabilitation and BAER treatments, restoration activities, invasive plants, livestock grazing, recreational use, mushroom gathering, transportation system management, WDFW Management Area activities, and timber stand improvement.

Comment 23

Please consider all the many values of snags and down wood presented in Rose, C.L., Marcot, B.G., Mellen, T.K., Ohmann, J.L., Waddell, K.L., Lindely, D.L., and B. Schrieber. 2001. Decaying Wood in Pacific Northwest Forests: Concepts and Tools for Habitat Management, Chapter 24 in ***Wildlife-Habitat Relationships in Oregon and Washington*** *(Johnson, D. H. and T. A. O'Neil. OSU Press. 2001) http://www.nwhi.org/nhi/whrow/chapter24cwb.pdf and as attached.*

Response to 23

This publication was consulted and was cited five times in Chapter 3.2 of the DEIS.

Comment 24

calculation of numbers of snags required by woodpeckers based on assessing their "biological (population) potential" is a flawed technique (Johnson and O'Neil 2001). Empirical studies are suggesting that snag numbers in areas used and selected by some wildlife species are far higher that those calculated by this technique (Johnson and O'Neil 2001).

numbers and sizes (DBH) of snags used and selected by secondary cavity nesters often exceed those of primary excavators (Johnson and O'Neil 2001).

This suggests the current direction of managing for 100 percent population potential levels of primary excavators may not represent the most meaningful measure of managing for cavity-nesters and that these snag

levels, under certain conditions, may not be adequate for some species. http://www.fs.fed.us/r6/frewin/projects/analyses/barneslong/ea/appb.pdf

Response to 24

The cited concepts (Johnson and O'Neil 2001) were considered in the DEIS (Rose et al 2001). The July 3, 2007 Okanogan-Wenatchee National Forest Letter of Guidance (Appendix D) for snag management, is based on the best available science. This guidance recognized the importance of unsalvaged post-fire habitat for species needing high levels of snag densities and retention of snag habitat within salvage harvest units. Many of the design features of the Tripod project retain remnants of the burned forest within salvage units as well as identifying parts of the post-fire forest to remain unsalvaged to contribute to the viability of primary cavity excavators and cavity nesters.

Comment 25

Before using DecAID, the agency must establish a rational link between the tolerance levels in DecAID and the relevant management requirements in the applicable resource management plan. For instance, since the Northwest Forest Plan and the Eastside Screens require maintenance of 100% potential population of at least some cavity-dependent species, the agency must explain why that does not translate into maintaining 100% of the potential tolerance level. If the site is capable of supporting 80% tolerance levels, the agency should not be able to manage for 30-50% tolerance levels and still meet the 100% potential population requirement.

Blind reliance on DecAID is inappropriate. DecAID does not pick the management objective. The agency must specify the management objective based on RMP objectives for the land allocation or based on natural "range of variation." Since large snags are outside the natural range of variability across the landscape, the agency must retain all large snags to start moving the landscape toward the natural range of variability, or the agency must carefully justify in the NEPA analysis every large snag it proposes to remove. See Jerome J. Korol, Miles A. Hemstrom, Wendel J. Hann, and Rebecca A. Gravenmier. 2002. Snags and Down Wood in the Interior Columbia Basin Ecosystem Management Project. PNW-GTR-181. http://www.fs.fed.us/psw/publications/documents/gtr- 181/049_Korol.pdf. This paper estimates that even if we apply enlightened forest management on federal lands for the next 100 years, we will still reach only 75% of the historic large snag abundance measured across the interior Columbia Basin, and most of the increase in large snags will occur in roadless and wilderness areas.

Response to 25

Tolerance levels are not indicators of population viability, "thresholds" or potential populations. Tolerance levels are estimates of individuals in a population expected to use a certain dead wood characteristic (i.e. density, size (Mellen et al. 2006)). DecAID tolerance levels are not equivalent to potential population requirements in the Forest Plan. Tolerance

levels (TI) are used to provide estimates of the proportion of elemental observations within specific percentages. TIs are best for describing historic or existing patterns and in particular, the distribution of values among observations.

DEIS pages 3-37 to 3-43 detail how DecAID was used in the Tripod analysis, and it was recognized that DecAID is an advisory tool to help managers evaluate effects of forest conditions and proposed management activities on organisms that use snags and down wood. However, the Forest Plan as amended by Regional Forester Amendment # 2, and interpreted by the July 3, 2007 Forest Letter of Guidance, provided the management guidelines for snag retention in the Tripod Fire Salvage project area.

Comment 26

The agency cannot use "average" snag levels (e.g. 50% tolerance level) as a management objective within treatment areas, because treatments are essentially displacing natural disturbance events which would normally create and retain large numbers of snags, so disturbance areas should have abundant snags, not average levels of snags. It would be inconsistent with current science and current management direction to manage only for the mid-points and low points. The agency should manage for the full natural range dead wood levels, including the peaks of snag abundance that follow disturbance.

Response to 26

A full range of snag levels (with the exception of the very bottom of the range where no snags or dead wood are left) would be managed for within the Tripod project alternatives. 100 acre neighborhoods would have a full range of habitat available as described in DEIS page 3-60 and in Figures 3.2-28, 29, and 30. Snag levels are assessed for 100 acre areas and average snag numbers for these areas would be used to determine compliance with Forest Plan standards and guidelines.

The DEIS,pages 3-37 to 3-43 detail how DecAID was used in the Tripod analysis. DEIS page 3-37 states that, DecAID is an advisory tool to help managers evaluate effects of forest conditions and proposed management activities on organisms that use snags and down wood. However, the Forest Plan as amended by Regional Forester Amendment # 2, and interpreted by the July 3, 2007 Forest Letter of Guidance, provided the management guidelines for snag retention in the Tripod Fire Salvage project area.

Comment 27

Be sure to use the DecAID tool appropriately. The agency must address the dynamics of snag habitat over time, by ensuring that recommended snag levels are maintained over time given typically high rates of snag fall and low rates of snag recruitment following fire. These dynamics are not accounted for in the DecAID advisor. The agency often misuses the DecAID decision support tool by looking at only a snap-shot in time. The agency relies on DecAID to analyze impacts on snag dependent species, but the agency fails to recognize that

"DecAID is NOT: … a snag and down wood decay simulator or recruitment model [or] a wildlife population simulator or analysis of wildlife population viability. … Because DecAID is not a time-dynamic simulator … it does not account for potential temporal changes in vegetation and other environmental conditions, … DecAID could be consulted to review potential conditions at specific time intervals and for a specific set of conditions, but dynamic changes in forest and landscape conditions would have to be modeled or evaluated outside the confines of the DecAID Advisor."
Marcot, B. G., K. Mellen, J. L. Ohmann, K. L. Waddell, E. A. Willhite, B. B. Hostetler, S. A. Livingston, C. Ogden, and T. Dreisbach. In prep. "DecAID -- work in progress on a decayed wood advisor for Washington and Oregon forests." Research Note PNW-RN-XXX. USDA Forest Service, Pacific Northwest Region, Portland OR. (pre-print)
http://wwwnotes.fs.fed.us:81/pnw/DecAID/DecAID.nsf/HomePageLinks/44C813 BC574BDFCC88256B3E006C63DF

To clearly and explicitly address the issue of "snag dynamics" you can start by reading and responding to the snag dynamics white paper on the DecAID website which says "To achieve desired amounts and characteristics of snags and down wood, managers require analytical tools for projecting changes in dead wood over time, and for comparing those changes to management objectives such as providing dead wood for wildlife and ecosystem processes" and includes "key findings" and "management implications" including "The high fall rate (almost half) of recent mortality trees needs to be considered when planning for future recruitment of snags and down wood. Trees that fall soon after death provide snag habitat only for very short periods of time or not at all, but do contribute down wood habitat. In fact, these trees are a desirable source of down wood as they will often begin as mostly undecayed wood and, if left on the forest floor, will proceed through the entire wood decay cycle with its associated ecological organisms and processes that are beneficial to soil conditions and site productivity."
http://wwwnotes.fs.fed.us:81/pnw/DecAID/DecAID.nsf/HomePageLinks/863EE A66F39752C088256C02007DF2C0?OpenDocument

The tolerance levels from DecAID may be too low to support viable populations of wildlife associated with dead wood, because anthropogenic factors that tend to reduce snags (e.g., firewood cutting, hazard tree felling, fire suppression, and salvage logging) may have biased the baseline data that DecAID relies upon to describe "natural" conditions. See Kim Mellen, Bruce G. Marcot, Janet L. Ohmann, Karen L. Waddell, Elizabeth A. Willhite, Bruce B. Hostetler, Susan A. Livingston, and Cay Ogden. DecAID: A Decaying Wood Advisory Model for Oregon and Washington in PNW-GTR-181, citing Harrod, Richy J.; Gaines, William L.; Hartl, William E.; Camp, Ann. 1998. Estimating historical snag density in dry forests east of the Cascade Range. PNW-GTR-428. http://www.fs.fed.us/pnw/pubs/gtr_428.pdf

Response to 27

This comment raises concerns about the DecAID tool and is not specific to the Tripod Fire Salvage project. However, DecAID was considered appropriately and thoroughly in this analysis, including all the comment passages cited by the reviewer. Regional Forest Service guidance specific to post-fire salvage and the use of DecAID for each of the cautions noted was considered and evaluated for this project. DecAID tolerance levels were considered and reported as another level of analysis and one of several methods for comparing alternatives on DEIS pages 3-53 to 3-59. Snag dynamics is addressed in DEIS pages 3-47 to 3-48, 3-62 to 3-63, and 3-67 to 3-68. However, the Forest Plan as amended by Regional Forester Amendment # 2 and interpreted by the July 3, 2007 Forest Letter of Guidance, provided the management guidelines for snag retention in the Tripod Fire Salvage project area.

Comment 28

The "unharvested" inventory data used in DecAID may represent but a snapshot in time, and fail to capture the variability of dead wood over time, including the pulses of abundant dead wood that follow disturbances and may prove essential for many wildlife species.

DecAID must be used with extreme caution in post-fire landscapes because the data supporting DecAID does not include natural post-fire landscapes. ("The inventory data likely do not represent recent post-fire conditions very well … young stands originating after recent wildfire are not well represented because they are an extremely small proportion of the current landscape … The dead wood summaries cannot be assumed to apply to areas that are not represented in the inventory data." "DecAID caveats" http://wwwnotes.fs.fed.us:81/pnw/DecAID/DecAID.nsf).

DecAID relies on a wide range of sources in the literature, some of which recommend much higher levels of snag retention than reflected in the advisor. The agency NEPA analysis should disclose the published literature with higher levels of snag and wood retention and discuss their potential relevance for the project. ("the agency must disclose responsible opposing scientific opinion and indicate its response in the text of the final statement itself. 40

C.F.R. § 1502.9(b).” Center for Biological Diversity v. United States Forest Service, No. 02-16481 (9th Cir., Nov. 18, 2003).)

DecAID tolerance levels need careful explanation. These tolerance levels are very difficult to put in terms that are understandable by the general public, but if the Forest Service is going to use this tool they must make it understandable. The NEPA analysis should provide cumulative species curves for each habitat type and each forest structural stage and should explain the studies and publications that support the data points on the curves. What kind of habitat were the studies located in? What was the management history of the site? Was the study investigated nesting/denning, or roosting and foraging too?

DecAID does not account for the unique habitat features associated with some types of snags. DecAID primarily just counts snags and assumes that all snags of approximately the same size have equal habitat value, but this fails to account for the fact that certain types of snags and dead wood features are unique, such as: hardwood snags, hollow trees and logs, different decay classes, etc. The NEPA analysis must account for these features and the agency should disproportionately retain dead wood likely to serve these unique habitat functions.

DecAID authors caution that “it is imperative, however, to not average snag and down wood densities and sizes across too broad an area, such as across entire watersheds, leaving large areas within watersheds with snags or down wood elements that are too scarce or too small” Kim Mellen, Bruce G. Marcot, Janet L. Ohmann, Karen L. Waddell, Elizabeth A. Willhite, Bruce B. Hostetler, Susan A. Livingston, and Cay Ogden. DecAID: A Decaying Wood Advisory Model for Oregon and Washington in PNW-GTR-181. http://www.fs.fed.us/psw/publications/documents/gtr-181/042_MellenDec.pdf While we agree that snags and down wood must not be averaged over wide areas, we also must emphasize that snags and down wood are far below historic levels on non-federal lands, so in order to ensure viable populations of wildlife and avoid trends toward ESA listing, federal lands must be managed to compensate for the lack of down wood on non-federal lands.

DecAID appears to be based on the idea that the habitat needs of certain key wildlife species represent the best determinant of how much dead wood to retain, and this may in fact be true, but DecAID should also include cumulative curves for other ecological functions provided by dead wood, including: site productivity, nutrient storage and release, erosion control, sediment storage, water storage, water infiltration and percolation, post-fire micro-site maintenance, biological substrate, thermal mass, etc. How much dead wood is needed for these functions?

DecAID may best be used for program level planning rather than project level planning.

Response to 28

This comment raises issue with DecAID and is not specific to the Tripod Fire Salvage project. No single source of information was relied upon for determination of appropriate snag management levels for this project. The analysis examined multiple scales and perspectives, including DecAID, for determining appropriate strategies for habitat retention as described on DEIS pages 3-37 to 3-68. DEIS pages 3-37 to 3-43 discuss specifically how DecAID was used in the Tripod Fire Salvage Project analysis. DEIS page 3-37 states that, "DecAID is an advisory tool to help managers evaluate effects of forest conditions and proposed management activities on organisms that use snags and down wood". However, the Forest Plan as amended by Regional Forester Amendment # 2, and interpreted by the July 3, 2007 Forest Letter of Guidance, provided the management guidelines for snag retention in the Tripod Fire Salvage project area.

Inventory data in DecAID represents a wide range of dead wood conditions across a broad area. The inventory data in DecAID were supplemented for the Tripod project with site-specific, local data as described on DEIS page 3-39. The concern of the reviewer is noted on DEIS page 3-54, "It is important to note that the inventory data from DecAID represents landscape conditions that contain little, if any immediate post-fire habitat. The inventory data in most cases do not represent recent post-fire conditions well because the plots sample conditions arising from a variety of disturbances, including but not limited to fire". In DecAID however, the pulses of abundant dead wood that follow disturbances are represented by those high densities of dead wood at the right side of the distribution histograms reported throughout the DecAID inventory data.

Many studies were considered for determining the effects of the Tripod alternatives. The sources of species-specific DecAID data were from study sites similar to those found in north central Washington (one study cited was in fact from north central Washington) and they were cited on DEIS pages 3-57 to 3-58.

The DEIS pages 3-53 to 3-54 carefully describes the terms "tolerance levels" and "tolerance intervals with an example used for clarity. The DEIS Pages 3-26, 3-37 and 3-39 discuss the use of Management Indicator Species (such as Primary Cavity Excavators) to assess the impacts of management activities on a range of other wildlife with similar habitat requirements. DEIS pages 3-39 to 3-41 discuss the roles of dead wood for a variety of species. DEIS pages 3-40 to 3-41 notes dead wood's value for many species. DEIS pages 3-62 to 3-64 discuss the values of legacy snags, damaged trees and down wood. The analysis for each wildlife species in DEIS Chapter 3 discusses the value of dead wood. The DEIS discusses cumulative actions and effects on pages 3-44 to 3-48 and 3-65 to 3-67 specifically for burned forests, and specifically for each species throughout Chapter 3.

Comment 29

"in surveys with the biologists for the WDFW and USFS last winter, we found lynx crossing through the fire area, but these incidences declined rapidly as the winter progressed. We are unsure whether these individuals were forced to move or died, but we do know they needed the cover afforded by standing

dead trees to move about. Removing dead, but standing trees, will not allow for lynx movement within the burn."

He continues that he sees "absolutely no scientific reason to cut trees for future lynx habitat. Currently burned trees offer lynx a minimal travel cover, but without the added bonus of an occasional meal like would be found in a mature live lodgepole stand providing the same travel component. Burned stands have virtually no hares in them, especially in fires as big as the Tripod."

Response to 29

DEIS page 3-105 noted that, "lynx habitat that burned at moderate to high fire intensity is no longer in suitable condition for lynx". Lynx have moved to areas where there is food available. Removing dead trees from areas where lynx don't occur would not affect the ability for the habitat to recover.

The DEIS page 3-238 states: "Salvage logging would have little or no effect on the residual conifer seed source in harvest units because only dead trees and fire injured trees expected to die within one year after the onset of logging would be removed. Monitoring on the Bitterroot Fires in Montana revealed no difference in conifer seedling abundance on salvage logged and unlogged areas (Kolb 2006). Natural conifer regeneration of Montana Douglas fir plant communities similar to portions of Mixed Conifer and Montane Forest habitat in the affected environment was closely correlated to the occurrence of a seed source. The majority of lodgepole pine seed production would be retained in salvage harvest units because all trees (live or dead) less than 10 inches DBH would not be harvested. All trees less than 12 inches DBH would be retained in harvest units within lynx habitat currently in an unsuitable condition, increasing the likelihood that lodgepole pine seed is retained on site and natural regeneration would occur. "

"Salvage harvest operations would likely be completed within two years after the fire and there would be little or no logging damage to post-fire natural regeneration (McIver and Star 2001). Soil disturbed by logging would provide favorable conditions for the establishment of natural regeneration because disturbed mineral soil generally produces the best germination and seedling survival for all conifer species that would re-establish after the fire (Lotan and Perry 1983, Burns and Honkala 1990). Soil disturbance attributed to salvage logging is not expected to impede natural regeneration establishment because seedling stocking on skid trails often reaches higher levels than on undisturbed areas (Smith and Wass 1976)."

The FEIS has been clarified in Chapter 3, Section 3.2, Endangered, Threatened, and Sensitive Wildlife, Canada Lynx, Environmental Consequences to restate the above information from the Forest Vegetation section in the Canada Lynx section, and add a statement that reads "The difference between alternatives that harvest dead and dying trees in lynx habitat (B, D, and E) and those that don't (A and C) is not substantial, and in 20 years there will not be a measurable difference for lynx or hare population recovery for any alternative".

Comment 30

We cannot support any entry into the capable lynx habitat. All capable habitats for lynx will need to recover at its soonest possible time, and the down wood that is provided from the remaining snags and future attrition is a benefit to this recovery by providing denning, cover, and future nutrients to the land as conifers regenerate to provide food for snowshoe hare and habitat for lynx. In the DEIS, there are statements that show any action within this area poses a risk to delaying recovery. Under the lynx section in Direct and Indirect Effects for Alt A, the no action alt p. 3-107 it says that in approx. 20yrs snowshoe hares will appear, providing prey for lynx. Following this, under the table, p. 3-108, it says that hare habitat would bounce back 20-30 years under all the other alternatives. This delay was confirmed by field discussions with your ID Team members as we stood in capable lynx habitat, and follows logic as the DEIS notes that timber salvage may continue through 2009. The decision of the agency on any actions within capable lynx habitat should focus on leaving open options for species recovery not in potentially limiting these options. A recent ruling by the 9th Circuit Court seems fitting to this analysis.

Response to 30

See the response to Comment 29.

All recommended conservation measures from the Lynx Conservation Assessment and Strategy (the unified strategy for conserving lynx across federal agencies in the United States) that apply to the Tripod project would be implemented under all alternatives. Referring to the conservation measures, LCAS states, "…projects that implement them are generally not expected to have adverse effects on lynx."

The DEIS page 3-112 concluded that because the alternatives are consistent with guidance in the LCAS, because no new travel routes would be created, because any den sites discovered would be protected, and because long-term habitat capability would be maintained, the project would not have an adverse effect for lynx or their habitat.

The FEIS, Chapter 3.2, Consistency Finding and Determination of Effect, has added the additional statement due in part to the results of required informal consultation with US Fish and Wildlife Service: "Based on the USFWS review and concurrence with this analysis, a review of all recent scientific literature on hares and lynx relevant to this project, discussions with top lynx experts regarding the effects of this project, the consistency of the project with the LCAS, and the author's personal experience with lynx and lynx habitat in north central Washington since 1989, it is determined that none of the alternatives proposed for this project threatens the viability of lynx in or near the project area."

The FEIS Chapter 3.2, Environmental Consequences, All Action Alternatives, has been clarified to show that salvage harvest areas would provide highly productive hare habitat and superior foraging conditions for lynx within approximately 20 years due to dense regeneration of conifer trees. This is no different than the FEIS Alternative A finding that in 20 years, when young trees have attained heights that protrude above snow, the lynx habitat that

burned will provide abundant forage and protective low cover for snowshoe hares, which will provide superior foraging opportunities for lynx. Further, the FEIS, Chapter 3.2, Environmental Consequences, All Action Alternatives states, "The difference between alternatives that harvest dead and dying trees in lynx habitat (B, D, and E) and those that don't (A and C) is not substantial, and in 20 years there would not be a measurable difference for lynx or hare population recovery for any alternative".

Comment 31

As the proposed alternative is analyzed, a full mapping effort should be conducted to ensure no lynx presence in the units surrounding or proposed for timber harvest.

Response to 31
DEIS page 2-17 noted that treatment units within capable lynx habitat would be field verified to ensure that harvest is only occurring outside suitable habitat. Lynx monitoring is ongoing. As stated in the DEIS page 3-108, the potential exists for short-term displacement of lynx from the areas where logging would occur. The conclusion is made that: "Temporary displacement of individual lynx would have no consequence for lynx populations"

Comment 32

Also mitigation efforts to control recreational disturbance across the lynx's habitat within the estimated 20 years of recovery to minimize impacts should be detailed and implemented.

Response to 32
Mitigation measures for lynx are described in the DEIS on page 2-17. Roads that are opened would be closed after operations are complete or at seasonal shutdown. Temporary roads would be decommissioned after operations on them are complete. (DEIS page 2-20). Recreation use is described as a cumulative effect on DEIS page 3-111 where it is noted that areas where harvest is proposed in lynx habitat are closed to motorized travel from December 1 to March 31 each year. DEIS page 2-34 noted that recreation use monitoring is scheduled.

Comment 33

We strongly urge no landings or temporary road construction within the RHCA's. If such landings or roads are anticipated, they will need to be identified in NEPA documents and impacts disclosed prior to a decision.

Response to 33
On further review, it was determined that new landings or temporary road crossings the RHACs would not be needed. The FEIS has been updated to clarify this.

Comment 34

On page 154 of the DEIS, the tables providing watershed conditions shows that the project area is a degraded system in need of restoration measures more so than further degrading. All watersheds of the project area (Lower Chewuch Mainstem, Boulder Creek, North Fork Boulder Creek, Upper Beaver Creek, North, West, and South Salmon Creeks) are Functioning at Risk (FAR) or Functioning at Unacceptable Risk (FUR) for road densities. In addition, all watersheds listed above except for the West Fork Substrate of the Salmon Creek watershed are FUR or FAR for sediment/substrate. Therefore, re-opening, temporary construction, or increased use of any poorly designed roads should not occur in this project area until proper mitigating measures have taken place.

Response to 34

As mentioned on DEIS 2-18 and 2-19, RHCAs would be identified and mapped prior to implementation, and no salvage harvest would occur within RHCA boundaries. Other design criteria that would be employed to provide for stream and riparian protection are also listed here, including: deploying erosion control measures where needed to protect RCHA (DEIS 2-19). On further review it was determined that new landings or temporary spurs across the RHCAs within RHCAs would not be needed. The FEIS has been updated to clarify this.

During development of the Proposed Action, salvage in Blue Buck Creek was considered but removed from consideration in part to avoid impacts to threatened bull trout population, highly-damaged soils, and hydrologic function (DEIS pages 1-22 and 2-36).

As displayed in DEIS Figure 3.3-5, the current conditions of some watersheds are functioning at risk or functioning at unacceptable risk for large wood, sediment delivery and road density. However, large woody debris in RHCAs is expected to increase largely due to the effects of the fire, while design criteria would help maintain the increase (DEIS page 3-181 and Figure 3.3-29).

There would be no new system road construction due to alternative implementation (DEIS page 2-3). There would be temporary roads constructed to access landing sites and allow landings to be less visible from roadways. These would typically be less than 500 feet in length and they would be decommissioned after use. The proposed temporary road locations are on relatively flat ground where there are no hydrological concerns (DEIS page 2-40). Further, currently closed system roads that are opened would be closed following activities, and there are about 7 miles of currently opened road that would be closed following implementation (DEIS page 2-12). Mitigations for re-opening roads and temporary road construction are listed in the DEIS, pages 2-19 to 2-20. Road system effects concerning watersheds are further discussed in Chapter 3.3 Fisheries/Hydrology. Action alternatives would essentially result in no net change in total road densities (DEIS page 3-184). There would be an increase in erosion during project implementation (years 1-5) due to hauling on roads as discussed on DEIS page 3-186 and displayed in DEIS Figure 3.3-22. However, this should be compared to the overall sediment delivery resulting from the fire for the same period. As mentioned on DEIS page 3-187, the difference in accumulated sediment delivery

between no action and the action alternatives is roughly 0.3%. Along these same lines, DEIS Figures 3.3-23 and 3.3-25 illustrate that the overwhelming majority of the sediment delivered to the stream network for the life of the project occurs in the first three years and is predominately a result of the fire, not project activities.

There are several mentions in Chapter 3.3 Fisheries/Hydrology of the improvements to the road system that would be completed prior to project implementation as a result of BAER treatments (see DEIS pages 3-166, 3-168, 3-178), and also discussion about BAER treatments on DEIS pages 3-338, 3-339, 3-340, and 3-342).

Comment 35

In reviewing the DEIS, I did not find information on the current status and condition of all existing closed roads to be opened. NEPA documents must detail the condition and whether the opening will require the simple opening of a gate or some level of construction.

Response to 35
DEIS Appendix J-1, Transportation lists all roads within the project area and what the current maintenance level is. All of the currently closed roads had been opened for fire access. Through BAER activities, these roads have been hydrologically stabilized and re-closed at the entrance.

Comment 36

We suggest that in addition to buffers around riparian areas, the slopes facing down to all riparian areas must maintain all snags over 21 inches DBH. This thinking was derived after review of the watershed analysis of these areas and the summary of their current status as reflected in the Figure 3.3-5, where all watersheds were Functioning At Risk (FAR) for Large Woody Debris (LWD). New science indicates that in certain landscapes almost one half of instream wood comes from outside the riparian area.

Response to 36
As stated in DEIS pages 2-18 and 2-19, RHCAs would be identified and mapped during unit layout following snow melt and would include potential landslide areas. This is repeated again on DEIS page 3-181; Unstable areas that are prone to mass wasting or landslides would be included as RHCAs and would be excluded from salvage. One of the main reasons for including potential landslide areas within the RHCAs was specifically to provide for the potential to deliver LWD and coarse substrate to the stream network.

Comment 37a

The post-fire logging in this proposal leaves the option for logging to occur during winter months over frozen ground when it is shown to have less disturbance, but this is not required. Therefore, it leaves open for logging to

take place late this summer or early fall at a time when the soils will remain sensitive and disturbance could be high.

Response to 37a

Winter logging is a mitigation listed in DEIS page 2-21 and discussed on DEIS page 3-216. Winter logging is optional and not required. This would allow salvage operations to proceed in the timeliest manner for economic recovery. Winter logging would be done if salvage operations occur during the winter operating season. The effects of summer logging on soils are disclosed in DEIS pages 3-211 to 3-226.

Comment 37b

Following the Farewell fire, summer thunderstorms destroyed bridges and sent plumes of silt down the Methow River. It is reasonable to expect similar events will occur in the Tripod area, and impacts must be disclosed in the EIS.

Response to 37b

In the Affected Environment section, as stated on DEIS page 3-148:

> "In 2001 and 2003 a combined total of 100,000 acres was burned in the upper Chewuch watershed. Following those fires, high intensity, short duration summer rain events on the burned areas created extensive landslides and delivery of massive amounts of silt, sand, gravel, cobble, boulders and large wood to Lake creek, Andrews Creek, and the Chewuch River. Bull trout spawning surveys have been conducted in these areas since 1995 and surveys conducted after the fires shows a neutral to positive increase in bull trout spawning activity following the fires and the distribution of redds has expanded to include the stream reaches where landslides intercepted the stream channels. Similar results were documented on the John Day River following the Tower Fire in 1996 (Howell 2006). The Farewell and Thirtymile fires burned in the portion of the Chewuch watershed that has very few roads, small amounts of grazing and little to no timber harvest. In contrast, the Tripod Fire burned thorough ground that has been more intensively managed, has areas with high road densities, higher levels of grazing and may not respond in the same was as the Farewell and Thirtymile areas have to date."

And DEIS page 3-150:

> "In addition to toppling, landslides and stream channel debris torrents also periodically deliver sediment and wood to valley bottom streams. Landslides often occur when intense storm events follow within a few years of fire. Fire related landslides historically were distributed in patches across the landscape and occurred periodically through time. This pattern of disturbance is essential to maintain ecological processes that support healthy salmonids populations across a landscape (Reeves et al. 1995)."

Also DEIS page 3-166;

> "The Farewell and Thirtymile fires also increased water storage capacity where new wetlands created by landslides partially blocking the river cause water to be impounded" (DEIS 3-161). Concerning Beaver Creek, "Fine sediment levels, as well as coarse sediment such as spawning gravel, are expected to increase dramatically as a result of the Tripod Fire. Burned Area Emergency Rehabilitation (BAER) treatments to improve road drainage and reduce the risk of stream crossing failure should help to reduce the effects of the road system on fine sediment within the burned area (DEIS 3-166)."

Under the No Action Alternative on DEIS 3-171 it is stated that:

> "Depending on storm events, fire affected landscape responses, such as landslides, would create depositional areas in streams and would likely bury some riparian areas with sand gravel, cobbles, boulders and logs. This is most likely to be observed on alluvial fans and could be dramatic on the Twentymile alluvial fan, the Boulder Creek alluvial fan, and on Boulder Creek especially downstream of Pebble Creek.
>
> …Tripod Fire effects that could cause increased summer water temperatures may be offset by anticipated increased stream flows and improved water ground water storage in alluvial stream reaches affected by landslides.
>
> …Based on data collected from the Farewell and Thirtymile Fires (USDA Forest Service 2005e) large wood levels in Boulder Creek and tributaries would probably increase dramatically. Wood would be recruited to the channel directly from streambanks as burned trees fall over and from debris avalanches as wood is swept downstream in a slurry of silt, sand, and rock."

On DEIS page 3-174 it is reiterated:

> "Landslides could affect channel position at the confluences of Twentymile and Boulder Creek, and impoundments created by landslides may increase water storage capacity on alluvial fans and at tributary junctions. Following the Farewell Fire bull trout spawning distribution has increased and spawning counts have so far been maintained and possibly have increased over pre-fire conditions. …

Similarly on DEIS page 3-178; "Spawning habitat may improve following the Tripod Fire as landslides occur and deliver bedload that includes spawning gravels to streams…

In the Effects Common to All Action Alternatives on DEIS page 3-181 it is pointed out that "unstable areas that are prone to mass wasting or landslides would be included as RHCAs and would be excluded from salvage", which carries with it the effects enumerated in the above excerpts."

FEIS Chapter 3.3 Fisheries/Hydrology, Effects common to all Action Alternatives, Effects Discussion by Alternative, has been clarified with regards to project effects on landslides.

Comments 38 and 39

Even with the restoration proposed in the newly created detrimental areas, the project does not meet the intention to "maintain or improve" the watershed.

In Neighbors of Cuddy Mountain v. USFS, 137 F.3d 1372 (9th Cir. 1998), the Court found that the Forest Service must demonstrate that a project be consistent with the Forest Plan by disclosing the relevant activity area or areas, and then demonstrating that detrimental soil conditions do not exceed standards in each activity area. 137 F.3d at 1377.

The FEIS should select an alternative that can meet the Okanogan National Forest Land Management Standards, and be able to demonstrate the soil conditions prior to harvest that consider all fire suppression activities.

Responses to 38 & 39

All action alternatives would be within the 15% detrimental soil standards (DEIS Soils Effects Common to All Action Alternatives on pages 3-211 through 3-226). The Cumulative Effects section summarizes the active restoration necessary to be within the 15% detrimental soil standards. DEIS Soil Appendix E also contains information. Each activity refers to each salvage cutting unit.

Existing detrimental soil condition was estimated on salvage cutting unit by visiting units. This was done during Tripod BAER analysis, using other Forest Specialists' observations and field visits. Familiarity with the soils in the area also occurred on past projects including Tiffany, Ramsey, East Chewack Allotment planning. Past sale activity for each salvage cutting unit was considered in this analysis and an estimate is given for each alternative listed in Soils Appendix E. Estimated additional detrimental soil disturbance is based on logging systems and discussed in the Soils Effects DEIS pages 3-211 through 3-226. Estimated active restoration is also discussed.

Fire suppression activities are discussed in the DEIS Soils pages 3-206 through 3-207. Suppression rehabilitation efforts were extensive with details given on these pages.

Comment 40

The Environmental Impact Statement should explore an option that does not add any new road mileage, and examines what road obliteration and/or adjustments can be made to mitigate the impacts of the post-fire logging operation to further the restoration of the watersheds in the project area. This restoration should be done prior to any disturbance on the watershed from post-fire logging rather than wait until 2009 when logging ends. To meet the intent of the National Environmental Policy Act to demonstrate a full range of alternatives, a restoration alternative should be examined.

Response to 40
An alternative that would build no new roads was analyzed but eliminated from detailed study on DEIS page 2-40. Descriptive Elements Common to All Action Alternatives on DEIS page 2-6 states that, "Generally, roads that were open before the Tripod Fire would remain open and roads that were closed before the fire would be closed." Additionally, an alternative that would actively restore riparian habitat areas and wildlife habitat was analyzed but eliminated from detailed study on DEIS page 39 to 2-40. The purpose and need for this project is economic recovery, danger tree removal and reforestation. Restoration is not a part of the purpose and need for this project and is outside the scope of this analysis.

Comment 41

The EIS must fully consider impacts associated with allowing grazing allotments to return to the Tripod burn area. Livestock grazing can be a contributing factor to poor soil and water quality conditions. Following the disturbance of fire suppression, proposed logging, and the return of recreation, the return of grazing to the area should not be allowed unless it can be demonstrated that water quality standards will be met. This assessment has not been completed. The BAER map of burn severity indicated that some grazing allotments experienced high severity fire, with concomitant damaged soils and stand replacement outcomes. Without assurances grazing allotments will be managed to allow succession to function naturally, new grazing patterns will emerge that will be difficult to reverse. An example where this occurred is within the Tripod Analysis area along Boulder Creek that burned in the Forks Burn of the 1970s. Following salvage, the landings were planted with grasses to protect Boulder Creek, with the opposite effect. These areas continued to be heavily grazed up to the year of the Tripod Fire, and the grazed salvage landings continue to be a source of sediment delivery to the stream and noxious weeds spreading into the adjacent riparian areas and downstream habitats.

Response to 41
Appendix H documents the assessment that will be used to determine when livestock grazing can continue within the Tripod Fire burned area. This assessment process is not a part of this DEIS, but is displayed in the DEIS to help analyze the cumulative effects of grazing within the project area. The DEIS Range Cumulative Effects, Present and On-going actions on pages 3-357 through 3-358 describes the allotment fire recovery measures for livestock grazing. To clarify, as part of this vegetation recovery assessment in Appendix H, a determination was made on all allotments (that have a portion of the grazing area within the burned area) as to which allotment pastures have very limited livestock access to the vegetation recovery areas. This assessment was made by the Ranger Districts prior to livestock turn-on for 2007. Only those pastures were grazed where it was reasonably certain that there would not be detrimental impacts to vegetative recovery and to water quality as a result of livestock grazing. The vegetation assessment would be completed before allowing grazing to return on all allotment pastures where grazing has been delayed due to the potential for livestock access vegetation recovery areas.

Comment 42

The proposed action actually does leave all trees under 10 inches DBH in the forest, leaves logging debris untreated in skyline units and units where trees are felled by hand, and re-plants conifers in some logging units, which actually are the finer fuels that could pose a fuels issue for re-burn concerns. Impacts of increasing fuels during the logging project must be disclosed.

Response to 42

The effects of salvage logging on fuels is disclosed in the DEIS beginning on page 3-321 to 3-329. More information regarding the effects of increased fuels on re-burn hazard has been added to the FEIS Chapter 3.10 (Environmental Consequences for Alternatives B, C, D, E, Reburn Hazard).

Comment 43

Actually, the most recent science on this issue from studies on the Biscuit Fire of 2002 shows that salvage logging and replanting after a fire may result even more extreme fire behavior next time around than in stands that were left to naturally recover. The study found that, in places that burned with high severity in the Silver Fire, areas that were salvage-logged and planted burned with even higher severity than comparable unmanaged areas (Thompson, Spies, Ganio 2007)

Response to 43

The effects of increased fuels on re-burn hazard have been added to the FEIS Chapter 3.10 (Environmental Consequences for Alternatives B, C, D, E, Reburn Hazard). Conclusions from Thompson, Spies, Ganio (2007) are discussed in this portion of the FEIS as well.

Comment 44

All statements referring to a fuels reduction benefit of any salvage action should be linked to a research project and placed with a context that answers the following questions:

To what extent does the full action effect landscape scale projected fire behavior and intensities?
What would the projected fire behavior be to an area being left untreated, and what management objectives for an area (ie. Improved burned habitat) be met with a no action alternative?
To what extent does the full action reduce potential re-burns near communities and/or critical habitat?

Response to 44
Refer to the DEIS page 3-316, for explanation of how resistance-to-control incorporates fire behavior and intensities. Page 3-328 of the DEIS discloses how salvage actions affect landscape-scale resistance-to-control.

Refer to the DEIS, (pages 3-318, 3-327 to 3-329) for discussion of projected resistance-to-control (hence fire behavior and intensities) in the no-action alternative, which would apply to areas left untreated in any of the action alternatives. The comment is not specific to what kinds of management objectives would be met by the No Action Alternative, however, each resource section in DEIS Chapter 3, discloses the effects of the No Action alternative.

Response to 44
Refer to the DEIS, pages 3-328 and 3-330, for discussion of how this project affects resistance-to-control near communities.

Comment 45

The NEPA document must acknowledge the fire risks associated with salvage logging including:

> *(a) salvage logging will remove most of the largest logs that least prone to burn (because large logs hold the most water the longest and they have relatively high ratios of volume to surface area),*
> *(b) salvage logging leave behind almost all of the smallest material which is most prone to drying and burning (e.g., relatively low ratio of volume to surface area),*
> *(c) the proposed action may lop and scatter the tops of large trees that are too big for the ground-based harvest machinery,*
> *(d) salvage logging equipment and workers could start fires,*
> *(e) increased human access increases the risk of human caused ignition,*
> *(f) the replanting will create a fuel load that is dense, uniform, extensive, volatile, and close to the ground (During an extreme weather conditions this is one of the most extreme fire hazards in the forest).*

Response to 45
(a) Refer to the DEIS, page 3-328, for disclosure of the effects of salvage logging on large fuel loading, fire hazard, and resistance-to-control.

(b) Refer to the DEIS, page 3-328, for disclosure of the effects of salvage logging on small fuel loading, fire hazard, and resistance-to-control.

(c) Fuels treatments are described in the DEIS, pages 2-12, 2-14, and 2-16. Lop and scatter treatments are not included in any alternative.

(d) FEIS Chapter 3.10(Environmental Consequences for Alternatives B,C,D, E, Reburn Hazard) has been revised to address this possibility.

(e) Refer to the DEIS, page 2-20. Any roads re-opened or temporarily created for salvage operations would be closed when salvage operations are completed. These roads would not generally be open to recreational vehicles while logging is in progress. DEIS page 3-302 discloses that recreational access via roads would be restricted by proposed activities. FEIS Chapter 3.10 (Environmental Consequences for Alternatives B,C,D, E, Reburn Hazard) has been revised to include additional information on the risk of future ignitions.

(f) DEIS pages 2-12, 2-14, 2-15, and FEIS, Alternatives Considered in Detail for Alternative E discusses proposed reforestation for each alternative. DEIS page 2-25 to 2-27 and DEIS Appendix F further defines reforestation proposals to meet minimum tree stocking guides developed for this project. Recommended tree planting densities in the dry and mixed conifer forest types are greatly reduced (40 – 60%) compared to historic tree planting densities in the Tripod area. Refer to FEIS Chapter 3.10 (Environmental Consequences for Alternatives B, C, D, E, Reburn Hazard) for a revised discussion of re-burn hazards including artificial reforestation.

Comment 46

The proposed action for the Tripod Salvage Project does not address any factors of resiliency for this landscape, while it does propose removing portions of the structure that would help in the landscapes recovery. The FEIS should address this issue, and considerations made in project design in light of climate change.

Response to 46

Information on climate change has been added to the FEIS, Chapter 3.11, Cumulative Effects. Climate change forecast models are not accurate at the Tripod Project level or even the Okanogan & Wenatchee National Forests scale. Therefore, it would not be meaningful to analyze the effects of climate change for the Tripod project scale. However, resiliency of forest stands is understood to be important on the landscape.

DEIS, pages 3-229 to 3-232 and 3-252 to 3-274 respectively, address the resiliency of forest vegetation in the analysis area and provides a detailed discussion of post-fire successional processes and vegetation re-establishment. Appendix F, Implementation/Marking Guide section of the FEIS describes the burned forest habitat, snags, coarse woody debris, and live trees that would be retained in the proposed action salvage harvest units. The biological legacy of these retained structures would enhance the resiliency of future forest stands that develop in proposed harvest units. Effects of the proposed action on forest recovery and plant species diversity are disclosed in the DEIS on pages 3-237 to 240 and 3-266 to 274. To summarize from the DEIS (page 3-274):

> "Ecologically, the fire resistance and resiliency of most plant species should respond favorably to the post-burn environment. The Tripod Fire burn severities are not thought to be outside the natural variation experienced

historically, so it is unlikely there would be any long-term effect to the native plant communities. Where harvest, particularly ground-based or skyline, are proposed in High severity burn areas, there may be a short term delay in the floristic recovery but any differences between harvest and unmanaged areas would be negligible in the long-term (30 to 50 years)."