

Response to Comments on the DEIS

General/NEPA

1. The Ecology Center would like to incorporate their October 19, 1998 letter sent to the Beaverhead-Deerlodge NF Supervisor, their December 2, 1999 letter entitled "Evaluation of Monitoring on the Beaverhead-Deerlodge National Forest" regarding Forest Plan Monitoring (also previously sent to the Beaverhead-Deerlodge NF Supervisor) as comments on this DEIS. They would also like to incorporate all their comments to date on the Forest Plan revision proposal (15).

Response: We have reviewed your letters dated October 19, 1998, and December 2, 1999, and your comments submitted to date on the Forest Plan revision proposal. Your 1998 letter focuses primarily on "ending commercial logging" on Forest System Lands, while your 1999 letter is an evaluation of monitoring on the Beaverhead-Deerlodge National Forest. The Basin Creek Hazardous Fuels Reduction Project proposes to treat existing and future hazardous fuels in the Highland Mountains south of Butte, Montana. The comments contained in both your letters and those pertaining to Forest Plan revision are not specific to the proposed action. The Code of Federal Regulations at 36 CFR 215.6 (a)(3)(iii) requires specific substantive comments (215.2) on the proposed action, along with supporting reasons that the Responsible Official should consider in reaching a decision.

2. It is incongruous that, while professing Ecosystem Management (EM), the FS largely disregards some vital forest parts, particularly components that ensure forest dynamics and permit tree growth (15).

Response: We are unsure which forest parts and components this comment is referring. The interdisciplinary team was composed of a team leader, silviculturist, fire management officers, fuels specialists, a wildlife biologist, fisheries biologist, soil scientist, hydrologist, and a recreation forester. Their respective reports include discussion of the existing conditions and effects related to the alternatives; these can be found in Chapter 3 of the FEIS. The purpose and need for the project is described in Chapter 1 and is specific to hazardous fuels reduction.

3. After reviewing the DEIS, we find major problems including vague generalities and unsupported assertions. It omits much important information in its disclosures and discussions, rendering it insufficient for adequately informing the public at this stage of the NEPA process. Our comments have expanded greatly on this point. Therefore we request a new DEIS or Supplemental DEIS be prepared and circulated to the public for review, in order to adequately inform the public at this stage of the NEPA process (15).

Response: Please refer to the extensive response to comments, some of which resulted in additional or revised analysis and disclosure in the FEIS. Refer also to the response to comment number 1, which addresses substantive comments.

4. The abstract of General Accounting Office (GAO) report # GAO-01-1101R dated September 21, 2001 states: GAO reviewed the Forest Services total costs associated with its timber sales program for fiscal years 1998 and 1999. Serious accounting and financial reporting deficiencies at the Forest Service during fiscal years 1998 and 1999 precluded GAO from making an accurate determination of the total federal costs for the timber sales program. These deficiencies made the Forest Service's cost information totally unreliable.

In a report released in January 2001, the GAO found the USFS has not provided Congress and the public with a clear understanding of what is accomplished with appropriated funds. According to the report, "the Forest Service and Congress do not have accurate financial data to track the cost of programs and activities and to help make informed decisions about future funding."

The GAO states: For fiscal years 1995, 1996, 1997, and previous years, the Office of the Inspector General reported that because of significant internal control weaknesses in various accounting subsystems, the Forest Service's accounting data were not reliable. Despite these weaknesses, we used the data because they were the only data available and are the data that the agency uses to manage its programs.

In January 1999, the GAO named the financial management system of the USFS to its "High Risk List" of government programs susceptible to waste, fraud and abuse. The GAO reported the problems were worsened by a new accounting system that had not been able to produce necessary reports on assets, liabilities and revenues. In January 2001, the GAO reported, "the Forest Service does not appear to be fully committed to making performance accountability one of its top priorities, and major hurdles to achieving performance accountability remain."

GAO report GAO-03-538 Forest Service states the Forest Service is violating the Financial Management Improvement Act of 1996 (FFMIA, P.L. 104-208, title VIII, 110 Stat. 3009-389 (1996)). The BDNF and this EIS are also in violation of the Chief Financial Officers Act of 1990 which calls for CFO Act agencies, such as the USDA, to have financial management systems, including internal control, that provide complete, reliable, and timely information. Dale Bosworth, Chief of the Forest Service concurred with the findings of this report.

In a May 1, 2003 report, GAO-03-503 Forest Service: Little Progress on Performance Accountability Likely Unless Management Addresses Key Challenges sent to Congress and the Honorable Scott McInnis, Chairman of the subcommittee on Forest Health, Barry Hill, Director of Natural Resources and Environment at the General Accounting Office, reported "the Forest Service has not been able to provide to Congress and the public with a clear understanding of what its 30,000 employees accomplish with the approximately \$5 billion it received every year."

The Beaverhead-Deerlodge N.F. no longer produces a financial analysis or TSPIRS report. Since the TSPIRS report can no longer be used to satisfy the economic monitoring requirements, there is no fiscal monitoring occurring.

Numerous government studies confirm the Forest Service's financial losses and lack of accountability. On March 26, 1998, Barry Hill, Associate Director of Energy, Resources and Science Issues at the GAO, testified before the House Committees on Resources, Budget, and Appropriations and the Subcommittee on Interior and Related Agencies. Mr. Hill concluded: Forgone revenue, inefficiency, and waste throughout the Forest Service's operations and organization have cost taxpayers hundreds of millions of dollars. The agency's financial statements are unreliable, and expenditures of significant amounts cannot be accounted for. Inefficiency within the Forest Service's business processes is accompanied by numerous shortcomings in the agency's accounting and financial and information systems that preclude the Forest Service from presenting accurate and complete financial information. For example, in reporting its fiscal year 1995 financial results, the Forest Service could not identify how it spent \$215 million of its \$3.4 billion in operating and program funds.

This is also a clear violation of NFMA and the Forest Plan monitoring requirements (16).

Response: The purpose and need for the project is fuels management and not timber, although timber harvest will be used to accomplish project objectives. Therefore, fiscal reporting related to the timber sales program is outside the scope of this project. Incidentally, the Forest Service received a clean audit opinion for Fiscal Year 2003, and continues to make strides to address performance

accountability. The FEIS contains an economic analysis for the project in Chapter 3, on pages 3.321-3.324. Page 2 .13 of the FEIS discusses Forest Plan consistency.

5. The review of the draft and comments should be expedited to ensure a final decision is made in April of 2004, and that the project be implemented in 2004. The Butte-Silver Bow community cannot afford any further delay in addressing the serious threats of fire in the area as the beetle infestation progresses (18).

Response: Thank you for your comment.

6. The highest and best use of the project area is to support a municipal watershed. All management efforts should be focused on that use, not on the roadless issue, or concerns about the impacts typically associated with timber harvest area or a grazing allotment (18).

Response: Part of the purpose and need for the proposed project is to modify vegetative conditions, reduce hazardous fuel accumulations and break up fuel continuity to reduce the potential for wildfire to spread into Basin Creek Municipal Watershed (FEIS pg. 1.3). Forest Plan direction states that municipal watersheds will be managed to protect municipal watershed values through applying the Specific Surface Water Quality Standards of the State of Montana (FEIS pgs 1.5-1.8).

Purpose and Need

7. We disagree with how the DEIS's "Key Issues" characterizes the fuel conditions. Since the watershed currently contains only "limited fine and ladder fuels" and that "it would be very difficult for a surface fire to start in the watershed" the real key issue regarding fuels should be the potential of increased public access and the vegetation treatments to INCREASE the likelihood and severity of fire. As it stands, the DEIS is quite illogical and the "purpose and need" slanted towards logging and road building as an unnecessary "solution" to a nonexistent "problem" (15).

Response: The ID team realized that we had not made the point, in our discussion in Chapter 1 that the need for treatment in lodgepole pine stands is a **future** risk of heavy fuel loadings and ladder fuels. We clarified this discussion for the FEIS that the risk is a future one for lodgepole pine killed by the mountain pine beetle, Chapter 1, page 1.3 of the FEIS. Pages 2 .1, 2 .4, 3.13, and 3.28-3.36 of the FEIS (2.1, 2.4, 3.3, 3.17 and 2.39 of the DEIS) describe in detail the implications and hazards associated with high intensity surface fire. Currently, in lodgepole pine stands throughout the watershed, there are limited fine and ladder fuels and surface fires are not likely to start, but in the future, as fuels accumulate, this will not be the case. The FEIS states on page 3.31 (DEIS pg 3.32), "The mountain pine beetle will have a substantial effect on fuel loadings over time. By killing trees, beetles create snags, which eventually fall over and become down woody debris and add substantially to fire intensity, especially in droughty conditions. Fuel loading increases from 2003 to 2028. The year 2028 represents the point in time that the Forest Vegetation Simulator predicted the greatest fuel loading." On page 3.36, the FEIS (pg. 3.37 of the DEIS) also discusses an increase in fire size over time, associated with a future heavy fuel loading.

As stated on page 2 .6 of the FEIS, all temporary roads will be closed following project completion, and the project will not cause increased public access in the long-term.

Pages 3.37-3.47 of the FEIS (pages 3.38-3.49 of the DEIS) describe in detail the effects of fuels treatments on reducing fire behavior. For example, on page 3.37 of the FEIS (page 3.38 of the DEIS), we cite numerous scientific documentation of how reduction in fuel loading reduces fire behavior. Additionally, on pages 3.37-3.41 of the FEIS, (page 3.4-3.41 of the DEIS) we discuss numerous scientific findings that support the effect of thinning on fire behavior reduction. The FEIS discusses the potential for increased ground and surface fire behavior associated with thinning due to an increase in surface wind exposure and increased solar radiation. However, the FEIS follows up by stating that in order for fuel treatments to be effective, the slash needs to be treated, and that surface fires are often safer and easier for firefighters to control.

Policy

8. We have far too much wilderness designation, which is a silly waste of valuable resources (2).

Response: This project does not propose to change the amount of wilderness.

9. The NEPA document should show that the proposed alternatives would comply with the Clean Water Act and all Montana Water Quality laws and regulations. Please remember that merely designating BMPs is not sufficient for compliance with CWA and NFMA. Are there WQLS segments in the project area (16)?

Response: As stated on page 3.192 of the FEIS, (page 3.175 of the DEIS) no WQLS segments exist within the project area. See pages 3.200-3.205 of the FEIS (pages 3.184 -3.189 of the DEIS) for a discussion of the effects of the action alternatives, including compliance with CWA and State Water Quality Standards.

10. The recent passing of the Healthy Forest Restoration Act of 2003 by Congress, and signed into law last Wednesday by President Bush, promotes the exact actions outlined in the DEIS for Basin Creek. The FS has been granted several new tools to start managing the millions of acres of public land at risk from bug outbreaks and eventual wildfire (19).

Response: The new categorical exclusions for hazardous fuels reduction activities do not apply where there are extraordinary circumstances, such as adverse effects on inventoried roadless areas. A categorical exclusion was not used for the Basin Creek project. Instead, an Environmental Impact Statement (EIS) was prepared.

Forest Plan

11. The DEIS proposes to implement a massive logging program to control fuels in unfragmented roadless lands. Harvest units exist largely on unsuitable timber lands in management areas where timber harvest is prohibited and a number of Forest Plan amendments are needed to change the management area direction to allow for timber production. Treatments should occur only where timber harvest is allowed under the current Forest Plan. The Forest Service cannot implement the National Fire Plan without first incorporating it into the Forest Plan (10).

Response: This project does not propose to manage for timber production, and commercial timber removal occurs only as a method of reducing fuels. Chapter 1 identifies the purpose and need to

provide firefighter and public safety, reduce the potential for wildfire to spread into Basin Creek Municipal Watershed, and reduce the potential for damage to public and private property. Forest Plan direction allows for management treatments in areas classified as unsuitable for timber production. Page 2.13 of the FEIS (page 2.12 of the DEIS) discusses consistency with the Forest Plan. The National Fire Plan is national policy and does not require an amendment to the Forest Plan.

12. There is a need to do a Forest-wide Amendment and EIS to address fuels management decisions. The amendment should divulge why specific areas are chosen and identify alternative approaches to fuels management, and the associated costs and wildlife impacts on a programmatic level, before these projects are implemented (10).

Response: A Forest-wide Amendment and EIS to address fuels management is outside the scope of this project. Your comment has been referred to the Forest Plan Revision Team.

13. The Forest Plan does not define management areas MD2, ME1, and MC3. Is this a variation of the D2, E1, and C3 designations? Where is this information located in the Forest Plan? Where is the management area A5 designation in the projects area? Is it missing from the map (10)?

Response: Thank you for your comment. The Deerlodge Forest Plan identifies that management areas occurring within a municipal watershed will be preceded by the letter "M" to denote municipal watersheds (Forest Plan II-26-II-27). This was not clear in the DEIS. A discussion of Forest Plan management areas and management direction has been included in the FEIS (pgs 1.5-1.7). The management area A5 designation occurs in the northeastern portion of the project area and this has been added to the map in Appendix B in the FEIS.

14. We understand that the purpose of this proposed hazardous fuel reduction project is to reduce fire risk and future fire severity for protection of homes on private land adjacent to National Forest land and protection of the Basin Creek municipal watershed from water quality impacts from a severe wildfire (14).

Response: Thank you for your comment.

15. Fuels reduction activities aren't anticipated or specified in the Forest Plan, and therefore, such a proposal is inconsistent with the Forest Plan (15).

Response: Please refer to response to comment number 11.

16. Since the adoption of the Forest Plan, conditions on and around the Forest have changed "significantly" in both NFMA and NEPA terms and the fifteen-year mandatory due date for Revision of the Forest Plans has passed (15).

Response: The Forest Plan is currently undergoing revision and a proposed action is available for review at www.fs.fed.us/r1/bdnf/forest_plan/revision. Until this planning process is complete, we are bound by the current Forest Plan.

17. Indeed, conditions have changed significantly, to the point where the Forest Plan can no longer be genuinely represented as responsive to present conditions. The Forest Plan EIS is no longer valid. Since the signing of the Forest Plan Record of Decision (Forest Plan ROD), at least two species that occur on the Forests have been listed under the Endangered Species Act (ESA). These include the bull trout and the Canada lynx (15).

Response: Impacts to these species were analyzed in the FEIS on pages 3.106-3.151 (DEIS pages 3.97-3.132). The US Fish and Wildlife Service concurred with this analysis in a letter dated March 24, 2004.

18. Forest Service documents in recent years, including this DEIS, suggest that there are many thousands acres of this national forest that have been seriously adversely affected by suppression of wildland fires. Yet the Forest Plan and DEIS fail to provide the kind of long-term planning to address this issue (15).

Response: Page 1.1 of the FEIS (page 1.1 DEIS) refers to the problem of fire suppression at a national level. However, the project area occurs in a municipal watershed and in the wildland-urban interface, and the current Forest Plan does not allow for wildland fire use in these kinds of areas. Long-term Forest Planning is outside the scope of this project and is currently being addressed in Forest Plan Revision.

19. The Forest Plans also never anticipated nor disclosed the degree to which land management activities, including timber production grazing, and management of recreational activities, would lead to large areas of the Forest being infested with noxious weeds (15).

Response: Page 3.71 of the FEIS (page 3.61 DEIS) contains a discussion of noxious weeds and Appendix E contains best management practices for weed control. The discussion identifies that total knapweed infested area in the analysis area is estimated at 30 acres and total common toadflax infested area is estimated at 10 acres.

20. Clearly, the Forest Plan is out-of-date and in dire need of revision. The practice of relying upon planning-level decisions, such as deferring to Management Area designations as the DEIS does, is seriously misguided by the current Forest Plan.

Section 6 of the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended, states under Section (f): Plans developed in accordance with this section shall- (5) be revised (A) from time to time when the secretary finds conditions in a unit have significantly changed, but at least every fifteen years, and (B) in accordance with the provisions of subsections (e) and (f) of this section and public involvement comparable to that required by subsection (d) of this section. (Emphasis added.)

NFMA implementing regulations at 36 C.F.R. § 219.10(f) and (g) deal with amending and revising forest plans:

(f) Amendment. The Forest Supervisor may amend the forest plan. Based on an analysis of the objectives, guidelines, and other contents of the forest plan, the Forest Supervisor shall determine whether a proposed amendment would result in a significant change in the plan. If the change resulting from the proposed amendment is determined to be significant, the Forest Supervisor shall follow the same procedure as that required for development and approval of a forest plan. 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.

(g) Revision. A forest plan shall ordinarily be revised on a 10-year cycle or at least every 15 years. It also may be revised whenever the Forest Supervisor determines that conditions or demands in the area covered by the plan have changed significantly or when changes in RPA policies, goals, or objectives would have a significant effect on forest level programs. In the monitoring and evaluation process, the interdisciplinary team may recommend a revision of the forest plan at any time. Revisions are not effective until considered and approved in accordance with the requirements for the development and approval of a forest plan. The Forest Supervisor shall review the conditions on the land covered by the plan at least every 5 years to determine whether conditions or demands of the public have change significantly. (Emphasis added.) (15)

Response: Please refer to response to comment numbers 1, 16, and 17.

21. In his response to an appeal of the roadless evaluation of the Idaho Panhandle Forest Plan the Chief noted that Forest Plans do not mandate development of roadless areas, they merely permit it. The decision stated that the tradeoffs between preservation of roadless values and development would be thoroughly evaluated at the project level and the benefits of non-development vs. development weighed. In addition, the Chief stated that ". . . decisions of the Forest Plan represent a dynamic management system . . . that can be modified. . . The Forest Plan will be monitored continually and adjusted as needed" (Idaho Panhandle Decision at 8 and 9). In the recent court decision on the Panhandle case the judge, supporting this contention stated, ". . .any future development which might take place (in roadless areas) will again be determined by the Forest Service and will be subject to the requirements of NEPA" [Idaho Conservation League v. Mumma, 21 E.L.R. 20666, 20668 (D. Mont. 1990) (16)].

Response: The effects to the Basin Creek Roadless Area were analyzed on pages 3.243-3.251 of the FEIS (DEIS pgs 3.215-3.223). The Forest Plan is currently under revision.

22. The Beaverhead NF Forest Plan contains the following standard: Populations of wildlife "indicator species" will be monitored to measure the effect of management activities on representative wildlife habitats with the objective of ensuring that viable populations of existing native and desirable non-native vertebrate species are maintained." (Forest Plan at II-26.) The DEIS does not demonstrate compliance with this standard (16).

Response: The Basin Creek Hazardous Fuels Reduction analysis area occurs on the Deerlodge portion of the Beaverhead-Deerlodge National Forest. The Beaverhead NF Forest Plan does not apply to the analysis area. The Beaverhead and Deerlodge Forest Plans are currently under revision and until this is complete, we are bound by the respective plans. Please refer to response to comment number 98, which addresses terrestrial species viability.

23. "Revision. A forest plan shall ordinarily be revised on a 10-year cycle or at least every 15 years. It also may be revised whenever the Forest Supervisor determines that conditions or demands in the area covered by the plan have changed significantly... In the monitoring and evaluation process, the interdisciplinary team may recommend a revision of the forest plan at any time. Revisions are not effective until considered and approved in accordance with the requirements for the development and approval of a forest plan. The Forest Supervisor

shall review the conditions on the land covered by the plan at least every 5 years to determine whether conditions or demands of the public have changed significantly." [36 CFR 219.10(g).]

The Beaverhead and Deerlodge National Forests' Forest Plan Records of Decision were signed in 1986 and 1987, respectively. This means the NFMA 15-year limitation on the Forest Plans has expired. The Forest Plans no longer meet the legal requirements of the National Forest Management Act.

Additionally the FS has failed in its obligation to finish each five-year review process mandated by the NFMA regulations. The FS cannot know, therefore, if "conditions or demands in the area covered by the plan have changed significantly... "

Project-level decisions based upon an out-of-date Forest Plan, and inadequately informed because of the failures to monitor and periodically review the implementation of the Forest Plan, are illegal (16).

Response: Please refer to response to comments numbered 1, 16, and 17. In point of fact, Five Year Reviews were completed for plan, as were many monitoring reports.

National Fire Plan

24. It is not clear if this project is to be designed and implemented using National Fire Plan funding. According to a November 2001 report released by the Department of Agriculture's Office of Inspector General, the Forest Service has inappropriately used NFP funds intended for fire restoration to conduct commercial timber sales. The report also states, "commercial timber sales do not meet the criteria for forest restoration." The NFP itself warns that the Forest Service's wildland fire policy "should not rely on commercial logging or new road building to reduce fire risks" because "the removal of large, merchantable trees from forest does not reduce fire risk and may, in fact, increase such risk" (15).

Response: The project is using National Fire Plan funding for planning. It has yet to be determined whether implementation will occur with National Fire Plan funding. The report by the USDA Office of Inspector General was referring to the Bitterroot National Forest Burned Area Recovery project. In response to the allegation that funds had been misappropriated, the Northern Region of the Forest Service replied to the OIG stating, "Commercial timber sale is being used as a tool to meet the end results specified in the environmental documentation for the project" and "This situation allows us to accomplish more work with the limited funds available for restoration activity. Not all the needed restoration activity identified by Forest Supervisors has been funded in the 2001 appropriation" (USDA 2001). The Northern Region agreed with the OIG Management Alert concerning the use of restoration funds to restore and rehabilitate landscapes damaged by fires occurring prior to the 2000 fire season and the Northern Region advised those forests with planned expenditures on areas burned prior to the 1999 season to cancel said projects. The Basin Fuels Reduction FEIS proposes commercial timber harvest for fuels reduction and not for the sole purpose of selling commercial timber. The proposal does not plan to treat areas burned, so this OIG report is outside the scope of this response.

The quote from the NFP was misquoted. The NFP actually states the Forest Service's wildland fire policy "**does not** rely on commercial logging on new road building to reduce fire risks." This project is not relying on commercial logging for fuels reduction. However, getting money for timber products where we can is desirable to meet our hazardous fuels reduction objectives to help offset costs. The report also points out that criteria developed by the FS Washington Office for selecting the projects states "treatments will be undertaken only when an analysis shows that treatments are likely to reduce risks significantly or are necessary to improve lands unlikely to recover naturally." Our analysis of the project shows the removal of standing dead and down trees to reduce the intensity of surface fires, and

the removal of small to large diameter standing trees to decrease crown bulk densities to reduce the potential for crown fire accomplishes this objective of the NFP.

USDA Forest Service. 2001. Reply to Office of Inspector General Management Alert. Northern Region. July 26, 2001.

Alternative Development

25. Alternative 3 should have been presented as Alternative 2 with 4 and 5 moving into the number 3 and 4 slots. There should have been a more aggressive Alternative 5 that would treat a much larger area and an alternative that allows treatments to continue indefinitely into the future (5).

Response: The ID Team did not intend for the numbers assigned to the alternatives to relate to their priority or importance. As indicated in the alternative descriptions on pages 2.1-2.5 of the FEIS, we chose to analyze an alternative that would only treat fuels along the Forest/Private boundary (Alternative 2). Alternative 3 treats fuels along the Forest/Private boundary and on the slopes below the homes on Roosevelt Drive. Alternatives 4 and 5 were developed to analyze the effects of treatment on water quality should a fire occur in the action or no action alternatives, in the Basin Creek Watershed (see page 1.3 of the FEIS for a description of the Purpose and Need). A more aggressive alternative would not have complied with the Lynx Conservation Strategy, and therefore was not analyzed.

26. We believe the DEIS has overstated the adverse impacts with respect to Alternative 5. We understand and respect the considerations, i.e., the project that is implemented cannot cause adverse impacts to water quality that the projects itself is trying to prevent. But the 500 acres are considerably far removed and separated by a road from the reservoirs, and in effect, the upper reservoir functions as a sediment basin, which can provide an added assurance that water quality can be protected. Given the distances and natural break in the topography, and the low potential for a major storm event to occur at precisely the same time as the timber harvest of dead and dying trees, the risk of adverse impact from action on these 500 upland acres would appear to be low. The risks of taking action on these 500 acres are far less than the risks of not taking action (18).

Response: Thank you for your comment. The statement in the DEIS regarding cumulative effects for Upper Basin Creek for Alternative 5 is difficult to understand. A better description of cumulative effects for Upper Basin Creek for Alternative 5 will be in the FEIS. It will state "The effects of this alternative, when considered with past and present effects of flow augmentation, ranks second among all alternatives in terms of reducing the risk or threat of further loss of channel stability. No change from the existing condition is expected for functioning-at-risk and non-functioning reaches". Other effects descriptions will remain the same. This should display the effects of this alternative in the proper perspective, and help the Deciding Official better assess the benefits and resource costs/risks of each alternative.

27. The best alternative is one that complies with citizens concerns and gets the job done (21).

Response: The public involvement process is explained on page 1.9 of the FEIS (page 1.6 of the DEIS). This process considers comments received by the public in the analysis stages.

28. The Butte Fire Protection Association has been successful in obtaining a Western States WUI grant to assist landowners in the Butte area with fuel reduction work. Fuels work accomplished by the USFS will complement what local landowners do and will encourage more of them to participate in the grant program. Wildfire threat can be mitigated by aggressive actions taken by both the public and private sectors (22).

Response: We agree. The FEIS discusses current harvest activities on private lands on page 3.71 of the FEIS, Cumulative Effects. An estimated 200 acres of private land have been treated. In some cases, the proposed treatments on public lands will compliment the actions taken on private lands, specifically where public and private treatments are juxtaposed to each other. All action alternatives in the FEIS include treatment units along the private and National Forest System boundary.

Support of alternatives

29. We feel we can support alternative 3 as well as alternatives 4 and 5 that treat additional acres (1, 22).

Response: Thank you for your comment.

30. Commenter recommends alternative 4 and wants to see as much done as possible to mitigate fire threat from fuels buildup and beetle damage (2, 4, 6, 9, 11, 12, 17, 18, 19, 22, and 23).

Response: Please refer to the discussion of fire and fuels effects of the action alternatives on pages 3.28-3.53 of the FEIS (pages 3.5-3.52 of the DEIS). Alternative 4 affords the greatest reduction in fuel loadings and fire hazard in the intermix community and throughout the watershed. Please refer to the "Rationale for Decision" located in the Record of Decision for a discussion of the reasons Alternative 3 was selected.

32. The Forest Service should consider a modified Alternative 5 to provide reasonably effective reduction of fire risk while not adversely affecting the threatened lynx, and designing treatments and using logging and road building methods that minimized road building and ground disturbance to protect water quality and the municipal watershed and water supply. In generally desirable features worthy of including in a modified preferred alternative include:

- Avoid sediment production and transport, excessive water yield, stream channel erosion, and maximize fisheries and watershed improvement (i.e., road improvement/obliteration, stream stabilization, aquatic habitat improvement, revegetation);
- Reduce fuel loading in high fire risk areas, particularly urban interface areas and municipal watersheds, and restore desired vegetative conditions, while protecting other resource values (e.g., wildlife habitat and security, water and air quality, old growth, forest connectivity, control of noxious weeds);
- Restrict motorized vehicle access and reduce road density adequately to protect watersheds, wildlife and wildlife habitat and while allowing for necessary management and appropriate public access.

Inclusion or discussion of additional alternative evaluation in the FEIS may also better explain the trade-offs involved in making land management decisions, and may lead to improved public acceptance of decisions. The Forest Service will need to evaluate and analyze the impacts of any new modified alternative, and display those impacts in the FEIS (14).

Response: Please refer to the description of alternatives and mitigation measures in Chapter 2. Chapter 2 of the FEIS will contain a better explanation of the alternatives and their tradeoffs, and the Rationale for Decision in the Record of Decision explains the reason for selecting Alternative 3.

33. A more consistent and clear methodology and presentation for hazardous fuels treatment design and fire reduction risk is needed in the narrative descriptions of alternatives in Chapter 2 in terms of risk of crown fire and intensity of surface fire for the various alternatives. For example, for Alternative 2 it is stated (page 2.2) that thinning will occur in areas that most contribute to crown fires or high intensity surface fires; for Alternative 3 it is stated that treatment units will only treat stands with a crown fire hazard rating of moderate and crowning index below 19 mph, and stands with a high intensity of surface fire; whereas for Alternative 4 it states that only stands with a rating of 71 or above were chose for treatments. What does the Alternative 4 "rating" of 71 refer to and how does this rating relate to moderate crown fire hazard ratings or a crowning index of 19 mph or high intensity surface fire stands in Alternative3, or areas that most contribute to crown fires in Alternative 2 (14)?

Response: Thank you for your comment. We have changed the discussion of alternatives in hopes of better presenting this information. For your information, the rating of 71 relates to the slope designations based on the Digital Elevation Models. This is described, in the DEIS on page 2.2, in the sentences preceding the statement that "only stands with a rating of 71 or above were chosen for treatments." This discussion has been removed and placed in the project file, to better clarify the alternative dialogue. Basically, a rating of 71 indicates upper slopes or ridgetops, where firefighters would traditionally place fire suppression lines. After upper slopes and ridgetops were determined, we then looked at areas that most contribute to crown fires and future high intensity surface fires for placement of treatment units, in the same manner as in Alternative 3.

34. The Forest Service should consider a better alternative to find a way to restore fire to its natural functioning in the watershed by using activities that don't disturb so much soil and therefore cause erosion and degrade water quality (15).

Response: The purpose and need for the project is described on pages 1.3-1.4 of the FEIS (pages 1.3-1.4 of the DEIS) and does not include restoring fire to its natural functioning. The project area is in an intermix community and municipal watershed and the Deerlodge Forest Plan does not allow for wildland fire use for resource benefits in these kinds of areas. The project aims to minimize risk to a municipal water supply, reduce the potential of damage to public and private property from wildland fire, and increase firefighter and public safety through modification of vegetation conditions. Alternatives developed reflect input from all resource specialists including a soil scientist, hydrologist and fisheries biologist. The methodologies, results, and whether or not these alternatives meet laws, regulations and policy regarding soils, erosion and water quality are displayed in the effects discussion for soils (pages 3.217-3.229 of the FEIS (DEIS 3.196-3.207)) and hydrology (pages 3.197-3.210 of the FEIS (DEIS 3.176-3.189)). These are not arbitrary or subjective standards, but legal requirements used to measure consistency with laws, regulations, and policy. The Deciding Official uses this information when selecting an alternative.

35. While Alternative 4 would be the most intense option to be used, it would also provide the most protection to the watershed. The analysis indicates wildlife habitat would also be afforded the best long term protection by thinning and clearing out stands to provide room and cover for the various critters in this location. A third

positive component is the long-term protection for clean air. The catastrophic wildfires experienced across our state in the past few years have put citizens at risk from choking the smoke. The use of Alternative 4 would be a proactive approach to forest management rather than waiting until the fiber becomes fire salvage (19).

Response: Thank you for your comment. The FEIS discusses short and long term effects to TES and MIS species on pages 3.105 – 3.150 of the FEIS (DEIS 3.97-3.132)). Please also refer to the response to comment number 32.

36. Commenter supports Alternative 3 but wishes mitigation measures be added (20).

Response: Additional mitigation measures have been included in the FEIS. Also, refer to the response to comment number 32.

Opposition of alternatives

37. Alternative 2 is laughable and insults the intelligence of the people in Butte-Silver Bow who depend on the Basin Creek watershed for potable water (5).

Response: Please refer to the response to comment number 32.

38. Alternative 3 does not adequately address the dead and dying, beetle-infested trees in the watershed and given the Forest Service's use of a 25-year model and the likelihood of every mature lodgepole pine in the watershed being dead by the year 2027, Butte-Silver Bow would be remiss not to insist that Alternative 4 be pursued (18).

Response: Please refer to the response to comment number 32.

39. Alternative 2 and the no action alternative are unacceptable (22).

Response: Please refer to the response to comment number 32.

40. The proposed action, Alternative 3, does not go far enough in protecting the Basin Creek reservoir and watershed. How can you not treat all the lands east of the reservoir, which are in the same condition relative to insects and fuel loading as the rest of the drainage, and say you have addressed the issue? I am aware that the roadless issue is the main factor in your selection of Alternative 3 and I appreciate your efforts in trying to get a project out that will at least address part of the problem. Alternative 3 will also waste a valuable timber resource. There is no legal or administrative reason for you to avoid entering the roadless area and I do not agree with the proposal to use helicopters instead of temporary roads on ground that can be harvested with tractors (23).

Response: Please refer to the response to comment number 32. Please also refer to the analysis in Chapter 3 on the Inventoried Roadless Area (FEIS pages 3.230-3.246, DEIS 3.125-3.223).

Mitigation Measures

41. In the current Forest Plan, there are acreages of unmanaged forest lands where natural processes are allowed, including insects and disease. These areas will be essential for sensitive species as the black-backed and three-toed woodpeckers. If you are now going to do massive logging in these areas, how are you going to mitigate for these species and ensure their viability (10)?

Response: Please refer to the response to comment number 98, which addresses viability for terrestrial sensitive species. The three-toed woodpecker is not considered a Region 1 sensitive species, but rather is identified as a Management Indicator Species (MIS) in the Deerlodge Forest Plan (1987).

42. The DEIS does not cite the results of monitoring on the Forest that demonstrates the efficacy of the proposed mitigation measures (15).

Response: Correct. For soils (watershed) we do not have site specific monitoring regarding mitigation and best-management practices. While we are in the beginning stages of obtaining that data, we currently rely on other studies, which we have extrapolated here and to annual State of Montana BMP, and Lolo NF BMP audits. Please refer also to the mitigation measures *listed in Chapter 2 and to Appendices D (Soil and Water BMPs) and E (Noxious Weeds BMPs)*.

43. We request that you refrain from harvesting in riparian areas and we recommend that no stream crossings be constructed in any of the drainages (16).

Response: Please refer to the mitigation measures outlined in Chapter 2 of the FEIS, pages 2.5-2.11 (DEIS 2.4 and 2.6). Streams and wetlands would be buffered from fuels reduction activity based on INFISH standards and guidelines. For most riparian areas in the project area, this would equate to a 150-foot no-treatment buffer. Road locations within riparian areas would be minimized with 2 to 5 stream crossings (depending on the alternative) being required for project implementation. Stream crossings would be designed to accommodate 100-year storm events. Crossings would be removed and roads decommissioned upon completion of project implementation.

44. The DEIS needs to better mitigate the risk of escaped prescribed fire, even though safety measure are built into the prescriptions for appropriate conditions, because there area always cases where poor judgment and misinterpretation of conditions mean out of control fires that create a great deal of damage. The DEIS also needs to address the issue of increased access during the 4-year project implementation period because of the issue of human ignitions. The roads should be gated and patrolled (20).

Response: Much of the prescribed burning that will occur in the project area will be landing pile burning, handpile burning, and jackpot burning. Landing and handpiles can only be burned when the area has received a certain amount of moisture, and jackpot burning will only occur in isolated areas. The risk of escape in these situations is inherently low. The FEIS discusses the mitigation measures associated with prescribed burning on page 3.41 of the FEIS (DEIS 3.42). All burning requires a burn plan, which sets parameters concerning moisture, fuel moisture, windspeeds, air temperature, etc. There will always be a risk associated with prescribed fire, however the effects of wildfire are reduced over time and the long-term benefits outweigh the short-term risks.

All other temporary roads associated with the project will be closed to the public. All temporary roads will be closed to the public during implementation.

Cumulative Effects

45. The DEIS lists a lot of reasonably foreseeable activities but does not adequately disclose the cumulative IMPACTS of those actions (15).

Response: Discussion of cumulative effects is largely focused on existing conditions we see in stream channels and aquatic habitats as a result of the cumulative effects of activities taking place in their watersheds. Part of this discussion also focuses on the nature and types of activities taking place in the planning area and the observable effects associated with them. We have discussed cumulative watershed effects to the best of our ability focusing mostly on Basin Creek and Blacktail Creek based on existing data, information, and professional judgment on pages 3.178 – 3.181 of the FEIS (DEIS 3.160-3.165). We have discussed cumulative effects in terms of soils on pages 3.217-3.229 of the FEIS (DEIS 3.196-3.207) at the 6th code watershed scale.

46. The cumulative effects of past livestock grazing are not adequately discussed, and especially there is no quantitative data. And the impacts of the changes in livestock grazing patterns post-project are not considered.

Response: Many aspects of cumulative effects to riparian habitat and streams are based on professional judgment of Hydrologists and Fisheries Biologists based on existing conditions. In some cases we have quantitative data on aquatic and riparian conditions (such as in main stem Basin Creek upstream of the lower reservoir) while in others we lack quantitative data and are forced to rely strictly on professional judgment. Relative specifically to livestock grazing, there are relatively few livestock grazing impacts on National Forest lands in this project area. There are a few areas where livestock grazing impacts are locally evident. Main stem China Gulch is probably the largest area where historic livestock grazing has likely contributed to poor willow regeneration and changes in stream channel morphology along about 1 mile of stream on National Forest lands. However, Livestock grazing in recent has years has been minimal in this area. Livestock grazing impacts are discussed on pages 3.179, 3.182., 3.205, 3.207, and 3.217 – 3.229 (DEIS pages 3.160, 3.163, 3.170-3.172 and 3.196-3.207). No substantive changes to livestock use patterns are expected with this project.

47. With all the maps in the DEIS, it does not provide a map showing the locations of past logging activities and other major human developments in relation to the current proposal. This is basic cumulative effects disclosure (15).

Response: Thank you for your comment. This map (Appendix B, Map 13) has been improved for the FEIS, with the past, present, and reasonably foreseeable future actions in relation to the current proposal.

48. The cumulative effects analysis should address the condition of the watersheds in relation to all past management activities as well as considering the present proposals (16).

Response: Pages 3.178 – 3.185, 3.197 – 3.210 and 3.217-3.229 of the FEIS (pages 3.160 – 3.165, 3.176 – 3.188, and 3.196-3.207 of the DEIS) discuss cumulative watershed effects as well as the effects of the current project proposal in the context of cumulative watershed effects.

49. Where livestock is permitted to graze, we ask that you assess the present condition and continue to monitor the impacts of grazing activities upon vegetation diversity, soil compaction, streambank stability and subsequent sedimentation (16).

Response: While assessment and monitoring of livestock grazing is beyond the scope of this project, annual monitoring is conducted on livestock grazing allotments. Livestock grazing impacts are discussed on pages 3.179, 3.182., 3.205, 3.207, and 3.217 – 3.229 of the FEIS (DEIS pages 3.160 and 3.163, 3.168 – 3.172, 3.183 – 3.188, and 3.196-3.207).

50. The Forest Management Handbook at FSH 2509.18 directs the FS to do validation monitoring to "Determine if coefficients, S&Gs, and requirements meet regulations, goals and policy" (2.1 – Exhibit 01). It asks what we are asking: "Are the threshold levels for soil compaction adequate for maintaining soil productivity? Is allowing 15% of an area to be impaired appropriate to meet planning goals?" The Ecology Center recently asked the Northern Region if they have ever performed this validation monitoring of its 15% Standard, in their February 26, 2002 Freedom of Information Act request to the Regional Forester, requesting:

The Forest Management Handbook at FSH 2509.18 provides the Forest Service with examples of validation monitoring to "Determine if coefficients, S&Gs, and requirements meet regulations, goals and policy." It asks "Are the threshold levels for soil compaction adequate for maintaining soil productivity? Is allowing 15% of an area to be impaired appropriate to meet planning goals?" We request all documentation of validation monitoring by the Forest Service in the Northern Region that answers those two questions.

Soil productivity can only be assumed to be protected if it turns out that the soil Standards work. To determine if they work, the FS would have to undertake objective, scientifically sound measurements of what the soil produces (grows) following management activities (16).

Response: There is a fairly large body of literature that has been compiled to come up with the 15 percent figure. The Regional Office probably gave you or cited Powers, 1998, which synthesizes much of the work in your previous discussions with it. While not precise, researchers generally agree that 15percent is in the ballpark as a high-end detrimental disturbance threshold. While we are currently just beginning to get site-specific data on the validity of the number as well as on mitigation measures, in the meantime we are relying on extrapolating research results and professional judgment. In addition, soil quality is not just how well trees or other species grow. Other ecosystem processes (e.g., carbon, nitrogen cycles; habitat/biodiversity for approximately 80 percent of terrestrial organisms) are either driven by or are affected by the condition and function of the soil resource.

Please also refer to the response to comment number one on substantive comments.

Fire/Fuels

Fire Policy

51. There are many other problems with the DEIS's discussion and analysis on the issue of fire:

- The DEIS failed to incorporate essential information from the Federal Wildland Fire Management Policy and Program Review (*FWFMPPR*).

Response: The Forest Service spoke with the Ecology Center on October 21, 2002, when the same comment appeared in their letter to the Forest Supervisor concerning the Post-Fire Vegetation and Fuels Management FEIS, to clarify what the missing essential information was. The Ecology Center clarified the information to be the lack of resource managers' incorporation of wildland fire use across the landscape. The FEIS is currently consistent with the Forest Plan, and this question is better answered in the ongoing Forest Plan Revision and is outside the scope of this FEIS. The FEIS did take the FWFMPPR guiding principles into account in its discussion on page 3.1 of the FEIS (page 3.2 of the DEIS). All alternatives are consistent with Forest Service Fire Management Policy.

- The DEIS fails to justify or analyze the ecological and economic impacts of continued fire suppression.

Response: The Purpose and Need of the FEIS does not include an analysis of the ecological and economic impacts of continued fire suppression and justifying these impacts is beyond the scope of this document.

- The DEIS contains no scientifically valid information that demonstrates significant impact from past fire suppression on all forest types to be logged.

Response: The discussion on impacts from past fire suppression is on pages 3.2 and 3.4-3.5 of the FEIS (page 3.2 of the DEIS). It includes scientific citations from fire history studies conducted on the forest as well as other more generalized documents from the region.

- The DEIS contains inadequate information on historic fuels levels.

Response: The purpose and need does not propose to restore historic fuel conditions. Furthermore, most of the area was logged in the mid-to-late 1800s to provide timber and fuel for Butte's mining operations.

- The DEIS fails to disclose how the FS will maintain fire-adapted or fire-dependent wildlife habitat in the portion of the project area that is not proposed for fuel treatment.

Response: The purpose and need for the project is to modify vegetative conditions, reduce hazardous fuels and break up fuel continuity to increase firefighter and public safety, reduce the potential for wildfire to spread into the Basin Creek municipal watershed, and, reduce the potential of damage to public and private property and structures. Devising a large-scale plan to maintain fire-adapted or fire dependent ecosystems in areas not proposed for treatment is clearly outside the scope of the project. The Wildlife Effects Analysis in Chapter 3 describes that proposed thinning in Douglas-fir, thinning and burning in sagebrush/grassland parks, and the creation of openings through the removal of trees in lodgepole pine may aid in maintaining or creating some of the components needed by some fire dependent wildlife species.

- The DEIS tiers to a Forest Plan that is out-of-date in terms of its considerations of fire ecology, as ICBEMP research and the DEIS itself indicate (15).

Response: As indicated above, Beaverhead-Deerlodge Forest Plan Revision is currently underway and a proposed action should be available for review. In *Biodiversity Associates, et al. v. USFS, et al* (September 20, 2002), the 9th circuit court concluded that “although the USFS has a duty to revise within fifteen years, the sanction is not the loss of all powers to act . . . [and that] . . . the USFS retains all the authority to perform its function of administering the Medicine Bow National Forest.” The court also held that “as long as the record demonstrates that the USFS reviewed the proffered new information, and provided an explanation for its decisions not to supplement the existing analysis, the court must uphold the agency’s decision.”

52. The 1995 Federal Wildland Fire Management Policy and Program Review (FWFMPPR) mandated that the FS prepare a Fire Plan for the Deerlodge National Forest, yet no such Fire Plan development has seen the NEPA light of day since the FWFMPPR policy was adopted in 1995. Also, the Fire Plan adopted by Congress following the 2000 fire season has major Planning-level implications that the FS has not responded to for management of this Forest (15).

Response: The Federal Wildland Fire Management Policy and Program Review are discussed in the FEIS on page 3.1 (page 3.1 DEIS). The current Forest Plan directs the Forest Service to protect resource values. Allowing natural fires to burn in a municipal watershed and below homes is not currently an option under current Forest Plan direction and will most likely not be an option under future Forest Plan direction. Implementing the Federal Wildland Fire Policy will take a forest-wide analysis to determine when and where fire-use plans are appropriate. This is most appropriately analyzed in conjunction with the ongoing Forest Plan revision that began in 2002. The Beaverhead-Deerlodge Forest Plan Revision is currently underway and a proposed action is available. Please see response to comment number 51 for further discussion of National Forests functioning while the Forest is undergoing Forest Plan Revision.

53. Fuels reduction is a continuing activity, and not a one-time project, that is needed to maintain a watershed, in order to reduce the need for a filtration facility (4).

Response: We agree that fuel reduction is an ongoing activity; however, we did not choose to analyze an alternative that allows treatments into the future due to changes in science and the potential for new issues to arise in the future. The analysis shows the results of fuels treatments last into the future. We looked at fire behavior in 2003, in 2008 to simulate the effect fuels treatment will have immediately

following treatment, and in 2028 to simulate the effect into the future. This information can be found in the Fuels Analysis in Chapter 3 of the FEIS on pages 3.1-3.53 (pages 3.1-3.54 of the DEIS).

54. The Forest Service has stated that in regards to treatments for fire, "What is needed is to take care of the underbrush and dry twigs. The majority of the material that we need to take out is not commercial timber. It is up to three and four inches in diameter. We can't sell it." (Truesdale 2000) (15).

Response: The Forest Service contacted Denny Truesdale in response to this same comment in the letter to the Forest Supervisor regarding the Post-fire Vegetation and Fuels Management Environmental Impact Statement, to determine the context in which he made this statement. He acknowledged that he was referring to the generic need to restore short fire interval ponderosa pine forests overgrown with small material in the understory to more historic open park-like stands, and that those stands often have four or five times the number of mature trees than historic levels. He also responded that the noted generalized comment could not apply to a site-specific DEIS (Truesdale 2002).

Truesdale, Denny. November 6, 2002. Personal communication. Assistant to the Deputy Chief, State and Private Forestry, USFS.

55. The DEIS does not disclose how long the fuel manipulation actions will be effective, and when they will have to occur again to be maintained as effective. The document does not disclose the long-term ecological effects of maintaining such fuel breaks and the cost to taxpayers over time (15).

Response: The FEIS discussion of the effects of the action alternatives, on pages 3.36-3.49, (pages 3.38-3.50 of the DEIS), provides information on the effects of treatment over time, until 2028, twenty-five years into the future. The project file contains additional information from the FVS (Forest Vegetation Simulator) runs. However, all simulations were only developed 35 years into the future. Please refer to response to comment number 53. The FEIS does not propose fuel breaks, nor does it propose to maintain any fuel breaks over time. Fuelbreaks are defined as a zone in which fuels have been reduced or altered to provide a position for fire suppression forces to make a stand against. They are designated or constructed before the outbreak of a fire and specifically include land clearing that will be maintained over time. Therefore, any fuel manipulation that will occur in the future will require further analysis.

56. The theory that areas with a general lack of understory/ladder fuels should be a focus for fuel treatment is very much stretching the FS's credibility, since you are now only looking at a proposal to prevent a rapidly-spreading crown fire. It seems to us that scientific information indicates that crown fire under those vegetative conditions would be accompanied by extreme weather and dry fuel conditions, where ground level firefighting would be too dangerous anyway. What is the science you are relying on to support your position (15)?

Response: As stated in our response to comment number 7, the FEIS explains in detail the implications and science behind treating hazardous fuels.

57. Where the DEIS considers commercial logging to be necessary to reduce fuels, it doesn't take into consideration other FS expert opinion (see Hessburg and Lehmkuhl, 1999) (15).

Response: Hessburg and Lehmkuhl (1999) conducted a Peer-Review Summary of the Wenatchee National Forest Strategy. Included in the peer review were the fields of fire ecology, forest landscape ecology and management, forest entomology, forest soils, forest hydrology, and wildlife ecology. Although the FEIS does not refer to this literature, it does consider many of the same limitations to prescribed fire brought forward in Hessburg and Lehmkuhl (1999). These limitations include, but are not limited to the following: sociopolitical constraints such as public attitudes toward smoke and fear of prescribed fire (FEIS page 3.4, DEIS p 3.7) and Hessburg 1999;); firefighter safety in high fuel loading and the potential resistance to control (FEIS page 3.4); monetary cost of prescribed fire treatment (Hessburg 1999); damage to residual trees (Hessburg 1999); and lack of economic return and no cost recovery (Hessburg 1999). Hessburg and Lehmkuhl (1999) agreed that while a fire alone scenario could be successful it might not be as successful or precise as a mechanical and burn strategy. They stated that a fire-only strategy “can be implemented in a broad range of cases without prior thinning,” and not all cases. This literature referred to a dry forest strategy in a live forest in Washington— climatic, social, and political issues are much different in the high elevation Rocky Mountain ecosystem described in the Basin Creek Fuels Reduction FEIS. Furthermore, the FEIS discusses other viewpoints regarding commercial thinning and fuel reduction on page 3.39 of the FEIS (page 3.40 of the DEIS). While commercial logging is not necessary to reduce fuels, the 10-Year Comprehensive Strategy requires that the attainment of the Strategy’s goals requires an investment of resources, and market-based approaches should be used to offset the cost of hazardous fuel reduction where appropriate. Pages 1.2 and 1.3 of the FEIS (page 1.2 and 1.3 of the DEIS) say that the project tiers to the 10-Year Comprehensive Strategy, and state that the project allocates and utilizes resources in a cost-effective manner.

58. Given the DEIS’s claims that recent fires were unnaturally large and intense, etc., we wonder why there is no discussion of unnatural effects of those fires (15).

Response: On page 1.2 of the FEIS, (page 1.2 of the DEIS), the discussion of the National Fire Plan defines the objective of the plan to describe actions that could restore healthy, diverse, and resilient ecological systems to minimize the potential for uncharacteristically intense fires. On page 3.2, (page 3.5 of the DEIS) the FEIS again mentions uncharacteristically intense fires as a method for determining where treatments should be priorities, according to the 10-year Comprehensive Strategy of the National Fire Plan. We could not find where we had made the claim that recent fires were unnaturally large and intense. Where we did mention uncharacteristically intense fires, it was in reference to the National Fire Plan, on a national scale. There have been no recent large and intense fires in the analysis area.

59. The photos on 3.48 displaying past fuels reduction do not “verify” anything, as the caption claims, except perhaps the ability of the FS to choose photos to “prove” a point, no matter how lacking in scientific veracity (15).

Response: There are many more photos of fires moving slowly through clearcuts or not moving through them at all in the project file. A flight over the Mussigbrod Fire of 2000 and Sheep Creek Fire of 2002 only further verifies that fires rarely move through lodgepole pine clearcuts on the Beaverhead-Deerlodge National Forest. During these extreme fire years, clearcuts provided safety zones and anchor points for firefighters.

Historic Fire Regimes

60. It seems to contradict ecological sense (and NFMA) to try to alter lodgepole pine forests to function as anything but a system that burns with stand-replacing intensity. What is the scientific basis (i.e., cited references) the FS uses to support this part of the proposal (15)?

Response: The purpose and need of the project is identified on page 1.3 of the FEIS (*page 1.3 of the DEIS*) and does not include maintaining lodgepole pine in its historic fire regime. However, on page 3.6 of the FEIS, the discussion of Fire Group Seven (cool habitat types dominated by lodgepole pine) identifies a mean fire interval of 46 years with a range of 25 to 60 years on the Beaverhead-Deerlodge National Forest. Sampled stands revealed that fires burned, on average, every 16-19 years between 1734 and 1900. As indicated in the discussion in the FEIS on pages 3.7-3.8 (DEIS pages 3.10-3.11), 21 fires have occurred in the Basin Creek fuels analysis area from 1948-2002, and none of the fires have been larger than 5 acres, suggesting that most of the area has not burned in over 55 years. Furthermore, a recent study by Losensky (2002) looked at vegetation and fire history in the Trail Creek drainage near Wisdom, MT. Multiple scarred lodgepole pines were common in the study area indicating both large scale and localized fires of light to moderate severity. A fire may have occurred in a particular stand every 30-40 years, on average, and stand replacement conditions may have developed about every 75-100 years. These studies suggest open grown lodgepole pine stands with significantly fewer stems per acre as compared to today as well as many fires of low to moderate fire intensity. This site specific data for the forest sheds new light on fire history in lodgepole pine and disputes older theories that lodgepole pine only burned as stand replacement fires.

61. The DEIS does not cite credible data to support the contention that 4,473 acres of the project area fall into the Low Severity (0-35 year return interval) fire regime. There is simply not enough data to adequately define a natural, historic range. Furthermore, a range of static conditions does little to define ecosystem resilience (i.e., "forest health") since what mainly matters is whether ecosystem processes are themselves within a normal range. Vague characterizations such as "The risk of losing key ecosystems components has increased to moderate" over 5,277 acres and, "Fire regimes have been significantly altered from their historical range" over 5,742 acres in the project area merely sounds like the FS's unnatural bias towards logging as the solution for any alleged problem. What does this level of "risk" mean, really? Again, the DEIS doesn't cite to credible data. Since the FS is proposing to essentially replace natural fire with management to maintain vegetative conditions within the historic range of variability, they should be eager to provide examples of where this has been accomplished. But the DEIS provides none. (15).

Response: The discussions of Condition Class and Fire Regime were displayed for information purposes only and have been removed from the FEIS. These reports are in the project file. The original acres were derived from satellite data and were found to be inaccurate. The new acres were adjusted based on site-specific stand exam data. The purpose and need of this project is **not** to maintain vegetation within its historic range of variability. The FEIS on page 1.3 states the purpose and need for the project is to Increase firefighter and public safety and reduce the risk of damage *to the Basin Creek municipal watershed and public and private property in the event of a wildfire.*

62. The DEIS vaguely discloses a range of fire return intervals for certain forest types termed "fire groups" but the way this range is presented doesn't conform to any accepted method of statistics, and therefore may be misleading or otherwise less than informative. In order to provide the necessary accuracy and scientific

integrity, please disclose the mean and standard deviation of the fire return intervals of each of the various "fire groups" in the project area (15).

Response: The mean and standard deviation of the fire return intervals of each of the fire groups is disclosed in the publications cited on page 3.5-3.7 of the FEIS (page 3.8-3.10 of the DEIS). Please refer to the literature cited for statistical analysis and scientific methods.

Fire Risk

63. Figure 3.32 (page 3.188) relates fire risk reduction to the acreage of treatment in each watershed. How much does the location of proposed treatment units factor into fire risk reduction vs. acreage of treatments? For example, the DEIS seems to be indicating that the fire reduction risk for Alternative 4 is 3.9 times as great as it is for Alternative 2 (since Alternative 4 treats 3.9 times as much acreage). If the treatment unit locations were moved, but the acreage treated remained the same would fire risk reduction be any different? Improved comparative analysis and disclosure of fire risk reduction and future fire severity among alternative would be helpful to improve public understanding (14).

Response: This figure was produced to show relative differences in treatments by alternative on a watershed basis, as the Fire/Fuels portion of the EIS does not express effects on a watershed basis. The simple approach displayed here does not factor in other variables including treatment location, but assumes that each acre treated holds an equal value in terms of reducing risks to water quality from wildfire. Units were selected for treatment based on the purpose and need (page 1.3 of the FEIS, 1.3 of the DEIS), Desired Future Condition (page 1.8 of the FEIS, 1.5 of the DEIS), and the rationale for Alternatives Developed (page 2.1 of the FEIS, 2.1 of the DEIS). It was not our intention to imply a linear, absolute relationship between alternatives. For example, Alternative 4 is most likely not 3.9 times as effective as Alternative 2, but rather is relatively more effective than Alternative 2 for Upper Basin, Lower Basin, China Gulch and Herman Gulch watershed. For Blacktail watershed, the relative differences between all alternatives are negligible.

64. How will thinning lodgepole pine not result in a stand more susceptible to windthrow and, therefore, higher fire risk (15)?

Response: The only lodgepole pine stands proposed for thinning are the small diameter pole sized stands. Experience on the Butte Ranger District has shown that windthrow is not a problem as long as a basal area of at least 80 square feet per acre can be retained in these small diameter (generally less than 6 inches DBH) stands (see page 2.4 of the FEIS, 2.4 of the DEIS). Thinning small diameter pole sized lodgepole pine stands has occurred across the forest for several decades and windthrow under these circumstances has not been a problem. Larger diameter lodgepole pine stands are not proposed for thinning.

65. The DEIS does not disclose, for stands to be thinned, the fire risk into the foreseeable future. Science on this topic strongly suggests stands opened up by logging will actually increase in flammability (15).

Response: The FEIS discloses and further discusses the negative impact thinning can have as a result of increased surface wind exposure and increased solar radiation on pages 3.36-3.41 of the

FEIS, 3.40 of the DEIS). Fuel moistures are often lower and fine fuels increase. However, the FEIS continues by stating, "These fires would occur as ground and surface fires, which can often be suppressed using direct attack." Slash in the project units will be piled and burned, as stated in Chapter 2, Features Common to All Action Alternatives.

Fire Suppression

66. The FS justifies the proposal on the grounds that it will allow firefighting to be conducted more safely, but the DEIS fails to show a need to fight fire as assumed would happen in the area. Increasingly in recent years, safety factors have made it less likely that fires will be fought in dangerous conditions—conditions that may have more to do with weather conditions rather than vegetation. In many cases where firefighting efforts have been contemplated, the decision has been made, based on weather factors, to not lace firefighters at risk. The mere fact that recent drought or immediate wind conditions could easily be the most pressing factors leading to wildland fire spread is ignored in the DEIS (15).

Response: Firefighter safety is just one of the benefits to reducing hazardous fuels. The FEIS, pages 3.36-3.41(pages 3.38-3.42 of the DEIS), also includes reducing the potential for crown fire, high intensity surface fires, and fire size as potential benefits of hazardous fuels reduction. As stated in the FEIS on page 3.1, (page 3.2 of the DEIS) the existing Deerlodge Forest Plan requires that fires be suppressed (excluding wilderness areas covered under an approved Fire Management Guide or Plan) using the appropriate suppression response. Suppression strategies include confine, contain, and/or control of wildland fire. On pages 3.2-3.4 (pages 3.6-3.7of the DEIS) the FEIS states that firefighters are often compelled to fight fires when structures are involved. Page 3.8 of the FEIS (page 3.11 of the DEIS) identifies the three contributing factors of fire behavior as fuels, weather, and topography, and follows up by suggesting that wildland firefighters identified fuel as the most important factor in improving their margin of safety. Fuel arrangement and loading is the only factor in the fire triangle that managers can manipulate to improve safety.

67. Despite the DEIS's apparent allegation that fire suppression has caused a problem, the FS is not willing to consider changing its ill-advised fire suppression policies. The public would be better served if the FS complete the revision of the out-of-date Forest Plan to deal with the suppression issues, before continuing the fiscally irresponsible and ecologically damaging fire suppression/fuel reduction policies (15).

Response: The Beaverhead-Deerlodge Forest Plan is currently undergoing revision and a detailed Proposed Action is available for public review. This proposed action includes a proposed change in policy with regards to fire, but a record of decision is not expected until at least December 2006. Until then, the existing Forest Plan provides management direction with respect to fire suppression.

68. It is also necessary for the Forest Service to programmatically assess its fire management so that economic investments in fuel reduction are most efficient. Throwing money at fuel reduction to prepare for later mostly unnecessary fire suppression activities followed by throwing money at post-fire vegetation manipulations makes no sense ecologically nor economically (15).

Response: As stated in the FEIS on pages 3.36-3.41(DEIS pages 3.38-3.42), in the discussion on the effects of fuel reduction and thinning, treating live and dead fuels can reduce the spread and intensity of wildland fires. The FEIS also explained on pages 3.39-3.40 (page 3.41 of the DEIS) that relatively

recent treatments are more effective than older units in slowing fire and decreasing fire severity. The efficacy of fuel reduction treatments may need to be evaluated some time in the future, but that is outside the scope of this document. This comment also appeared in a comment letter for the Post Fire Vegetation and Fuels Management DEIS, and this project does not propose **post-fire** vegetation manipulations, so that is outside the scope of this project as well. The Basin Creek Project Area has not recently burned. This project is in response to mortality associated with a current mountain pine beetle infestation.

Intermix Community

69. Private landowners to the north of the watershed have conducted fuels reduction and most of them expect the Forest Service to do the same (4).

Response: Thank you for your comment. The action alternatives address the FS conducting fuels reduction.

70. The DEIS needs to clearly state how many homes will be protected by this project, and the value of the homes involved. The public should be able to compare the values protected against the cost in taxpayer dollars (10).

Response: Property values alone do not indicate the values at risk in this zone. The project is designed to reduce hazard to these areas and to allow a measure of safety for the public and for fire fighters. The exact value of homes is not a significant part of measuring the success of each alternative. The number of homes, outbuildings and their values vary as property changes hands or owners improve their residences. The constant in this area is that people live there, they have values at risk, and the Forest Service intent is to reduce hazard in this zone. Unless the Forest Service had a strategy for changing this area into another classification in which firefighters would not be required for fire suppression, exact property values are not a deciding factor. Pages 3.2-3.3 of the FEIS (page 3.6 of the DEIS) states, "The Basin Creek analysis area falls into...Intermix Community. These areas include permanent and summer residences...When wildland fire enters these areas the suppression efforts require a large commitment of firefighting resources..." The end of this section says, "Because of the problems and complexities associated with the Intermix community, resource managers and fire managers find it desirable to exclude, to the extent possible, wildland fire from these areas." Wildland fire in this intermixed interface has economic consequences such as homes burned. But the measurement of success in this project is in how the proposal would reduce the threat to lives and property in this area. A simple measurement of number of homes at risk misses the point of firefighter and public safety. For these reasons, the FS has not displayed home values.

71. Research indicated that only 100 or so feet are required to provide an effective fire buffer. Yet the DEIS proposes huge buffer zones, far in excess of 100 feet. The DEIS needs to justify such large buffer zones. The DEIS should discuss how many acres would need to be treated for fuels reduction if no more than 100 foot buffers were established adjacent to private lands. The DEIS should discuss how many acres would need to be treated if no more than 100 feet were treated adjacent to private structures, such as homes. The DEIS does not discuss why fire buffers are needed just because the public lands abut private lands. Is the Forest Service trying to buffer specific things, such as homes, or is it just buffering private lands in general, even if there are no specific structures that need protection (10)?

Response: The FEIS discusses its reasoning for treating beyond 40 meters (based on Cohen 1995 and Alexander et. al. 1998) from private property on pages 3.41-3.42 of the FEIS (page 3.43 of the DEIS). The Forest Service is buffering private lands and not specific structures, because there is no way to determine whether structures will exist on private lands in the future. Meetings held with adjacent landowners strongly indicate their desire for the Forest Service to take action.

72. The DEIS fails to provide enough information to support expanding the fire suppression influence beyond the immediate vicinity of human-built structures-the few hundred feet (mostly on private land) that Forest Service (FS) research itself point out as the necessary first step in adapting human communities to the wild lands they are apparently uncomfortable components of. Hypothetical discussions that promote an imagined "need" to do large-scale vegetation manipulations not only fail to take into account the cumulative effects of this next step in development of wild lands, they also fail to provide a genuine disclosure of how much is **not** known about the landscape-level implementation of such experiments. Therein lies the justification for an approach that has caution as a fundamental principle. The ID Team needs to study the Restoration Principles (Della Sala et. al., 2003), which we also incorporate within these comments

The Forest Service should define the wildland urban interface including distance from structure. The FS (Cohen, 1999) reviewed current scientific evidence and policy directives on the issue of fire in the wildland/urban interface and recommended an alternative focus on home ignitability rather than extensive wildland fuel management:

The congruence of research findings from different analytical methods suggests that home ignitability is the principal cause of home losses during wildland fires... Home ignitability also dictates that effective mitigating actions focus on the home and its immediate surroundings rather than on extensive wildland fuel management.

[Research shows] that effective fuel modification for reducing potential WUI fire losses need only occur within a few tens of meters from a home, not hundreds of meters or more from a home. This research indicates that home losses can be effectively reduced by focusing mitigation efforts on the structure and its immediate surroundings. Those characteristics of a structure's materials and design and the surrounding flammables that determine the potential for a home to ignite during wildland fires (or any fires outside the home) will, hereafter, be referred to as home ignitability.

The evidence suggests that wildland fuel reduction for reducing home losses may be inefficient and ineffective. Inefficient because wildland fuel reduction for several hundred meters or more around homes is greater than necessary for reducing ignitions from flames. Ineffective because it does not sufficiently reduce firebrand ignitions (Cohen, 1999)

That research also recognizes "the imperative to separate the problem of the wildland fire threat to homes from the problem of ecosystem sustainability due to changes in wildland fuels" (Ibid)(15).

Response: The purpose and need for this project is not to protect the homes from fire. The purpose and need, stated in the FEIS on pages 1.3-1.4, (DEIS on pages 1.3-1.4), includes minimizing the risk of fire to the integrity of the municipal watershed as well as firefighter and public safety. The FEIS defines Wildland Urban interface categories on pages 3.2-3.4 of the FEIS (pages 3.5-3.7 of the DEIS). Development on private land is difficult to predict. Where the forest meets private land there is always the potential for houses or development in the future. Cohen's research is addressed in our response to comment number 71 and in the FEIS on pages 3.41-3.42 (DEIS on page 3.43).

The project does not propose restoration. The publication by Della Salla and others (2003) addresses ecological forest restoration and specifically states, "A clear distinction must be made between fuel-reduction treatments that restore ecological integrity and treatments that protect property and lives by reducing fuels." This project proposes fuel reduction treatments for the purpose of protecting property and lives and this distinction was made in the above stated purpose and need for the Basin Creek Hazardous Fuels Reduction Project.

73. If owners of the homes and other structures take the appropriate steps, and costly and ecosystem-damaging fire suppression will not save anything that can be cost-effectively saved (15).

Response: Current Forest Plan Direction states that the FS will suppress fire and attempt to keep fire on the National Forest in the project area. The FEIS addresses this issue on page 3.3, (pages 3.6-3.7 of the DEIS) where it states there is an "uncertainty regarding the number of property owners who would take the responsibility to reduce the ignitibility of their homes and maintain that condition over the ensuing decades."

74. Removing overstory trees to mechanically maintain crown separation well-away from private lands will unnecessarily "artificialize" the forest ecosystem over too large an area. Once again, this points to the need for the FS to perform landscape level fire management planning that is transparent and part of the public process (15).

Response: The purpose and need for the project is identified on pages 1.3-1.4 of the FEIS.

75. The DEIS does not explain the scientific basis for removing "down woody debris on sites within 200 feet of private boundaries will be cleaned up as much as possible to provide added protection" (2.3-2.4). What is this "added protection" (15)?

Response: The discussion on page 3.15 of the FEIS (DEIS page 3.18) discloses that fuel concentrations contribute to fire persistence, burnout time, and resistance to control. If there is fuel, it can burn. Reducing this fuel reduces the potential for high intensity fires with long persistence time and high resistance to control.

Probability of Ignition

76. Lightning strikes are common and more frequent in the area than the DEIS discloses. The fire history shown on the maps is lacking a fair amount of pertinent data (4).

Response: The fire history map is based on information the forest has on file from 1948 to 2002. This information is based on fires the Forest Service has found or fires that have been reported to the Forest Service during that time, not on the number of lightning strikes occurring in the area. The forest has recently been using a lightning detection system that maps lightning strikes with both a positive and negative lightning charge to dispatch patrols to areas with a lot of activity. These maps are kept for a month or so then discarded when the chance of a holdover fire starting has passed. The Wildland Fire Assessment System identifies that "lightning fires are started by strikes to ground that have a component called a continuing current. All positive discharges have a continuing current, and about 20 percent of negative discharges have one. Ignition depends on the duration of the current and the kind

of fuel the lightning hits." (www.fs.fed.us/land/wfas/wfas24.html). This information insinuates that not all lightning strikes will cause a wildland fire, and that lightning strikes are indeed more common than the Fire Occurrence Map in the DEIS suggests.

77. Human caused fire starts will likely increase (4).

Response: We agree. This area has been the focus of an on-going fire prevention campaign in recent years. The district Fire Prevention Technician has visited many of the homeowners in the project area to discuss the concepts of "firewise" home construction and defensible space. In fact, during the 2000 fire season, we held a public meeting to exchange information and solicit dialogue with respect to fire prevention and pre-planning in the event of a large fire. The Butte Fire Protection Association (BFPA), consisting of local, state and federal agency representation, sponsored this meeting. In September 2002, the BFPA held a simulated wildfire exercise in Roosevelt Drive. The purpose of this exercise was to give area fire fighters practice with dispatch procedures, communication, and operations in an urban interface environment. Several agencies, including local, city, state and federal participated. This information was added to the FEIS in Chapter 1, on page 1.3. One deficiency identified after the exercise was the lack of accurate homeowner information and locations. As a result, a pre-attack plan was drafted for the Roosevelt Drive area in an effort to consolidate information about structures in the area, and identify names and contact numbers of the homeowners.

78. The DEIS fails to disclose the increased risk of human-caused fire starts because of the ever-increasing access into the area by ATV users and from the new access facilitated by constructed or reconstructed roads (16).

Response: The discussion of fire occurrence on pages 3.7-3.8 of the FEIS (3.10-3.11 of the DEIS) indicates that nine of the 21 fires occurring from 1948 to 2002 were human caused. The FEIS also discloses that increased access, building and recreation site improvements have the possibility of increasing use in and around areas with heavy mountain pine beetle mortality. More use leads to a greater chance of human caused fires. We expect this trend to continue. (See response to comment 77 above for recent fire prevention efforts.) The FEIS states that all temporary roads will remain open for the shortest amount of time possible. All other roads will not be open for public access, and will be closed following harvest. There will be some increase in the potential for human starts on the roads below Roosevelt Drive for the season following harvest when the public is allowed access for the purpose of firewood removal. All temporary roads will be closed to the public during implementation.

Effects

79. More harvest results in reduced fuel loading, reduced risk of structure loss, reduced risk of possible loss of life to residents and fire-fighters, reduced possibility of fire being started in the drainage from the North end, and an increase in utilization of useful material. Prevailing winds come from the southwest and any fire start in the Basin Creek drainage will certainly make its way into Butte and threaten structures on the outskirts of the city. I support treating the greatest number of acres possible (6).

Response: Thank you for your comment. The alternative discussion in Chapter 2 describes varying degrees of treatment and the Rationale for Decision in the Record of Decision describes the process used for selecting Alternative 3 for implementation.

Vegetation

80. The desired vegetation conditions for the analysis area are the same for every acre and are inconsistent with the Beaverhead Forest Plan. Since the DEIS does not propose an amendment to the Forest Plan, it is in violation of the National Forest Management Act (NFMA) (10).

Response: The Basin Creek Analysis Area is located on the Deerlodge portion of the Beaverhead-Deerlodge National Forest and therefore, the Beaverhead Forest Plan is not relevant to this project. The Deerlodge National Forest Plan governs the land management activities within Basin Creek. The desired vegetative conditions are not the same for every acre and differ by the various strata identified in the FEIS on pages 3.65 –3.69 (pages 3.65 –3.69 of the DEIS). Refer to page 2.14 of the FEIS (2.12 of the DEIS) for a discussion of Forest Plan

compliance.

81. 36 C.F.R. § 219.27 (g) Diversity. Management prescriptions, where appropriate and to the extent practicable, shall preserve and enhance the diversity of plant and animal communities, including endemic and desirable naturalized plant and animal species, so that it is at least as great as that which would be expected in a natural forest and the diversity of tree species similar to that existing in the planning area. Reductions in diversity of plant and animal communities and tree species from that which would be expected in a natural forest, or from that similar to the existing diversity in the planning area, may be prescribed only where needed to meet overall multiple-use objectives. Planned type conversion shall be justified by an analysis showing biological, economic, social, and environmental design consequences, and the relation of such conversions to the process of natural change (16).

Response: This comment refers to Forest Planning regulations and is outside the scope of this document. The purpose and need for the project is stated in Chapter 1 and does not include a vegetation type conversion. The beetle has killed or is killing most of the lodgepole pine in the project area already. Units in the project will be allowed to regenerate naturally.

Livestock Grazing

82. I have witnessed what I consider to be overgrazing by cattle. Some of the areas involved are Lost Creek and Willow Creek in Beaverhead County, Whitetail Reservoir and Galena Gulch in Jefferson County, as well as the Little Basin Creek Area in Silver Bow County. Grouse need habitat too. Cattle grazing should be allowed on U.S. Lands (USFS, BLM, State Lands) as long as it is carefully monitored. The Forest Service has been lax in protecting our public lands from overgrazing and public opinion may be swayed to abolish grazing altogether. If this happens, everyone loses, especially the rancher (21).

Response: The Basin Creek Fuels Reduction Project does not propose a change in the current grazing status. This comment is outside the scope of the project.

Revegetation

83. The DEIS does not identify if clearcuts will need to be planted, and if so, how many acres need to be planted (10).

Response: Reforestation surveys will be conducted 1, 3, and 5 years following harvest. Any areas identified through these surveys will be planted as needed. These areas will likely regenerate from lodgepole pine cones left on the site following treatment.

84. If old and dying lodgepole pine is removed from the forest by timber harvest rather than the normal ecosystem process of forest fire, will the lodgepole pine communities adequately regenerate on their own? Will there be any need for planting to promote more rapid reforestation (14)?

Response: Please refer to response to comment number 83.

Habitat Types

85. The DEIS needs to disclose the habitat types (as per the Green et al. 1992 definitions) of each unit to be logged or burned and discuss how ecological functioning and processes would compare post-project and pre-project, by each habitat type (15).

Response: The treatment units were classified by fire group where habitat types are combined. The fire groups and their corresponding habitat type groups are discussed on pages 3.5 and 3.54 of the FEIS (Fisher and Clayton 1983). Old growth definitions were based on Green (1992).

86. "Reduction of tree densities to between 40 and 80 square feet of basal area per acre" (2.1) and maintaining it such in habitat types where forests were naturally denser and functioned differently would be creating a situation where repeated, periodic entries are necessary to maintain this artificial situation, but the DEIS does not examine the cumulative ecological or economic effects of these obviously foreseeable activities (15).

Response: The commenter points out that the DEIS does not clarify early on that this particular thinning should only occur in Douglas-fir. This change has been made in the FEIS, in Chapter 2. The Forest Vegetation Simulator estimated that stand densities and crown closure would not increase enough in Douglas-fir stands to begin to constitute a fire hazard until sometime after 2028. The Forest Service did not choose to analyze an alternative for repeated, periodic entries and this is beyond the scope of this document. Cumulative ecological and economic effects to future projects will be analyzed if and when they occur.

Sagebrush

87. Does the MOU that was developed with the Beaverhead Forest and Region 3 of the Montana Department of Fish, Wildlife and Parks apply to the Deerlodge as well? If not, does the Forest Service still consider inventory of sagebrush areas to be burned important? Was this done for this project (10)?

Response: The MOU applies to the Beaverhead-Deerlodge National Forest, but not to this area because the Basin Creek Analysis Area is not elk winter range, nor is it a sagebrush habitat type. We have involved Montana Fish Wildlife and Parks in this project. In the long run, because of a reduction in tree densities in habitats conducive to sagebrush, we expect sagebrush plant communities to increase in the project area.

Snag Recruitment

88. The DEIS does not identify the expected decline in snag recruitment that will occur in thinned stands of Douglas fir (10).

Response: The larger diameter Douglas-fir is being retained in the treatment areas. These trees will provide snag recruitment. Refer to page 1.11 of the FEIS (1.12 of the DEIS). In addition, lodgepole pine snags are in abundance outside the treatment units as a result of the mountain pine beetle infestation. Page 3.97 of the FEIS (page 3.90 of the DEIS) states that there is abundant snag nesting and foraging habitat on over 10,000 acres of lodgepole pine that is considered at high risk of 40-70 percent mortality from mountain pine beetle infestation. The FEIS on pages 3.128-1.31 (page 3.117 of the DEIS) describes the effects of the alternatives on snags. For example, "Alternative 2 would remove 4 percent of the existing, potential snag-nesting and beetle-foraging habitat and would reduce the existing potential for colonization [by Black-backed Woodpeckers] by 9 individuals." Alternative 4 reduces snag habitat the most, at 27 percent, affecting a potential for colonization by 63 individuals.

89. The Forest Service needs to harvest renewable resources instead of letting it die of old age, disease, and bug infestations, and then letting it go up in smoke (7).

Response: Timber harvest is proposed in this project as a way of reducing fuels.

Bark Beetles

90. The Forest Service should have sprayed aerially for bark beetles several years ago (8).

Response: Aerial spraying for mountain pine beetle is not feasible. Each individual tree trunk has to be sprayed to a height of 30 feet from the ground every two years. It was not physically possible to get spray equipment to every susceptible tree. In addition, the cost would be phenomenal when there are hundreds of thousands of trees involved.

91. While we agree that severe pine beetle tree infestations and tree mortality and associated increased fire risk in the municipal watershed need to be effectively addressed to protect source water quality, we note that bark beetles are natives of forest ecosystems and local endemic populations of beetles are a normal component of such ecosystems and all trees are susceptible to attack and mortality of bark beetles. This is a normal ecosystem function, and it is our understanding that even large populations of bark beetles and resulting tree mortality can be part of normal ecosystem function.

We recognize that much of the public perceives epidemic beetle populations as an unhealthy forest environment. However, beetle populations generally experience "boom and bust cycles, and forests have proven resilient, if not dependent on these cycles. While from the perspective of a forest manager, beetle attacked trees are at risk, this may also be part of a natural progression to a new successional sere. Beetle infestation may be part of the natural disturbance and regeneration agent in the ecosystem. Many forests that have undergone "devastating" infestations are now experiencing regeneration without active management before or prior to the epidemic.

We believe there should be ongoing beetle monitoring to confirm beetle presence and tree mortality and severity of the beetle epidemics. We also believe it would be helpful if the FEIS evaluated in greater detail options for utilizing pheromone treatments to trap and repel beetles, burning/peeling infested logs to destroy brood, and chemical treatments as well as harvest of infested or vulnerable trees as ways to reduce epidemic beetle infestations (14).

Response: The Forest Service does recognize that bark beetle epidemics are a natural process. This project deals with the fuel accumulations that are a result of that process. The purpose and need for the project is not to have an effect on the Mountain Pine Beetle epidemic, it is to reduce fuels to minimize risks to water quality, reduce the potential of damage to public and private property, and to increase firefighter and public safety.

Each year, insect and disease flights are conducted as part of a general monitoring program. Tree mortality and the likely causes are mapped for the entire forest. On the ground monitoring activities began in 1999 when there were less than 500 trees infested in the area. Transect surveys were conducted in 2000-2001. The information from these surveys was used to predict the amount of lodgepole pine that was likely to be infested. Exponential increases in the number of trees killed were noted at that time. Random field checks have been conducted to verify the extent of the infestation every field season since. From field vantage points and stand walkthroughs it is apparent that nearly every stand in the project area has at least some beetle activity. Many areas have had nearly every lodgepole pine in excess of 5 inches in diameter killed.

Regional entomologists have visited the area numerous times. Pheromone treatments such as trapping and baiting have been ruled out because of the extent of the infestation. When thousands of acres are involved it is not possible to have a significant effect upon the beetle population by employing these methods. The pheromone repellent, verbonone, is an experimental development at this time. Refer to page 2.18 of the FEIS (page 2.15 of the DEIS). Burning and peeling infested logs is simply not feasible considering the extent of the infestation.

92. The susceptibility of green trees to insect infestations is mere speculation. Other factors such as amount of rainfall and other weather factors affect susceptibility and are not predictable (15).

Response: The susceptibility of green trees to mountain pine beetle infestations is well documented. See Amman and Cole (1983) and Gibson (1989). The effects of cold weather conditions are discussed on pages 3.58, 3.62-3.63, and 3.67 of the FEIS (3.58, 3.59, 3.63, and 3.67 of the DEIS).

Old Growth

93. The DEIS suggested that old growth habitat had been designated. Although there is a map of some old growth areas, no other information was provided. If old growth has in fact been designated, what are the stand identification numbers and acres? What will keep these stands from being logged in the next fuels reduction project (10)?

Response: In the FEIS, references to the "designation" of old growth on pages 2.5 FEIS (2.4 and 2.7 of the DEIS) have been changed to "identified" as old growth. Old growth RECRUITMENT has been identified as part of the old growth analysis and this stand, which is 800 acres, is numbered 414-01-101. An old growth map is found in Map 17 in the Appendix. Stand numbers are available in the

project file. In the event of a future fuels reduction project in the area, old growth will be analyzed in conjunction with that project. No old-growth stands are proposed for treatment in this project.

94. The DEIS glossary presents a definition of old-growth habitat that is more detailed than the definition in the Deerlodge Forest Plan. The Forest Service should explain why there is a change in definitions since the Forest Plan was written and define the relationship between the DEIS definition of old growth and the Region 1 definitions/criteria (Green et al. 1992) (15).

Response: *The Deerlodge Forest Plan defines old growth in general terms. The definition in the FEIS is more detailed but is consistent with the Forest Plan; this definition summarizes Green and others (1992). The Forest Service used the 1992 old growth descriptions by Green et. al. (1992) to classify old growth for this project.*

95. The DEIS does not disclose the intensity of the FS's recent old-growth surveys, so that expected accuracy can be estimated (15).

Response: Old growth was verified for compartment 414 by on the ground walkthroughs. Possible stands were identified from aerial photos and then checked by supervisors and crewmembers trained in old growth identification using Green and others (1992). For compartment 416, 86 acres of old growth was identified from stand exam data. The remaining acres were identified using the same process as for 414. An area at the northwest corner of the project area OUTSIDE any proposed treatment units was not checked because compartment acres of old growth far exceeded Forest Plan Standards. For compartment 415 we had stand exam data for the entire compartment. Old growth stands were identified using individual exam data. From stand exam data we identified 75 stands as old growth. The same Forest Service crews then field checked 25 of these stands. Sixty- eight of 1379 acres were found not to be old growth. In the process of checking these stands an additional 14 stands were found that were also old growth.

One field crew consisted of a 4-person crew of seasonal employees who all had previous stand exam experience. The district silviculturist trained these crewmembers in old growth identification. The other field crew consisted of a 2-person crew of permanent employees who had 24 and 18 years experience with stand exams including old growth identification.

96. The Forest Plan 5 percent standard is not based on sufficient science to insure that meeting the minimum standards would ensure old-growth wildlife species' population viability. The Belt Creek Landscape Assessment (Lewis and Clark NF) states that "A review of the literature at the time the Forest Plan Standard was established recommended various levels of the coniferous forest types be managed as old-growth ranging from a low of 5 percent up to as much as 20 percent". The Kootenai NF recognizes that at least 10 percent is necessary (and that there is no scientific justification for only providing 8 percent, and in the Helena NF, FS experts have raised concerns over the continuing validity of that forests requirement of 5 percent¹ (15).

¹ For example, in the 1994 Five-Year Monitoring and Evaluation Report, the Helena NF stated that: "New thoughts on how old-growth needs to be distributed across the landscape are continuing. The question exists as to whether maintaining 5% old-growth is enough to maintain viable populations."

Response: The Lewis and Clark, Kootenai, and Helena National Forests are outside the project area. However, the Forest Service does not dispute the present controversy concerning the amount of old growth needed to maintain viable populations of associated wildlife. The FEIS does not propose to harvest any old growth, and old growth recruitment was identified outside of proposed or foreseeable future treatment areas to ensure compliance with the 5 percent Deerlodge Forest Plan Standard. The Forest also analyzed the effects of the project on old growth by using the Deerlodge Forest Plan Management Indicator Species (MIS) northern goshawk in Douglas-fir (FEIS pages 3.88; 3.95, 3.123-3.127, 3.140, DEIS pages 3.84, 3.89, 3.113-3.116, 3.126) and the hairy woodpecker in lodgepole pine and subalpine fir (FEIS pages 3.95-3.96; 3.138-3.139, DEIS pages 3.89, 3.124-3.125). Pine marten, also found in old growth spruce fir and lodgepole pine was added to the baseline in the FEIS on pages 3.95-3.96 and 3.139-3.141. See Table 3.38 (page 3.95 of the FEIS) and Table 3.46 (page 3.122 of the FEIS), Table 3.47 (pages 3.137-3.138 of the FEIS). Old growth was also analyzed and discussed for the Canada lynx, flammulated owl, and fisher (refer to those sections). Refer to response to comment number 98, which addresses terrestrial species viability.

97. The DEIS claims that thinning Douglas-fir will help development of large diameter trees and therefore old growth. The BDNF has failed to cite any evidence that this "managing for old growth habitat" (i.e., logging) strategy will improve old growth species habitat over the short-term or long-term. In regards to the DEIS's "managing for old growth habitat" theory:

There is the question of the appropriateness of management manipulation of old-growth stands... Opinions of well-qualified experts vary in this regard. As long term results from active management lie in the future – likely quite far in the future – considering such manipulation as appropriate and relatively certain to yield anticipated results is an informed guess at best and, therefore, encompasses some unknown level of risk. **In other words, producing "old-growth" habitat through active management is an untested hypothesis.** (Pfister et al., 2000, pp. 11, 15 emphasis added)

Furthermore the DEIS fails to disclose that the areas "treated" will retain or better develop characteristics meeting Northern Region or Forest Plan old growth criteria—and if they won't, how they will at some specified time in the future. There is no scientific certainty in the DEIS's approach.

Moreover, since the BDNF has not monitored for the presence of old-growth wildlife species in areas previously treated in this fashion, the DEIS's conclusions are unreasonable. There is no data to lead us to believe anything other than logging these areas will reduce their natural qualities, reduce their habitat value for wildlife, and reduce their resiliency to subsequent disturbance, such as fire (15).

Response: Long-term studies of treatment effects on old-growth wildlife species are outside the scope.

In the analysis area, no old growth is proposed for treatment, therefore none will be "manipulated." Page 3.126 of the FEIS (page 3.114 of the DEIS) states: "Squires and Ruggiero (1996) suggested that thinning old growth could create stands similar in structure to goshawk nest areas that would enhance future nesting opportunities."

The purpose and need of the project is to reduce fuels to minimize risks to the Basin Creek Municipal Watershed, reduce the potential for damage to public and private property from wildland fire, and increase firefighter and public safety; not to produce "future old growth habitat through active management." The fuels analysis, FEIS page 3.44-3.45 (page 3.45 of the DEIS) demonstrates that the "average diameter [in thinned stands of Douglas-fir] is increased significantly from 2003 ...to 2028."

The vegetation analysis, FEIS page 3.65 (DEIS page 3.65), also concluded that "the largest diameter and oldest trees will be retained with Douglas-fir and aspen favored for retention... These stand conditions will accelerate the development of larger diameter Douglas-fir trees which is a vital component of old growth." Language in the wildlife analysis was clarified in the FEIS to reflect that treatments are not designed to create future old growth, but that promoting diameter growth in Douglas-fir may aid in providing one of many components (i.e. larger diameter trees) needed for Douglas-fir old growth dependent species.

Please also refer to the response to comment number 96.

98. Does FIA old growth data determine the block size of old-growth areas it purports to measure? What are the minimum sizes of old growth blocks needed to meet the habitat needs of old-growth MIS and TES species? How is it determined that the current and proposed dispersion patterns of existing old-growth blocks will insure old-growth MIS and TES species' population viability? What is the Forest's natural historic range of Douglas-fir, lodgepole pine, and spruce/fir old-growth types, including total acres, block sizes, and dispersion patterns (15)?

Response: FIA data does not purport to determine block size (refer to FEIS pages 3.71-3.72, DEIS page 3.71). Determining the minimum block sizes needed for MIS and TES species is outside the scope, and impractical if not impossible. The general assumption among wildlife biologists and researchers is that "more is better" (F. Samson, pers. comm.). The Deerlodge Forest Plan standards call for maintaining 5 percent old growth by timber compartment (refer to FEIS pages 3.71-3.72, DEIS page 3.71). The issue of population viability was an argument presented in litigation regarding the Upper Sunday Timber Sales on the Kootenai National Forest. The U.S. District Court of Montana ruled "Neither is it plainly erroneous or inconsistent with regulation for the Forest Service to strive to maintain viable populations of species by focusing on the critical habitat requirements of Sensitive, Threatened, and Endangered species within and without the Decision Area." On July 3, 1996 the 9th Circuit Court of Appeals affirmed the District Court Summary Judgment.

The National Forest Management Act of 1976 (NMFA) directs the Forest Service to manage wildlife habitat to maintain viable populations of existing native and desired non-native species in the planning area. Rarely are viability analyses conducted for any species that conclusively determine whether viability is assured under a given habitat and population management strategy. The Beaverhead-Deerlodge National Forests' approach was to map the appropriate habitats on a Forest-wide basis for selected species, and to evaluate the distribution of these habitats across the entire National Forest (the Planning Unit). These maps are available in the project file. Because separate Forest Plans are in effect for the Beaverhead and Deerlodge, habitat viability for selected species was evaluated individually for each Forest. The species selected for National Forest Habitat Viability Analysis were at risk species (threatened, endangered and sensitive (TES) species), and management indicator species (MIS). Habitat for commonly hunted species was assumed to be well distributed across the Beaverhead and Deerlodge National Forests. Some TES species either do not occupy the project areas, or their habitat would not be affected by the proposed actions. Therefore, National Forest wide Habitat Viability Analysis was not done for these types of species, even though they are discussed in the FEIS on pages 3.78-3.79 Table 3.33, (DEIS Table 3.33, p. 3.75).

Please refer to the response to comment 96, which references old growth species covered in the FEIS. Additional information regarding TES and MIS population viability and the forest wide habitat viability assessment may be found on the following pages of the FEIS:

Introduction and methods, wildlife species considered: FEIS 3.77 (DEIS 3.74-76)

Analysis of effects methods: FEIS 3.105 (DEIS 3.97)

Gray wolf: FEIS 3.109 (DEIS 3.102)

Canada lynx: FEIS 3.111 (DEIS 3.109)

Flammulated Owl: FEIS 3.122 (DEIS 3.113)

Northern goshawk: FEIS 3.123 (DEIS 3.115-116)

Blackbacked woodpecker: FEIS 3.127 (DEIS 3.118-119)

Wolverine: FEIS 3.131 (DEIS 3.121)

Fisher: FEIS 3.133 (DEIS 3.122-123)

Hairy woodpecker: FEIS 3.137 (DEIS 3.122-123)

Three-toed woodpecker: FEIS 3.142

99. The DEIS says the project would not log old growth, but since old-growth surveys are incomplete, how is it known the areas to be burned and/or logged don't meet old-growth criteria. Given that the Forest Service lacks population monitoring information for old growth MIS, fails to maintain an accurate inventory of forest wide old growth, an EIS for such a project must disclose the methodology for maintaining viable populations of old growth species. The DEIS does not disclose the location and size of viable populations of MIS and TES species and other species of special concern at sufficient scale anywhere (15)?

Response: See old growth verification in response to comments 95 and 100. Where possible, the best available information about species records, monitoring information and known population trends, and quantity of habitat available was provided in the FEIS. Please refer to response to comment 98 for a discussion on MIS and TES species viability and comment 96 for old growth MIS.

100. In the identification process of old growth habitat, we would like to see the analysis team perform on-the-ground verification of areas chosen from photo-interpretation and database examination. This is especially important in identifying areas appropriate for old-growth designation to make up for any deficits to meet forest plan standards and to meet future old growth habitat needs as the dynamic systems of the forest cause some old growth areas to cease to be old growth. Disclose the precise criteria used to designate old growth. Who made the decisions regarding old growth designations and what are that person's qualifications? Measure and disclose the sizes of old growth stands in the areas. Tell how much habitat each block provides for interior old growth dependent species, considering the edge effect from natural and manmade openings including roads (16).

Response: Large-scale old growth maps displaying block size in relation to roads and openings are located in the project file. The FEIS discussion on pages 3.80-3.82 (DEIS pages 3.77-3.78) titled "Disturbance Patterns - Existing and Historic" talks about old growth occurrence and block size on the landscape, and the influences that past harvest, roads, trails, private homes, active mining claims, fire suppression, etc. have had on landscape level linkages in the analysis area.

The theory of "edge effect" and the large body of available literature surrounding the theory was not specifically discussed in the FEIS. Instead, old growth habitat for MIS was displayed in Table 3.38, on

page 3.94 of the FEIS (page 3.88 of the DEIS), showing total available acres, and the location and size of available patches were discussed for each species in the text (i.e. hairy woodpecker, page 3.94 of the FEIS; and for northern goshawk, page 3.95 of the FEIS (3.89 of the DEIS) A more thorough discussion of fragmentation and edge effects on neotropical migrants and interior forest species was added to the FEIS. Please refer to response to comment number 95.

101. The FS has not ensured that suitable old growth/mature forest habitat components, snag levels, interior forest, forest canopy closure, soil conditions, interior forest prey levels, densities of large trees, densities of other trees, and large areas around nest stands, alternative nest sites, and other habitat components have actually been protected on the BDNF (16).

Response: Please refer to the existing condition and effects analysis for these resources in the FEIS.

102. There is serious uncertainty over the validity of the Forest Plan old-growth standards. The Beaverhead National Forest Standard reads: "Maintain at least 10 percent of the Douglas-fir and spruce component of each timber compartment as old growth." The Deerlodge National Forest Standard reads: "Five percent of each timber compartment will be managed for old growth."

In regards to the Beaverhead NF, the Standard itself is rather vague since nowhere does the Forest Plan nor the DEIS state how much of the Forest is Douglas-fir and spruce. We simply don't know what percentage or how many acres the Forest Plan Standard is meant to protect and maintain for old growth MIS, so we cannot know if the Standard is adequate.

Furthermore, the DEIS does not disclose that adequate on-the-ground surveys have been used to validate the old growth, that the old growth alleged to comply with Forest Plan Standards actually meets the Green et al. (1992) criteria. The DEIS also indicated that there has not been adequate protection for old growth from firewood cutting and roadside hazard tree removal, resulting in a widespread loss of the snag habitat adjacent to open travelways.

Forest wide maintenance of old growth is important for several reasons. One is that NFMA regulations require that there be sufficient distribution of habitat for old growth-dependent species. 36 C.F.R. § 219.19 states that "...a viable population shall be regarded as one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area. (Emphasis added.)(16).

Response: Please refer to response to comment numbers 95 and 98.

103. The FS has not maintained any past or current hard population or inventory or monitoring data for the Sensitive species at issue in the project areas or forest wide. Distribution, status and population trends have not been determined. FSM 2670.45. Viability cannot be assured without first establishing population objectives. FSM 2670.22(3) and 2672.1 and 32. These objectives have not been established. 36 CFR 219.12(d), 219.27(a)(5, 6).

The NFMA implementing regulations' diversity requirements state: "Each Forest Supervisor shall obtain and keep current inventory data appropriate for planning and managing the resources under ... his jurisdiction" [36 C.F.R. § 219.12(d)]. "Forest planning shall provide for diversity of plant and animal communities ... Inventories shall include quantitative data making possible the evaluation of diversity in terms of its prior and present

condition" (36 C.F.R. § 219.26). Obviously, the BDNF is not in compliance with these regulations as pertaining to old growth forests (16).

Response: Where possible, the best available information about sensitive species records, known population trends, and quantity of habitat available was provided in the FEIS. Refer to response to comment 98 for discussion on wildlife species viability.

Noxious Weeds

104. Thank you for specifying that logging equipment will be inspected and certified as weed free, and that noxious weed control measures will be carried out with the treatments (page 2.5), and for including BMPs for Weed Control in Appendix E. EPA fully supports control of noxious weed infestations. Noxious weeds tend to gain a foothold where there is disturbance in the ecosystem, such as wildfire. Logging and other ground disturbance (such as road building) can also stimulate or promote weed problems. EPA supports integrated weed management (e.g., effective mix of cultural, education and prevention, biological, mechanical, chemical management, etc.), however, we encourage prioritization of management techniques that focus on non-chemical treatments first, with reliance on chemicals (herbicides) being the last resort. Early recognition and control of new infestations is encouraged to stop the spread of the infestation and avoid wider future use of herbicides, which could correspondingly have more adverse impacts on water quality, fisheries, and biodiversity. It is important that water contamination concerns of herbicide usage be fully evaluated and mitigated, since weed control chemicals have the potential to be transported to surface or ground water following application, and can be toxic. No spraying should occur in wetlands or other aquatic areas. Herbicide drift into streams and wetlands could adversely affect aquatic life and wetland functions. All efforts should be made to avoid movement or transport of herbicides into surface waters that could adversely affect fisheries or other water uses (i.e., use mitigation measures avoid herbicide drift to streams and wetlands, during applications of herbicide such as adequate streamside buffers, mechanical weed removal adjacent to streams, spray nozzles that produce larger droplets to reduce drift, use of photodegradable dyes in herbicides, wind monitoring, herbicide monitoring, etc.). We also recommend that the Butte Silverbow Water Utility Division and Montana DEQ be consulted in regard to any proposed herbicide treatments within the municipal watershed.

The National Primary Drinking Water Regulations (40 CFR Part 141.50, 141.61) identify allowable maximum contaminants levels for toxic organic chemicals, including some herbicides/pesticide in public water supplies. It is our understanding that weed control chemicals must be at non-detectable levels in A-Closed waters.

It should also be noted that while Montana Water Quality Standards do not identify numerical criteria for aquatic life protection for many herbicides, it should be recognized that the research and data requirements necessary to establish numerical aquatic life water quality criteria are very rigorous, and many herbicides and weed control chemicals in use are toxic, although numerical aquatic life criteria have not been established. The Montana Water Quality Standards include a general narrative standard requiring surface water to be free from substances that create concentrations which are toxic or harmful to aquatic life.

For your information, the website for EPA information regarding pesticides and herbicides is <http://www.epa.gov/pesticides/>. The National Pesticide Telecommunication Network (NPTN) website at <http://nptn.orst.edu/tech.htm> <http://nptn.orst.edu/tech.htm> which operates under a cooperative agreement with EPA and Oregon State University and has a wealth of information on toxicity, mobility, environmental fate on pesticides that may be helpful (phone number 800-858-7378) (14).

Response: For management of noxious weeds, we follow state and federal laws, the herbicide labels, agency policies and handbooks and the Final Environmental Impact Statement for Noxious Weed

Control – Beaverhead-Deerlodge NF May 2002 .Current infestations are small and are controlled by herbicide application with a hand sprayer.

105. The DEIS's does not disclose the effectiveness of the mitigation measures it requires to limit or prevent the spread of noxious weeds. We are unaware of any instances where logging projects have resulted in less noxious weed invasions—as far as we are aware, the opposite is always what happens. Please cite any instances where the FS accomplished less, rather than more, noxious weeds from a logging project on these forests (15).

Response: Disturbance, naturally or human caused, usually causes an increase in weeds if weed seed sources exist. Prevention is hard to measure. If one assumes that the area will eventually burn from wild fire, the amount and degree of disturbance is not controlled or planned. With a fuel reduction project, managers can control the areas disturbed and the severity of the burn. Managers will know where to look for possible new infestations and have the means to control infestations.

106. The DEIS does not adequately disclose the cumulative impacts of all the herbicide application that will be ongoing due to other decisions (15).

Response: Our current application is very low and is estimated at one pint of picloram for the project area per year. The infestations are dispersed. Herbicide is applied by hand spraying from a truck or ATV. Even if the workload increases by 10 fold, the herbicide application is minimal. For the Soils Cumulative Effects, virtually all of the existing and expected new weed infestation is associated with roads, landings and similar areas such as turn-arounds. These are easily and relatively safely treated. See also the Beaverhead-Deerlodge Weed EIS for treatment types, methods, and effects.

107. Forest fires are bad, but usually the land comes back to be productive in some form. When noxious weeds invade, especially knapweed, the land is lost forever-or until very expensive means are used to eradicate the problem. Loggers must be held accountable for the steam cleaning (or other valid methods) of all equipment used on Forest Service land. Log trucks must be cleaned and inspected as well as log dumping sites and areas where log trucks are parked when not in use. We do have knapweed on Forest Service land in the Little Basin Creek area, my neighbor and I have been working with the Forest Service weed sprayer for several years to control the problem. Most ATV trails in the area have some knapweed as well as some open meadows (21).

Response: We agree with much of what you have said. Thank you for helping us control noxious weeds on the National Forest.

Insects and Disease, Other

108. The rationale and analysis of this proposal do not look at the forest as an ecosystem with interrelationships. It failed to assess fungal and insect organisms as capable of operating in a self-regulatory manner and exist as beneficial organisms within the project area. Enumeration of and monitoring of specific small, nongame birds and animal populations that are important in keeping destructive insect populations at low levels are also missing. The outlook and rationale developed in the DEIS was mainly from a fire suppression viewpoint disregarding many ecosystem functions of organisms portrayed as "problems" to forest health and production. Harvery et al., 1994 state:

Although usually viewed as pests at the tree and stand scale, insects and disease organisms perform functions on a broader scale.

...Pests are a part of even the healthiest eastside ecosystems. Pest roles—such as the removal of poorly adapted individuals, accelerated decomposition, and reduced stand density—may be critical to rapid ecosystem adjustment.

...In some areas of the eastside and Blue Mountain forests, at least, the ecosystem has been altered, setting the stage for high pest activity (Gast and others, 1991). This increased activity does not mean that the ecosystem is broken or dying; rather, it is demonstrating functionality, as programmed during its developmental (evolutionary) history.

Besides removing live standing trees, fuel reduction can also reduce other habitat structures such as snags and large fallen trees.

The DEIS's portrayal of certain insects as essentially a negative part of the forest ecosystem imparts the typical "manipulate and control" bias of management. These organisms have always played a part of a healthy forest within the project area. This "saving" of the forest trees from infestation has been demonstrated to have deleterious effects on species dependent upon forest insects and diseases.

For example, the FS admits that of the habitat structures that provide denning opportunities for the Canada lynx, "Salvage logging that has removed dead and dying trees has contributed to the shortage of down logs in some areas" (USDA Forest Service, 2000c p. 62) (15).

Response: This project does not propose to "save forest trees from infestation". It addresses the accumulation of fuels resulting from the current pine beetle activity. The project area is in a WUI area and the National Fire Plan and public have encouraged the FS to take measures necessary on FS land to address the protection of private property. The purpose and need for the proposal are described in Chapter 1 page 1.3 of the FEIS. Enumeration of and monitoring of specific small, nongame birds and animal populations is outside the scope. The Forest analyzed the impacts of the project on woodpecker species that prey on insect population on pages 3.127-3.131 and 3.137-3.138 of the FEIS (DEIS pages 3.116-3.119 and 3.126-3.127).

109. The DEIS does not consider research that indicates logging, roads, and other human caused disturbance contribute to the causes of "forest health" decline by promoting the spread of tree diseases and insect infestation. For example, multiple studies have shown that annosus root disease (*Heterobasidion annosum*, formerly named *Fomes annosus*), a fungal root pathogen that is often fatal or damaging for pine, fir, and hemlock in western forests, has increased in western forests as a result of logging (Smith 1989). And researchers have noted that the incidence of annosus root disease in true fir and ponderosa pine stands increased with the number of logging entries (Goheen and Goheen 1989). Large stumps served as infection foci for the stands, although significant mortality was not obvious until 10 to 15 years after logging (id.).

Armillaria, a primary, aggressive root pathogen of pines, true firs, and Douglas-fir in western interior forests, spreads into healthy stands from the stumps and roots of cut trees (Wargo and Shaw 1985). The fungus colonizes stumps and roots of cut trees, then spreads to adjacent healthy trees. Roots of large trees in particular can support the fungus for many years because they are moist and large enough for the fungus to survive, and disease centers can expand to several hectares in size, with greater than 25 percent of the trees

affected in a stand (id.). Roth et al. (1980) also noted that *Armillaria* was present in stumps of old-growth ponderosa pine logged up to 35 years earlier, with the oldest stumps having the highest rate of infection.

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

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

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

Typically ignored by NEPA analyses are complex interactions involving mechanical damage from logging, infestation by root diseases, and attacks by insects. Aho et al. (1987) saw that mechanical wounding of grand fir and white fir by logging equipment activated dormant decay fungi, including the Indian paint fungus (*Echinodontium tinctorium*).

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

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

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

A variety of root diseases, including black-stain, *Armillaria*, and brown cubical butt rot (*Phaeolus schweinitzii*), predispose lodgepole pine to attack by mountain pine beetles in the interior west. The diseases are also believed to provide stressed host trees that help maintain endemic populations of mountain pine beetle or trigger population increases at the start of an outbreak (Goheen and Hansen 1993).

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

More western pine beetles (*Dendroctonus brevicomis*) and mountain pine beetles (*D. ponderosae*) were captured on trees infected by black-stain root disease (*Ceratocystis wageneri*) than on uninfected trees

(Goheen et al. 1985). The two species of beetle were more frequently attracted to wounds on trees that were also diseased than to uninfected trees. They also noted that the red turpentine beetle (*Dendroctonus valens*) attacked trees at wounds, with attack rates seven-to-eight times higher on trees infected with black-stain root disease than uninfected trees. *Spondylis upiformis* attacked only wounded trees, not unwounded trees (id.)(15).

Response: While some of the tree species mentioned in the comment such as grand fir and ponderosa pine do not occur in the project area, the Forest Service does recognize that various rots and root disease can be spread through damage to leave trees. We also are aware of the susceptibility of trees stressed through damage to bark beetle infestation. No root rot pockets have been identified in the project area after numerous trips through the area. In addition, the Butte Ranger District has not experienced root rot problems associated with harvest in the last 20 years at least. Current, standard harvest procedures such as designated skid trails and directional felling with feller-bunchers are designed to mitigate damage to leave trees and will be incorporated in the treatment. Contracts will include provisions to minimize damage to the residual stand where thinning occurs.

As discussed throughout the FEIS, pine beetles are at epidemic levels. A "population outbreak" has already been "triggered". Any additional risk that damaged pine may have is inconsequential considering the size of the current mountain pine beetle population in the area.

Douglas-fir bark beetles have not been observed in the project area and are less likely to infest thinned stands (Schmitz and Gibson 1996). Again, the procedures described above will minimize damage to the residual stand.

Wildlife

110. Impacts to wildlife will be negligible (2).

Response: Impacts for individual threatened, endangered, sensitive, and MIS species are discussed in detail on pages 3.108-3.121 of the FEIS (pages 3.100-3.132 of the DEIS) and summarized in Table 3.42.

111. We are pleased that 10-15 tons/acre of downed woody debris would be retained to serve as wildlife habitat and for soil nutrient cycling and productivity (page 2.3) (14).

Response: Thank you; this material will be in the largest size-classes available, which has been determined in the research literature to be most beneficial.

112. The DEIS discloses that many thousands of acres of forest have been affected by management actions in the cumulative effects analysis area. The DEIS does not discuss how helicopters and other logging and burning activities will affect individual mammals and birds that are using the area during times when the disturbances occur. The DEIS fails to disclose the ramifications these issues have for wildlife species' viability (16).

Response: It is possible that helicopters and other treatment-related activities will affect individual mammals and birds. The FEIS, on pages 3.108-3.121 (DEIS 3.100-3.132) discloses the direct and indirect effects of "habitat modification" and "treatment-related disturbances" on individual threatened, endangered, sensitive and MIS. Treatment-related disturbance in the DEIS was intended to include the use of helicopters and this information was clarified in the FEIS. Refer to comment 98 for discussion on wildlife species' viability.

Canadian Lynx

113. Canadian Lynx do not reside in the watershed and are not likely to in the future because there are too many people living and recreating in and around the area. Bobcat and lion do reside in the area (4).

Response: The potential for lynx occurrence in the analysis area is discussed in the FEIS on pages 3.84-3.85 (pages 3.80-3.81 of the DEIS).

114. What information is available on the occurrence and habitat use of lynx in this project area? Has the Forest done any monitoring of lynx use in this area to aid in project planning (10)?

Response: Known lynx occurrence records in the analysis area are discussed and cited in the FEIS, on page 3.84 (DEIS page 3.80). The FEIS disclosed that the "abundance and distribution of lynx" was "not studied in detail in the analysis area".

115. It is shown (page 2.13, Table 2.3, page 2.17) that Alternatives 4 and 5 are inconsistent with the Lynx Conservation Assessment and Strategy (LCAS), since habitat connectivity would not be maintained between LAU's and more than 15 percent of lynx habitat would be changed to an unsuitable condition. The DEIS states that Alternatives 4 and 5 are "likely to adversely affect lynx and their habitat" (page 3.109). Risks to lynx would occur from direct modification of habitat; increased habitat fragmentation from roading and habitat alteration; disturbance and displacement effects from harvest related activities; and reduction in winter security habitat from possible harvest related disturbance and associated use of temporary roads in winter. The DEIS also states that Alternatives 4 and 5 should not affect the long term ability of the lynx to inhabit the analysis area once temporary roads are reclaimed and cover returns on ridges and saddles in 10 to 15 years.

The EPA is concerned about the potential adverse effects to the threatened Canada lynx from Alternatives 4 and 5. It does not appear that these alternatives are consistent with the conservation and recovery of a threatened and endangered species, and with Forest Service Agreements with the U.S. Fish & Wildlife Service. We believe that the preferred alternative that is developed for the final EIS should include appropriate project revisions and modifications to be consistent with the recommendations of the Canada Lynx Conservation Assessment and Strategy, and avoid a likely to adversely affect determination for the threatened lynx (14).

Response: The "Preferred Alternative," Alternative 3 is consistent with standards and guidelines outlined in the Lynx Conservation Assessment and Strategy (FEIS page 3.112, DEIS page 3.104). A Biological Assessment for effects of the preferred alternative on threatened and endangered species was sent to the USFWS on February 26, 2004, and a Biological Opinion received on March 26, 2004.

116. The USFWS listing of the lynx as "threatened," rather than endangered, and the failure to designate critical habitat, was recently held to be a violation of the ESA. *Defenders of Wildlife v. Norton*, Civ. No. 00-2996(GX) (DCDC, 2003). According to that decision, "[without the designation of its critical habitat, and the protections which flow from such designation, the Lynx would be subject to further extirpation and 'destruction or adverse modification of [its] habitat. 16 U.S.C. 1536(a)(2).'" *Ibid.*, at p. 31. The project area may well end up being designated as critical habitat. It is thus unlawful to proceed with further adverse modifications of lynx habitat pending final designation of critical habitat

The DEIS fails to qualitatively address the effects of logging on landscape pattern, which is essential for designation of critical habitat. The LCAS require that the FS:

Maintain suitable acres and juxtaposition of lynx habitat through time. Design vegetation treatments to approximate historical landscape patterns and disturbance processes.

If the landscape has been fragmented by past management activities that reduced the quality of lynx habitat, adjust management practices to produce forest composition, structure, and patterns more similar to those that would have occurred under historical disturbance regimes.

Also, the impacts of both winter and non-winter motorized route densities have not been adequately considered. The LCAS states, "the effects of open road densities on lynx are poorly understood" (LCAS at 95). There is use by motorized recreationalists in the Project area. But the DEIS provides an incomplete analysis of the impacts of the current and future projected levels of motorized use. The DEIS also fails to disclose the expected level of cumulative impacts on lynx from the new roads and skid trails/logging access routes to be constructed—access that could be used by snowmobilers, snowshoers, and cross country skiers long after the logging activities have stopped. These roads can also impact lynx habitat during other seasons because of increased access for humans.

From Ruggerio et al., 2000 (upon which the LCAS is largely based): "Lynx metapopulation dynamics operate at regional scales" (p. 24). Lacking maps and adequate discussion of the connectivity issue in the DEIS, it is impossible to see the landscape features that affect connectivity and metapopulation dynamics within and between LAUs both within and outside the project area, a goal of the LCAS mapping requirement.

The DEIS fails to provide adequate maps of LAUs and habitat components along with areas of human activity as the LCAS requires, making it impossible for the public and decision maker to understand the impacts of motorized travel, as well as to understand impacts on habitat and connectivity of habitat (15).

Response: Designation of critical habitat for Canada lynx is outside the scope (contact U.S. Fish and Wildlife Service in Helena).

A Biological Assessment for effects of the preferred alternative on Canada lynx was submitted to the USFWS on February 26, 2004 and a Biological Opinion/concurrence received on March 26, 2004.

Effects to landscape pattern are an overriding theme throughout the FEIS. Existing landscape patterns for all terrestrial wildlife are discussed in detail in the FEIS on pages 3.80-3.82 and specifically for lynx, pages 3.84-3.85 (DEIS pages 3.80-3.81). Table 3.35, FEIS page 3.85, (DEIS page 3.80), clearly shows that less than 1 percent of lynx habitat available in the effected LAUs have been reduced to an unsuitable condition in the past 15 years. Table 3.43, FEIS pages 3.112-3.113, (DEIS page 3.103-3.104), summarizes effects on overall landscape pattern on lynx by showing how each alternative complies with applicable standards and guidelines in the LCAS. Table 3.44, FEIS pages 3.113-3.114 (DEIS, page 3.105) further addresses changes to landscape pattern by summarizing the expected change in foraging and denning habitat in each LAU over time. Effects on landscape pattern are further discussed in the direct, indirect and cumulative effects to Lynx, FEIS, p. 3.115-3.119 (DEIS, p. 3.106, 3.107-108), by addressing such issues as "fragmentation from roading and habitat alteration," and disclosing how under Preferred Alternative 3, proposes no treatment in the Research Natural Area, the inventoried roadless area, old growth, riparian areas, etc. and will "maintain existing areas comprised of high quality denning and foraging habitat." Alternative 3 also proposes that "treatment related disturbance would be concentrated in the lower elevation, roaded portions of the analysis area where lynx habitat appears in discontinuous blocks" and "larger, more suitable, untreated blocks of lynx

habitat would remain available at higher elevations in more remote, unroaded sections of the analysis area."

The proposed action and alternatives do not designate any new recreation routes or trails. Temporary roads constructed for logging access routes will be reclaimed. The Preferred Alternative complies with all applicable standards and guidelines outlined in the LCAS (FEIS pages 3.111-3.119, DEIS p. 3.109).

In the FEIS page 3.113 (DEIS page 3.104), the Forest discloses that "although winter logging activities are not restricted by LCAS standards, an increase in snow compaction would be expected on temporary roads constructed and used for log hauling in winter....during the project implementation period." Clarification of this was added to include compaction on skid trails. Refer to FEIS pages 3.116-3.118 (DEIS, page 3.107, 3.108 and 3.109) for a cumulative effects discussion on "snow compacted trails."

Lynx habitat across the Forest was mapped in accordance with the LCAS using habitat parameters defined for the Montana portion of the Northern Rocky Mountain Geographic area (Ruediger et al. 2000, p. 409). Refer to Forest wide distribution of lynx habitat section in the FEIS on page 3.118 (DEIS p. 3.109).

Woodpeckers

117. The DEIS does not adequately justify its claim that proposed logging will not impact hairy woodpecker population status (15).

Response: Refer to the FEIS pages 3.137-1.138 (DEIS page 3.124-3.125) and specifically to Table 3.47, for project and cumulative effects on the hairy woodpecker. The hairy woodpecker was used to estimate project effects on old growth spruce fir and lodgepole pine associates in the analysis. No treatments would occur in a single acre of available old growth lodgepole pine or spruce-fir; therefore the existing levels shown in Table 3.38, FEIS page 3.94 (DEIS pages 3.88-3.89), will be maintained. Of note 2,238 acres of lodgepole pine old growth are available in the analysis area, representing 15 percent of the 14,875 total available acres of lodgepole pine; and 233 acres of old growth spruce fir are available in the analysis area, representing 52 percent of the 446 total available acres of spruce-fir.

118. The black-backed woodpecker is also a Sensitive species. Cherry, 1997 states:

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

The Region 1 black-backed woodpecker assessment (Hillis et al., 2003), notes that the black-backed woodpecker depends upon the very forest that this project targets for much of its logging, removal of dead and dying trees:

Black-backed woodpeckers occupy forested habitats that contain high densities of recently dead or dying trees that have been colonized by bark beetles and woodborer beetles (Buprestidae, Cerambycidae, and Scolytidae). These beetles and their larvae are most abundant within burned forests. In unburned forests, bark beetle and woodborer infested trees are found primarily in areas that have undergone natural disturbances, such as wind-throw, and within structurally diverse old-growth forests. (Internal citations omitted.)

...Black-backed woodpeckers also occur in unburned landscapes Bull et al.1986, Goggans et al.1987, Bate 1995, Hoffman 1997, Weinlagen 1998, Steeger and Dulisse in press, Taylor unpublished data). Taylor's observations of black-backed woodpeckers in unburned forests in northern Idaho suggest that they may occur at substantially lower densities in unburned forests, but no rigorous comparisons between black-backed woodpecker densities in burned and unburned forests have been done. Hutto (1995) hypothesized that black-backed woodpeckers reproduce at source reproductive levels in burns, but may drop to sink reproductive levels in the intervening periods between large burns (15).

Response: This project does not propose to suppress fire, nor does it propose to eradicate insects and disease. The purpose and need for the project is identified on page 1.3 of the FEIS and specifically addresses the fuels resulting from an already occurring mountain pine beetle epidemic. Page 3.1 of the FEIS identifies the management response for wildland fires under the existing Deerlodge Forest Plan to be suppression using the appropriate response (confine, contain, and/or control). Please refer to FEIS pages 3.129-3.131 (3.116-3.119 of the DEIS) for a discussion of project and cumulative effects on the black-backed woodpecker.

119. In their publication, "Trees and Logs Important to Wildlife in the Interior Columbia River Basin," Bull, et al. (1997) conclude:

This document presents new information on the retention and selection of trees and logs most valuable to wildlife.

...Current direction for providing wildlife habitat on public forest lands does not reflect this new information. Since the publication of Thomas and others (1979), new research suggests that to fully meet the needs of wildlife, additional snags and habitat are required for foraging, denning, nesting, and roosting. Although we do not suggest specific numbers or snags to retain by forest type, tow recent studies indicate that viable woodpecker populations occurred in areas with about four snags per acre.

We suggest that the next step in snag management should involve creating a model that incorporates the new information on woodpecker foraging substrates (live trees, snags, and logs), home range sizes, number and characteristics of roost trees, multiple occupancy of snags, and needs for other habitat structures. Once this information is incorporated, the model may suggest changes to guidelines that specify numbers of snags and other habitat features by forest type and geographic area. Additional information on fall rates of snags, foraging needs of black-backed and three-toed woodpeckers, relation of the density of woodpeckers to that of secondary cavity nesters, and relation of snag density to woodpecker density would greatly improve the model.

The BDNF does not recognize this important research and it implications for wildlife species such as black-backed, hairy, northern three-toed, and pileated woodpeckers. The DEIS never states how a logging project

that targets for removal dead and dying trees and supposedly reduces future levels of dead trees still maintains local populations. Also, Harris, 1999, discusses issues very pertinent to snag habitat. Inadequate quantitative commitments to protecting snag habitat are made in the DEIS.

In sum, the analysis for the cavity-nesting and insectivorous wildlife species is inadequate to insure viable populations (15).

Response: Developing a snag model is outside the scope of this project. Bull et al. 1997 is cited in the FEIS on page 3.96 (DEIS, page 3.90).

The proposed action includes leaving five snags per acre in treated areas, which is above the 4/acre cited as a recommendation to provide for viable populations of woodpecker species. In the Preferred Alternative, Alternative 3, untreated areas represent 91 percent of the analysis area, 86 percent of which is forested. These untreated forested areas will continue to provide for adequate snag habitat, especially in areas where dense stands of lodgepole pine greater than 9 inches in diameter have experienced up to 70 percent MPB-related mortality. Refer to pages 3.127-1.131, 3.137-3.138 in the FEIS for effects to cavity dependent wildlife and the response to comment 98 for a discussion on wildlife species viability.

The pileated woodpecker, also considered a Douglas-fir old growth MIS on the Beaverhead-Deerlodge, may be marginally present in the analysis area. A discussion on the pileated woodpecker was added to the baseline in the FEIS.

Pine Martens

120. Old growth allows pine martens to avoid predators, provides resting and denning places in coarse woody debris and large diameter trees, and allows for access under the snow surface. Research suggests that martens prefer forest stands with greater than 40% tree canopy closure and rarely venture more than 150 feet from forest cover, particularly in winter (USDA Forest Service 1990). It also cites research suggesting that at least 50 percent of female marten home range should be maintained in mature or old growth forest.

Ruggerio, et al. (1998) and Bull and Blumton, 1999, indicate that vertical and horizontal diversity provided by snags and large down woody debris are important habitat characteristics for pine marten. Bull and Blumton, 1999 suggest that the kind of treatments adopted by the Post-Fire ROD reduce the availability of prey species for the marten.

Consideration of habitat connectivity is essential to ensuring marten viability:

To ensure that a viable population of marten is maintained across its range, suitable habitat for individual martens should be distributed geographically in a manner that allows interchange of individuals between habitat patches.

(USDA Forest Service, 1990).

The FS has otherwise recognized the need for updated guidelines for the pine marten: "Apply snag and down woody material guidelines from the Upper Columbia River Basin Assessment to improve marten habitat" (USDA Forest Service 2000c, p. 39).

However, the DEIS makes no determination regarding the significance of the pine marten habitat losses associated with past or proposed vegetation treatments. This does not insure viability of the species, as NFMA requires.

The Beaverhead Forest Plan requires the FS to "Monitor old growth acres/number of animals annually, reporting every 5 years." The pine marten is an MIS for the Beaverhead National Forest. The most recent Forest Plan Monitoring and Evaluation report, for fiscal year 2001, "evaluates the effects the Mussigbrod and Middle Fork fires on individual resources by Forest Plan Monitoring." That report also states, "the amount of spruce-fir and mature-old lodgepole pine forests totally consumed and the use of burned areas by marten need to be determined so that the fire's impact on pine marten population viability can be evaluated." The report for fiscal year 1999 focused on riparian habitat health, stream channel condition, water quality, and fish habitat conditions, failing to respond to the Forest Plan old growth MIS monitoring requirement. Likewise, a "Forest Monitoring and Evaluation Report" for fiscal year 1998 also was narrowly focused, on "Vegetation Treatment." Prior that the most recent report was for fiscal year 1996, which stated, "There were no projects implemented in 1996 believed to adversely influence old growth indicator species or the related wildlife community." Monitoring reports provide no indication of population trends of the old growth MIS pine marten (16).

Response: Thank you for the information on pine marten. An analysis of project and cumulative effects on pine marten were added to the FEIS. See also Tables 3.37 on page 3.87 (page 82; DEIS) and pages 3.94-3.95, 3.94-3.95, and 3.137-3.140 in the FEIS (*DEIS pages 3.111 and 3.47 and 3.124*). Old growth spruce was also analyzed and discussed in the FEIS for the Canada lynx (associated with spruce-fir old growth), the fisher (also associated with spruce-fir old growth), and the flammulated owl (associated with Douglas-fir old growth) (please refer to those sections).

At this time, the Beaverhead Forest Plan does not apply to this project which falls under the jurisdiction of the Deerlodge Forest Plan.

Fisher

121. The DEIS failed to disclose and analyze the uncertain and precarious population status of the Sensitive fisher, as described in Witmer, et al., 1998:

The status of the fisher in the Western United States is poorly known but generally perceived as precarious and declining. This is a serious issue alone, but it also is a component of the larger problem of the decline of biological diversity. Recovery of species of concern must necessarily focus on the population level, because this is the scale at which genetic variation occurs and because population [sic] are the constituent elements of communities and ecosystems. Systematic habitat alteration and overexploitation have reduced the historical distribution of fishers in suitable habitat in the interior Columbia basin to isolated and fragmented populations. Current populations may be extremely vulnerable to local and regional extirpation because of their lack of connectivity and their small numbers (Id. at 14, internal citations omitted).

Johnsen, 1996, Jones (undated), and Heinemeyer and Jones (1994) provide some examples of conservation strategies for the fisher, something the BDNF has so far neglected for this Sensitive Management Indicator species (16).

Response: The Forest fully acknowledged the population status of fishers as well as the controversy over whether fisher historically ranged into southwestern Montana in the FEIS page 3.92 (DEIS pages 3.86 - 3.87). Fisher do not tend to thrive or persist in mature xeric forests like those found in the Basin Creek project area (C. Fager, pers. comm.) Nonetheless, many of the citations used by Witmer et al. 1998 to summarize fisher population status and habitat requirements are cited in the EIS. What the comment doesn't point out and what is also found in Witmer et al. 1998, p. 14, "Fishers probably can tolerate small patch cuts or other small-scale disturbances, provided these occur in a larger matrix of relatively dense, closed canopy, late successional forest (internal citations omitted). Such openings might even increase the value of habitat by providing a diversity of prey, which will support a diverse

diet for fishers." The FEIS, pages 3.133-3.134 (page 3.122 of the DEIS) demonstrates that even under the maximum treatment alternative, 95 percent of potential fisher habitat would remain untreated.

Developing conservation strategies is outside the scope, however, the key environmental correlates for conserving fisher, also identified in Witmer et al. (i.e. riparian corridors, > 20 percent mature forest, large areas of unroaded habitat) are accounted for in the analysis area on pages 3.133-3.134 (DEIS p. 3.122-3.123). Refer to Biological Evaluation for the project in the Appendix of the FEIS.

Boreal Toads

122. The DEIS fails to consider cumulative effects on upland habitat for boreal toads. This does not make sense, since such small populations that are likely to persist are especially susceptible to fragmentation and extirpation due to isolation of smaller populations. See Maxell, 2000 (16).

Response: Assessing the cumulative effects of proposed fuels reduction activities is difficult because the state of scientific knowledge about boreal toads is currently quite limited. In particular, the effects of timber harvest on boreal toads are unclear at this time (Bryce Maxell, personal communication 2004). We currently lack suitable information to conduct an analysis of population dynamics and trends for boreal toad. The aquatic Biological Evaluation for this project includes a Forest-wide examination of species viability for boreal toad). This analysis suggests that habitat is well distributed for this species. Based on this wide distribution of habitat for boreal toads across the Forest, the Basin Creek Fuels Reduction project is not expected to reduce the viability of this species.

During planning for this project, we found one known boreal toad breeding site and one suspected breeding site located near proposed fuels treatment activity. Both these sites would have a 500-foot no-treatment buffer placed around them to minimize alteration, toad mortality, and disturbance to the sites. In addition, proposed treatment areas within an approximately ¼-mile radius of these sites would undergo winter logging (while toads are hibernating) to reduce risk of causing direct mortality to individual boreal toads using these sites. These findings and mitigation were added to the FEIS on page 3.178. There are also other boreal toad sites nearby. Three additional boreal toad sites (breeding definitely confirmed at one) were found in the project area but no fuels treatment activities are proposed within 1 mile of any of these sites (FEIS Map 26). An additional boreal toad breeding site was located in the Blacktail Creek watershed upstream of the project area and no activity is proposed near this site either. Additional cumulative effects analysis for boreal toads was added to the FEIS on page 3.184.

123. The DEIS discloses the potential for impacts on upland habitat for boreal toads. Small populations that are likely to persist are especially susceptible to fragmentation and extirpation due to isolation of smaller populations. (See Maxell, 2000.) Given the degree of impact of the various action alternatives, a genuine analysis of population dynamics and trends, both project-specific and regionwide, is needed (15).

Response: Please refer to response to comment number 122.

Wolverines

124. This project would also adversely impact the Sensitive wolverine, which relies on vast areas of undeveloped land. The DEIS does not discuss the implications that the present snowmobile use has for

wolverine populations. Again, no conservation strategy (such as suggested in USDA Forest Service, 1993) has been designed with public involvement (16).

Response: Designing conservation strategies is outside the scope. The FEIS (page 3.90-3.9, DEIS p. 3.122-3.123) provides a thorough discussion of the potential barriers to wolverine movement in the analysis area; and the cumulative effects section (FEIS page 3.132, DEIS p. 3.120) describes the potential for an increase in dispersed winter recreation, which was intended to include snowmobiles. Clarification of snowmobile use was added to the baseline in the FEIS.

Game Species

125. There is not information on big game winter range in the project area. A map of this habitat and the current levels of thermal cover would be helpful (10).

Response: As stated in the FEIS (page 3.100, DEIS page 3.93) the project area provides elk with spring, summer, and fall habitat; however, use of the area by big game is limited, likely because the area is mostly forested (92 percent) and therefore, lacks optimum foraging habitat. Due to high elevations, snow depths, and lack of foraging habitat in the project area, core winter range is concentrated on non-Forest lands in lower elevations (MDFWP 1974-1991). A map of core elk winter range is available in the project file. Appendix B, Map 21 provides a map of hiding cover across the entire elk analysis area, the majority of which provides 70 percent or more canopy closure that would essentially serve as thermal cover (stand data summaries in project file).

Populations

126. EIS needs to be more specific as to how and when impacts on individuals of a population are determined to trigger population impacts and lead to a trend toward listing. The document provided the conclusions without any supporting rationale as to how these population impacts for indicator and sensitive species were made (10).

Response: The direct, indirect, and cumulative effects sections for TES and MIS species provide the rationale for impacts. Detailed rationale of summary determinations for sensitive species are provided in the BE (Appendix in the FEIS).

127. Does the BDNF consider that pileated woodpeckers and pine marten that might be found in the project area are not needed for population viability? Is there no need to manage for these species here (15)?

Response: The Forest analyzed the effects of the project on old growth dependent species by using the Deerlodge Forest Plan Management Indicator Species (p. III-26) hairy woodpecker associated with subalpine fir and lodgepole pine (FEIS pages 3.94, 3.137-3.138, DEIS pages 3.89, 3.124-3.125) and the northern goshawk in Douglas-fir (FEIS pages 3.95-3.96, 3.140-3.141, 3.113-3.116; DEIS pages 3.84, 3.89, 3.113-3.116, 3.126). Pine marten, also an MIS for old growth spruce fir and lodgepole pine on the Beaverhead-Deerlodge was added to the baseline in the FEIS. See also Tables 3.37 (FEIS page 3.87 (DEIS page 3.82), 3.38 (FEIS page 3.90, DEIS page 3.88), 3.46 (FEIS page 3.120, DEIS page 3.111), and 3.47 (FEIS page 3.136, DEIS page 3.124). Old growth spruce-fir and lodgepole pine was also analyzed and discussed at some level in the EIS for the threatened Canada lynx and the sensitive fisher; and old growth Douglas-fir was analyzed and discussed for the sensitive flammulated owl (refer to those sections). The pileated woodpecker, also considered a Douglas-fir old growth MIS

on the Beaverhead-Deerlodge, may be marginally present in the analysis area and a discussion on the pileated woodpecker was added to the baseline in the FEIS.

128. The DEIS fails to disclose the direct and indirect impacts of increased motorized disturbance during project activities, and the increased risk cumulative impacts caused by later motorized access, on landscape patterns that provide the specific habitat features that the local populations of MIS and TES species depend upon for persistence (15).

Response: The comment is incorrect. The FEIS, on pages 3.105-3.150 (DEIS pages 3.97-3.132) demonstrate that the Forest thoroughly acknowledges the direct, indirect, and cumulative effects associated with motorized access on TES and MIS. Of note, all temporary roads constructed and used under the proposed action and alternatives would be reclaimed after the implementation period. Road closures are expected to be effective.

129. Finally, viability is actually an issue dealt with in a wider landscape context than the Project area. The FS admitted that viability is not merely a project area consideration, that the scale of analysis must be broader:

Population viability analysis is not plausible or logical at the project level such as the scale of the Dry Fork Vegetation and Recreation Restoration EA. Distributions of common wildlife species as well as species at risk encompass much larger areas than typical project areas and in most cases larger than National Forest boundaries. No wildlife species that presently occupy the project area are at such low numbers that potential effects to individuals would jeopardize species viability. No actions proposed under the preferred alternative would conceivably lead to loss of population viability.

(Dry Fork Decision Notice, Lewis and Clark NF, Appendix D at p. 9—Appeal Attachment 8.) However, the DEIS failed to disclose the forestwide status of old growth in the BDNF. Therefore, the assumption upon the ROD's conclusion of insignificant impacts on old growth species' viability is not substantiated. Old growth species' habitat adversely affected by the Project may well be crucial to maintaining viable populations of these species, especially if old growth habitat is deficient and/or fails to meet Forest Plan Standards in surrounding or nearby geographic areas (16).

Response: Detailed estimates of Old Growth obtained through Forest Inventory and Analysis and the direct, indirect and cumulative effects to old growth are described on pages 3.71-3.75 of the FEIS. Also, refer to the response to comments numbered 98, 95, and 100.

Songbirds

130. The document needs to discuss the cumulative impacts on migratory song birds from past, present, and proposed activities in this area (16).

Response: Species considered in the EIS are summarized in the FEIS 3.77-3.79 (DEIS pages 3.74-3.75). The effects to songbirds were added to FEIS page 3.149-1.50.

Goshawk

131. The DEIS infers that logging will improve foraging habitat for the goshawk, but it does not cite the specific research where this has been demonstrated, nor does it compare these research findings to habitat conditions on the Deerlodge Forest (10).

Response: The FEIS, on page 3.125 (DEIS 3.114), states: "Proposed treatments in grassland/shrub areas are designed to reduce conifer colonization and restore open parklands, resulting in improved conditions for goshawks, known to forage for ground squirrels and other prey items along forest/grassland ecotones. For example, in Idaho, Patla (1997) found that nesting productivity and occupancy were positively related to the proportion of grassland/shrub cover in the Foraging Area, suggesting the importance of this cover type for goshawks."

The FEIS page 3.125 (DEIS 3.114) further acknowledges that clear-cut areas and thinned areas may facilitate increased occupancy by open-forested raptors resulting in an increased competition for resources or in increased risk of predation (Crocker-Bedford 1990).

Refer to the cumulative effects section in the FEIS page 3.125 (DEIS 3.115) and the existing condition (FEIS page 3.80) for a discussion of past, present and foreseeable actions and the effects on prey and prey species availability and citations therein. Given goshawks forage in a variety of forest cover types it is impractical if not impossible to compare foraging habitat across the entire B-D NF. However, a forest-wide assessment of available mature and old growth was conducted (FEIS pages 3.124-3.127, DEIS 3.115-3.116).

The Forest admits the level of uncertainty (FEIS page 3.124 - No Action Cumulative Effects, DEIS 3.115) from a lack of historic population data and the assumptions made on effects of past treatment on goshawk foraging habitat. The Forest (FEIS page 3.88 and 3.125-127, DEIS 3.84 and 3.116) also discloses the monitoring data available on goshawk occupancy and nest success on the Forest.

132a. The DEIS identifies a mitigation measure for the goshawk as a 40-acre buffer from timber harvest but it does not identify what this information was based on and what happens after the nesting season is over. The DEIS does not identify if the stand will be protected permanently or if it will be logged later.

The DEIS does not offer provisions for a post-fledgling area for the goshawk nests. Do you have a management strategy for these nesting areas, and if so, what is it and what is this based on as per current research and/or guidelines?

Response: Details of mitigation and supporting research are provided in the Biological Evaluation for the project in the Appendix of the FEIS. The 40-acre buffer was chosen to ensure that the entire nest stand (or nest area) was protected from **any** treatment (including from treatments proposed in this project or foreseeable projects). Additional provisions to protect nesting goshawks and their young from disturbance during the critical incubation, nestling and post fledgling periods were clarified in Chapter 2 of the FEIS and detailed in the Biological Evaluation.

132b. The DEIS needs to provide a history the 3 goshawk nests of that occur in the project area. This information should include how long the nests have been active and what their productivity was for each of the years they were monitored.

Response: Refer to the Biological Evaluation for Sensitive Species in the Appendix of the FEIS for history. In summary, one nest located outside the project area was discovered in 1997, and checked for occupancy in 1998, 2001, and 2003.

The two territories located inside the project area (one in China Gulch, and one northwest of Basin Creek) were first discovered during systematic goshawk surveys conducted in 2001 in association with this proposed project (refer to 136 below). In 2002, a wildlife biologist visited the China Gulch and Basin Creek West nests during the early fledgling period to determine occupancy.

The Basin Creek West nest was checked for occupancy in 2002 and 2003 (refer to page 3.88 of the FEIS for discussion).

132c. Could the Forest Service provide a summary of the available Forest monitoring data on logging impacts on goshawk productivity and nest site occupancy on the Deerlodge Forest? How was this monitoring data used in the current project (10)?

Response: No long-term scientific studies of harvest-related effects on goshawk productivity and nest site occupancy have been conducted on the Forest. Refer to the FEIS pages 3.88 4 and 3.113-3.116 (DEIS 3.84 and 3.116) for a summary of known monitoring data.

133. We are pleased that disturbance around goshawk nest sites will be minimized by use of 40-acre no harvest buffers around nests (page 2.6) (14).

Response: Thank you for your comment.

134. We are pleased that 10-15 tons/acre of downed woody debris would be retained to serve as wildlife habitat and for soil nutrient cycling and productivity (page 2.3) (14).

Response: Thank you for your comment.

135. The Lewis and Clark National Forest questions the utility of the northern goshawk as MIS for old growth on that Forest: "The northern goshawk was a poor old growth forest MIS on the LCNF" (Whitford, 1991). Does the Deerlodge NF consider the northern goshawk to be a sufficient old-growth forest MJIS to represent viability of other old-growth wildlife species on the Forest (15)?

Response: The northern goshawk is designated as an MIS for old growth Douglas-fir on this portion of the Deerlodge NF. Refer to FEIS page 3.88 for discussion. MIS species specific to Forest habitat types will be analyzed through the Forest Plan Revision process.

136. The DEIS provides no information on the thoroughness of goshawk surveys in this project area. Proposed logging, roadbuilding and other disturbance associated with the project could affect goshawk nesting, post-fledging family habitat, alternative nesting, foraging, competitors, prey and potential habitat, including areas far from cutting units. Research in the Kaibab National Forest found that goshawk populations decreased dramatically after partial logging, even when large buffers around nests were provided (Crocker-Bedford, 1990). Research suggests that it is essential to viability of goshawks that 20-50 percent of old growth within their nesting areas be maintained (Suring et al. 1993, Reynolds et al. 1992). USDA Forest Service, (2000b) recommends that forest opening greater than 50-60 acres be avoided in the vicinity of goshawks. At least five years of monitoring is necessary to allow for effective estimates of habitat quality (Id.). Research suggests that

a localized distribution of 50% old growth should be maintained to allow for viability of goshawks (Suring et al. 1993).

Reynolds et al. 1992, recommends protecting nest areas around 3 nests and 3 alternative nests against adverse impacts in each home range. They also recommend certain ratios of mid-aged forest, mature forest, and old forest Vegetative Structural Stage (VSS) classes in the post-fledging family areas (PFAs) and foraging areas. In addition, Reynolds et al. 1992 calls for artificial openings of no more than 2 acres in size or less in the PFAs, depending on forest type, and openings of no more than 1-4 acres or less in size in the foraging areas, depending on forest type. Along with Reynolds et al., 1992, another conservation strategy for the goshawk is Graham, et al., 1999. Goshawks are associated with habitat with large-diameter overstory trees, large standing dead or defective trees, downed logs, a deep duff layer, and formation of several canopy layers (USDA Forest Service, 1990). Goshawks are often associated with a thick overstory cover and areas with a large number of large trees. For example, Hayward and Escano recommend an overstory canopy between 75 and 80 percent (Hayward and Escano, 1989.)

According to the BE/BA for the BDNF's Keystone Quartz EIS, "Goshawks prefer vegetation structure that permits them to approach prey unseen and to use their flight maneuverability to advantage (Widen, 1989, Beier and Drennan 1997)..." The types of thinning proposed in the DEIS would thus damage foraging habitat. The DEIS and Forest Plan do not contain any population data or population trend data for goshawks (15).

Response: Refer to the Biological Evaluation for Sensitive Species for biological information and details on the thoroughness of goshawk surveys, Appendix of the FEIS. FEIS page 3.88 (DEIS 3.84) states that systematic landscape surveys were conducted for northern goshawks in the analysis area. In summary, surveys were conducted in accordance with well-established protocol (Kennedy and Stahlecker 1993 as modified by Joy et al. 1994 and applied by Squires and Ruggiero 1997.) All lands below 7,000 feet in elevation were surveyed for goshawks by walking 60 transect lines (1,950 m long laid side by side across the landscape 260 m part). Each transect line contained 7 broadcast calling stations for a total of 420 stations in the analysis area. A map of transects and calling stations resides in the project file.

Foraging habitat is not considered a limiting factor for goshawks in the analysis area. The FEIS (pages 3.80-3.83, DEIS 3.77) establishes that historic harvest and ongoing fire suppression has resulted in reduced structural and biological diversity compared to historic (or pre-mining) conditions. Lack of downed wood, reduced vigor in aspen and willow communities, loss of open grassland parks, and an overall lack of structural diversity in the understory of lodgepole pine and Douglas-fir forested areas is assumed to have reduced the potential of the area to support goshawk prey populations was added to the FEIS.

The types of thinning proposed in Douglas-fir will leave the overstory relatively in tact, accelerate the development of larger diameter Douglas-fir, stimulate understory vegetation, and improve the vigor of grasses and shrubs (refer to the Vegetation section FEIS pages 3.66-3.69, DEIS 3.65-3.68), and leave 10 to 15 tons of downed wood on the ground and 5 snags per acre. These are all important components for goshawk prey.

137. The northern goshawk was selected as an MIS for the Beaverhead and Deerlodge NFs. The FS Northern Region also lists the species as Sensitive on these Forests. The EIS cannot dismisses the project's impacts on goshawks without any population data or population trend data, as required by the Forest Plan and NFMA regulations.

The DEIS even ignores scientific documents. Reynolds et al., 1992 suggest that it is essential to viability of goshawks that 20-50 percent of nesting areas be maintained as old growth. Nowhere does the DEIS cite any documentation that shows the BDNF is maintaining adequate old growth or goshawk habitat, in the project area or forestwide, to ensure viability of the goshawk.

Reynolds et al., 1992 provides a basis for a northern goshawk conservation strategy that could be implemented if forestwide habitat considerations were to be truly taken into account. Graham, et al. (1999), USDA Forest Service (2000b) and Suring et al. (1993) are other examples of northern goshawk conservation strategies the FS might adopt for this Forest or Region, if emphasis was more appropriately placed on species conservation and insuring viability rather than justification for resource extraction. However, the BDNF shows no indication of implementing such habitat guidance in the Post-Fire Project area or in the wider landscape.

Reynolds et al. (1992) calls for protecting nest areas around 3 nests and 3 alternative nests against adverse impacts in each home range, and call for 100% in VSS classes 5 & 6 and 0% in VSS classes 1-4 in nest areas. Reynolds et al. (1992) calls for ratios of (20%/20%/20%) each in the mid-aged forest, mature forest, and old forest Vegetative Structural Stage (VSS) classes in the post-fledging family areas (PFAs) and foraging areas. The DEIS does not disclose that VSS percentage post-fledging ratios are being met anywhere. Reynolds et al. (1992) call for agency-created openings of no more than 2 acres in size or less in the PFAs, depending on forest type, and agency-created opening of no more than 4 acres or less in size in the foraging areas, depending on forest type, but because of the poor analysis methodology adopted, the FEIS does include such considerations.

The FS simply has not analyzed whether inadequate habitat conditions for the goshawk exist, or whether additional mitigation measures are required to maintain the viability of the goshawk. And the DEIS provides no detailed analysis of cumulative effects to the goshawk, including impact related to activities on land of other ownership.

Goshawks are associated with habitat with large-diameter overstory trees, large standing dead or defective trees, downed logs, a deep duff layer, and formation of several canopy layers (USDA Forest Service, 1990). Yet, the project would affect such habitat, and log large dead trees.

According to the BE/BA for the Beaverhead-Deerlodge NF's 2001 Keystone Quartz EIS:

Goshawks prefer vegetation structure that permits them to approach prey unseen and to use their flight maneuverability to advantage (Widen, 1989, Beier and Drennan 1997). ... In northern Arizona ponderosa pine and mixed conifer forests, Beier and Drennan (1997) found that goshawks did not select foraging sites based on prey abundance; abundance of some prey were lower on used than contrast plots. Goshawks selected foraging sites that had higher canopy closure, greater tree density, and greater density of trees >16" dbh than on contrast plots. However, for all parameters sampled, the range of sites used by goshawks was impressively broad, and comparable to the range found in contrast plots. Kenward (1982), Widen (1989), Bright-Smith and Mannan (1994), and Hargis et al (1994), also reported similar preferences for large trees or dense forest condition, and similar tolerance for a broad range of forest structures. (Keystone Quartz FEIS at B1-22.)

The issue of fragmentation should have been more thoroughly considered with respect to goshawks. Crocker-Bedford (1990) recommends that a foraging area of >5000 acres of dense forest, in which no logging is permitted, be designated for goshawks, with additional areas of 2500-5000 acres of more marginal habitat designated beyond this 5,000 acre foraging area (16).

Response: Thank you for the information on goshawks. Refer to Biological Evaluation included as an Appendix to the FEIS. Also refer to response to comments numbered 131, 132, 136 and the analysis of project effects on goshawks in the FEIS on pages 3.123-3.127 (DEIS 3.84, 3.113-3.116). The

Beaverhead-Deerlodge National Forests mapped goshawks on a Forest-wide basis, and evaluated the distribution of these habitats across the entire Forest (the Planning Unit).

138. Nowhere does the DEIS cite any documentation that shows the FS is maintaining adequate goshawk habitat, in the project area or forestwide, to ensure viability of the goshawk (16).

Response: The EIS discloses that all alternatives (including the no action alternative due to tree mortality in recently occupied and potential nesting habitat) will reduce the nesting potential for 2 of three known breeding pairs in the analysis area (FEIS pages 3.123-3.127, DEIS 3.113-3.116). However, given that goshawk habitat is abundant and well-distributed forest-wide (FEIS pages 3.123-3.127, DEIS 3.113-3.116) a reduction in the viability of goshawks is not anticipated. Please refer to the response to comment number 98 and the Biological Evaluation for Sensitive Species included as an Appendix to the FEIS.

Bears

140. The DEIS does not state how the changes that would be caused by the proposed logging would affect other species that are said to be represented by the MIS elk. Black bears are one example. As Bull and Torgerson, 2001 state:

Black bears feed at both the lower and upper strata of the food chain, so forest management practices can directly or indirectly influence availability of their food sources. Because black bears rely on log-dwelling ants in some areas (Beeman and Pelton 1977, Costello 1992, Beecham and Rohlman 1994), management of coarse woody debris is important. High fuel loadings in the aftermath of insect outbreaks can result in a high risk of wildfire and might prompt land management agencies to view coarse woody debris as a hazard rather than an important biological component.

Bull et al., 1997 also discuss the importance of large, hollow trees, both alive and dead, for black bears and other species. This is precisely the kind of habitat that would be significantly reduced in the logged areas. Leaving three small snags per acre, while ignoring the fact that so many more acres are lacking these key habitat features because of past clearcutting, isn't effective mitigation. Snags lost due to OSHA requirements are those soft snags providing the best foraging habitat for woodpeckers such as the pileated and denning habitat for mammals, but the snags gained by the fires will not necessarily soon provide foraging substrate (15).

Response: The black bear has no special status in the project area, is commonly hunted, and is considered widespread and common on the Forest. The forest acknowledged the importance of snag/cavity habitat on wildlife throughout the FEIS, and more specifically used the Deerlodge Forest Plan MIS three-toed woodpecker to assess project effects on snag/cavity habitat, referencing Bull et al. 1997 (FEIS pages 3.96-3.97; pages 3.142-3.143; and Table 3.38 on page 3.94, DEIS 3.90, 3.126-3.127, 3.47).

Wolves

141. The DEIS needs a more detailed examination of how this project will affect wolves. The new roads that are being proposed will impact wolves and their prey (16).

Response: The Forest provides a thorough discussion of the impacts of roads on wolves and wolf prey. Please refer to pages 3.110-3.111 in the FEIS (DEIS 3.101-3.102).

Snag Retention

142. What data does the Forest currently have to indicate how the snag and old growth standards in the Forest Plan have worked to maintain viability of associated wildlife? How was this monitoring data used to design the current project? The DEIS does not identify how long term snag recruitment and cavity nesting wildlife will be maintained in proposed clearcuts (10).

Response: Vegetation treatments were designed to address the purpose and need of the project, defined in Chapter 2. The proposed action and alternatives include leaving 5 snags per acre greater than 9 inches in diameter at breast height in all areas proposed for treatment. Long-term snag recruitment will be allowed to continue in untreated areas (comprising 91 percent of the analysis area under the preferred alternative). Refer to FEIS pages 3.127-3.131, 3.137-3.138 (DEIS 3.116-3.119, 3.124-3.127) for effects to cavity dependent wildlife. Refer to FEIS pages 3.137-3.138 (DEIS 3.124-3.126) for discussion of effects to old growth dependent species. Forest Inventory and Analysis and the direct, indirect and cumulative effects to old growth are described on pages 3.71-3.75 of the FEIS. Also, refer to comment 98 for discussion on species viability.

143. It is stated that 5 snags would be retained per acre in harvest areas (page 3.126). Will this provide adequate snags for cavity nesting wildlife (e.g., woodpecker and owl species)? The reduction of 27 percent of snag habitat in Alternative 4 appears very high and may be cause for concern (14).

Response: The Region One Snag Protocol (cited in the FEIS as USFS 2000) was used to evaluate the range of snag densities found in the literature. This information was clarified in the FEIS. Within the proposed treatment units, the 5 snags per acre (greater than 9 inches in diameter) Forest Plan standard falls within the range of 2.1 to 11 snags/acre recommended by various researchers to support the potential density of woodpeckers on a landscape (Cunningham, et al 1980, Raphael and White 1984, Schreiber and de Calesta 1992, Bull, et al 1997, USFS 2000).

The 5 snags per acre retained in treatment units was not meant to fully supply snag needs in the Analysis Area because long term snag recruitment will be allowed to continue in untreated areas (comprising 91 percent of the analysis area under the preferred alternative). Refer to FEIS pages 3.127-3.131, 3.137-3.138 (DEIS 3.116-3.119, 3.124-3.127) for effects to cavity dependent wildlife.

144. The landscape-level effects on wildlife from the reduction of snag habitat under the snag management regime adopted by the DEIS was not evaluated. The DEIS fails to cite a single instance of a management strategy for snags that is monitoring-validated, both for implementation and effectiveness. The high density or potential density of snags and defective trees within the forest areas to be logged will be substantially reduced. Snags designated for retention will be lost over time due to increased access to firewood cutters also (15).

Response: Please refer to comment 14. In addition, Forest Inventory and Monitoring Data (FIA) were used to evaluate the range of snag densities across the Forest and this information was clarified in the FEIS. Forest Inventory and Analysis and the direct, indirect and cumulative effects to old growth are described on pages 3.71-3.75 of the FEIS.

Other

145. Due to the results of past logging, the DEIS discloses at 3.59 that old-growth habitat is poorly distributed. However the implications of this poorly distributed habitat on wildlife species viability are not disclosed (15).

Response: The Forest discloses on pages 3.58-3.59 of the FEIS (DEIS 3.59) that Douglas-fir old growth is limited due to historic harvest. The effects on Douglas-fir old growth associated wildlife are disclosed in the FEIS pages 3.88, 3.94, 3.123-3.127, 3.137-3.139 (DEIS 3.84, 3.84, 3.113-3.116, 3.126). Also, refer to 98 above addressing terrestrial species viability.

Habitat

146. A big problem with the DEIS's analyses is that effects of cumulative habitat fragmentation from roads, logging, private land developments, livestock grazing, motorized access, etc. is missing. The issue of fragmentation should have been more thoroughly considered with respect to interior forest species. It is documented that edge effects occur 10-30 meters into a forest tract (Wilcove, 1986). Other edge-adapted species may compete with and displace interior forest species if adequate interior forest habitat is not provided (15).

Response: Refer to cumulative effects sections in the DEIS and FEIS for each TES and MIS species. A discussion on edge effects was added to the Neotropical Landbird section in the FEIS on pages 3.149-3.150. Also refer to comment 116 for an example of how cumulative impacts from habitat fragmentation were addressed in the EIS.

147. A recent court ruling, *Marble Mountain Audubon v. Rice* (No. 90-15389, D.C. No. CV89-170-EJG, Sept. 13, 1990) interprets NEPA to require the Forest Service to consider biological corridors. The standard for such a review is the same "hard look" NEPA requires of other environmental effects. We are requesting the Forest Service analyze the actions' effects on biological corridors. That means that corridors in within the analysis area, and linkages with areas adjacent to the analysis area need be examined, plus the value of the entire analysis area as part of a larger corridor within or between ecosystems.

The continued fragmentation of the forest also needs to be a major analysis issue for this proposal. That is, the size of blocks of interior forest that existed historically before management actions (including fire suppression) were initiated needs to be a point of comparison with both the present condition and in terms of all action alternatives. Again, this should be a landscape ecology-type analysis which looks at the larger picture of the fragmentation of habitat in surrounding concentric circles. How will the proposed alternatives tend to further fragment the habitat for plants and other wildlife, given the already fragmented landscape from past harvesting and road building activities? Disclose how past management actions have extirpated or significantly reduce any plant or animal species from the analysis area. Disclose how combined past management actions have affected or reduced the diversity of habitat types in the analysis area, the Beaverhead National Forest and the region (16).

Response: Biological corridors and linkages within the analysis area and between mountain ranges were discussed throughout the existing condition and the direct, indirect, and cumulative effects sections for terrestrial wildlife species, especially those species that are wide ranging (i.e. gray wolf, lynx, wolverine, and elk). Historical conditions of the project area are described on pages 3.80-3.82 of the FEIS (DEIS 3.77-3.88).

148. Economically speaking, elk are probably the most important animal in the Basin Creek Watershed and surrounding areas. It is essential that elk calving areas be protected as well as habitat security. It would also be prudent to protect the areas elk use to enter and leave the area during migration. Deer and moose are probably easier to deal with as they adapt to change better than elk do (21).

Response: Sensitive elk calving areas and major elk migration routes are not an issue in the analysis area (C. Fager, pers. comm.). The Forest is not aware of any scientific research that statistically compares the ability of elk to adapt to change with the ability of deer and moose to adapt to change. Refer to elk analysis on pages 3.100-3.103 and 3.144-3.148 of the FEIS (DEIS 3.93-3.96 and 3.128-3.132). The purpose of this project is to protect urban interface areas.

Modeling

149. Much of the wildlife modeling relies upon databases, which in turn rely upon stand exams done generally by non-biologists. The amount of error in the models is uncertain. The FS (USDA Forest Service, 2000c) has admitted that these databases are of limited usefulness for habitat analyses:

“Habitat modeling based on the timber stand database has its limitations: the data are, on average, 15 years old; canopy closure estimates are inaccurate; and data do not exist for the abundance or distribution of snags or down woody material...”

Because of the unknown amounts of error in the databases and undoubtedly more error in wildlife models that depend upon them (lack of validation studies), the DEIS relies upon them far too much in effects analysis (15).

Response: A journey level wildlife biologist used the best available habitat and species information known to date to assess effects. Refer to methods section in the FEIS on pages 3.77-3.80 (DEIS 3.74-3.76).

Fisheries and Aquatic Resources

150. Impacts to water quality will be transitory if at all (2).

Response: Thank you for your comment. The temporal effects to water quality are included in the environmental effects to Hydrology/Riparian on pages 3.188-3.196 of the FEIS (DEIS 3.176-3.189).

Wetlands/Riparian Areas

151. EPA considers the protection, improvement, and restoration of wetlands and riparian areas to be a high priority. Wetlands and riparian areas increase landscape and species diversity, and are critical to the protection of designated water uses. Executive Order 11990 requires that all Federal Agencies protect wetlands. In addition national wetlands policy has established an interim goal of **No Overall Net Loss of the Nation's remaining wetlands**, and a long-term goal of increasing quantity and quality of the Nation's wetlands resource base. Wetland impacts should be avoided, and then minimized, to the maximum extent practicable, and then unavoidable impacts should be compensated for through wetland restoration, creation, or enhancement.

We are pleased that no treatments are proposed in the Research Natural Area, riparian areas and in designated Old Growth, and that the largest and oldest trees would be retained (page 2.4). It is particularly

important to retain large fire resistant Douglas fir. We are also pleased that INFISH Standards and Guidelines will apply, and that RHCA layout would be conducted or overseen by a hydrologist or fisheries biologist (page 2.6). We recommend that all wet areas within timber sale units be clearly marked with flagging on the ground to allow contractors to avoid such areas.

We also note that the Interior Columbia Basin (ICB) Strategy (which applies west of the continental divide) says that projects should:

- Achieve physical integrity of aquatic ecosystems;
- Provide an amount and distribution of woody debris sufficient to sustain physical and biological complexity;
- Provide adequate summer and winter thermal regulation;
- Provide appropriate amounts and distributions of source habitats for riparian- or wetland-dependent species; and
- Restore or maintain water quality and hydrologic processes.
- Restore or maintain naturally functioning riparian vegetation communities

Will these ICB Strategy commitments be met on the proposed project (14)?

Response: Thank you for stating your wetland concerns and your contentment with INFISH standards and guidelines. Riparian areas would be marked with flagging and posted harvest unit boundary tags on the ground to clearly indicate that no activity would occur within riparian areas and their buffers as per INFISH Standards and Guidelines (page 2.8-2.9 of the FEIS, DEIS 2.6).

A Record of Decision was never signed for the Interior Columbia Basin (ICB) Strategy EIS, thus it is not a legally binding document that became incorporated into Forest Plans. However, the strategies that you list are reflected in other laws and associated regulations that we are held to such as the CWA, ESA, NFMA and INFISH. ICB Strategy objectives are very similar to (and nearly duplicative of) INFISH Riparian Goals (Pages A-1 and A-2, Attachment A, Inland Native Fish Strategy Environmental Assessment Decision Notice and Finding of No Significant Impact). The Riparian Goals of INFISH form the basis for the Standards and Guidelines that we would follow with this project. Therefore we believe that ICB strategy management direction would be followed with this project.

Browse regime on willow and aspen needs to be addressed by FWP before any improvement in riparian vegetation can be achieved.

152. The DEIS states that the highest levels of amphibians (spotted frogs, boreal toads) are usually associated with beaver ponds (page 3.145), but that beavers have been trapped out of Basin Creek between the upper and lower reservoirs and potentially in other areas as well to minimize Giardia risks in the municipal water supply (page 3.134). As a result, large pools associated with beaver ponds that benefit aquatic fauna such as amphibians and westslope cutthroat trout are gradually being lost as unmaintained beaver dams gradually fail. While we understand the need to protect the municipal water supply from Giardia contamination, are there any possibilities of mitigation outside the municipal watershed possible to compensate for lost aquatic habitat (i.e., beaver pond habitat) (14)?

Response: The valley bottom areas of Basin Creek within the project area are owned by Butte-Silver Bow and are not National Forest lands. Therefore, activities such as beaver trapping within the Basin Creek riparian area are mentioned in the FEIS on pages 3.152-3.153 (DEIS 3.134) but are outside the purview of the Forest Service. However, there may be opportunities on National Forest lands to improve wetland habitat outside but nearby the municipal watershed. In particular, boreal toads (a “sensitive” species) have been found at two locations within the China Gulch drainage. This would be an area where wetland improvement may benefit a sensitive amphibian species.

153. The DEIS should more carefully analyze the impacts to fisheries and water quality, including considerations of sedimentation, increases in peak flow, channel stability, risk of rain-on-snow events, and increases in stream water temperatures (16).

Response: Thank you for your comment. The analysis provided in Chapter 3 of the FEIS on pages 3.165–3.185 and 3.197-3.210 (DEIS 3.147-3.65 and 3.176-3.188 discusses sedimentation risks, increases in peak flows, risks to channel stability, and risks of increasing stream temperatures. We used the WEPP model to illustrate that sedimentation risks are relatively low throughout most of the project area. Peak flow increases associated with action alternatives are likely to be similar to what would occur naturally due to forest canopy loss associated with the ongoing mountain pine beetle outbreak. Sensitive stream channel reaches most susceptible to erosion and channel changes have been identified in the FEIS. Rain-on-snow peak flow increases are not common in the project area due to the local hydrologic regime. Peak flow events in the project area are normally associated with heavy snowmelt periods in spring or localized thunderstorm events during summer. Rain-on-snow events rarely if ever occur within this region of the northern Rockies, but do occur west of here in places like the Cascades and mountainous regions of the Idaho panhandle. Rain-on-snow events are highly uncommon in the project area.

Native Fish Species

154. Forest Plan direction for protection of native fish species habitats is inadequate for insuring continued population viability in the bodies of water to be directly or indirectly affected by the proposed project. As with terrestrial wildlife, issues such as quality and quantity of habitat, specifications of viable populations, habitat connectivity, and baseline levels are not adequately considered (15).

Response: Chapter 3 of the FEIS describes existing aquatic habitat conditions, fish distributions, and habitat connectivity. Viability of sensitive aquatic species is addressed in the Biological Evaluation for the project in an Appendix of the FEIS

155. The DEIS implies that the proposed fuel reduction would reduce the intensity of future fires, and by implication is good for water quality and fisheries. A recent position paper by the Western Montana Level I Bull Trout Team does not agree with this management prioritization:

...the real risk to fisheries is not the direct effects of fire itself, but rather the existing condition of our watersheds, fish communities, and stream networks, and the impacts we impart as a result of fighting fires. Therefore, attempting to reduce fire risk as a way to reduce risks to native fish populations is really subverting the issue. If we are sincere about wanting to reduce risks to fisheries associated with

future fires, we ought to be removing barriers, reducing road densities, reducing exotic fish populations, and re-assessing how we fight fires (15).

Response: The DEIS does not imply that this fuels reduction project would necessarily benefit fisheries values in the project area. Pages 3.165-3.170 of the FEIS (DEIS 3.147-3.152) discuss a range of possible effects of a large-scale wildland fire in the vicinity of key aquatic habitats under the no action alternative. This analysis includes discussion of beneficial effects of wildland fires such as wood recruitment to streams providing a long-term foundation for high quality aquatic habitat. Pages 3.173-3.185 of the FEIS (DEIS 3.152-3.159) discuss effects of the action alternatives to aquatic species and habitats. Many of these potential effects are detrimental to aquatic fauna, such as potential sediment inputs to aquatic habitats. The FEIS does not suggest that any of the action alternatives would benefit fisheries values.

156. Livestock grazing has caused damage to riparian habitat and streams. However the DEIS's cumulative effects discussions are too vague (15).

Response: Please refer to response to comment number 46.

157. Due to the fact that Westslope cutthroat trout (WCT) populations are isolated in the headwaters, and given the science showing that such small populations are at risk to extinction, the FS must devise conservation strategies to ensure long-term viability. This is lacking in both Forest Plans and in the DEIS (15).

Response: The development and description of a conservation strategy for westslope cutthroat trout is beyond the scope of this project. However, as an offshoot of this fuels reduction project, there may be a number of opportunities to focus on westslope cutthroat trout conservation in the Basin Creek watershed. At the Forest scale, the Beaverhead-Deerlodge National Forest is currently preparing several sub-basin restoration plans for westslope cutthroat trout in the Big Hole, Red Rock, and Ruby River watersheds.

Threatened and Endangered and Management Indicator Species

158. The DEIS has no specific habitat plans or conservation strategies for any Forest management indicator or sensitive species, and therefore, there is no basis for conclusions about project impacts (10).

Response: Development of conservation strategies for sensitive and management indicator species is beyond the scope of this project. Project and cumulative impacts were thoroughly considered for terrestrial TES and MIS species in the FEIS on pages 3.105-3.150.

For westslope cutthroat trout (WCT), the BDNF is developing sub-basin plans to restore this species. Plans are currently being developed for the Big Hole, Red Rock, and Ruby River basins to the south of this project area. Information on local WCT populations is provided in the FEIS on pages 3.155 – 3.156. This information provides the context for assessing the effects of this project. The Biological Evaluation for sensitive aquatic species in an Appendix of the FEIS provides a Forest-wide assessment for sensitive aquatic species, upon which conclusions regarding effects of this project are based.

159. The DEIS needs to identify which management indicator species is being used to reflect wildlife habitat and populations in the sagebrush/conifer ecotones (10).

Response: Designating new MIS is outside the scope. Sage/grass and forest dependent TES and MIS are addressed in the FEIS. Sage/brush conifer ecotones provide goshawk foraging opportunities (refer to goshawk sections in the FEIS).

160. The Lynx Conservation Assessment and Strategy (LCAS) notes that opening should not exceed 600 feet in width to avoid creating movement barriers for this threatened species. The harvest areas proposed in the DEIS are huge; how did the Forest Service address this width limitation in the project design? The assessment also identifies sagebrush openings as important in providing travel cover and as an alternative food source. How did the Forest Service address this part of the LCAS (10)?

Response: Applicable LCAS standards and guidelines and how the proposed action and alternatives meet the standards and guidelines are fully addressed in the EIS (refer to lynx analysis in the FEIS pages 3.111-3.119 and Table 3.43, DEIS 3.103-3.109 and Table 3.43). Of note, the "Preferred Alternative," Alternative 3 is consistent with all applicable standards and guidelines outlined in the Lynx Conservation Assessment and Strategy. A Biological Assessment for effects of the preferred alternative on threatened and endangered species was sent to the USFWS on February 26, 2004, and a biological opinion/concurrence received on March 26, 2004.

161. What data is the DEIS relying upon to assert that "It is assumed that the proportion and juxtaposition of MIS habitats in the analysis area are within the historic range of natural variation" (3.88) for the most part? In other places the DEIS states that the present forest pattern is not within the historic range of natural variation (15).

Response: The proportion (total amount) and juxtaposition (placement on the landscape) of forested cover types are assumed to be within the historic range of natural variation (B. Hodge, pers. comm.). Exceptions, such as the extent and total amount of old-growth Douglas-fir (reduced from historic harvest) and the loss of habitat from roading and development were clearly stated in the FEIS on page 3.93 (DEIS 3.88). The statement was deleted in the FEIS to remove any confusion.

162. Populations of the species listed as Sensitive that occur on the BDNF are declining or at risk. The Forest Service Manual obligates Forest Supervisors to "[d]etermine distribution, status, and trend of ... sensitive species and their habitats on Forest lands," see Forest Service Manual (FSM) 2670.45(4), and to document possible impacts to sensitive species of an activity in a "biological evaluation." FSM 2672.4, 2672.41, 2672.42. The FS itself has identified the obligation to determine the impact of logging on Sensitive Species - it uses BEs, has a Sensitive Species List, and has regulations specifically focusing on the special emphasis required for TES species (e.g. see FSM 2672.1) According to the FS Manual, Section 2670.22 on Sensitive species, the FS must:

1. Develop and implement management practices to ensure that species do not become threatened or endangered because of Forest Service actions.
2. Maintain viable populations of all native and desired nonnative wildlife, fish, and plant species in habitats distributed throughout their geographic range on National Forest System lands.

3. Develop and implement management objectives for populations and/or habitat of sensitive species.

The DEIS reveals no baseline or quantitative population data for the Sensitive species or their habitats. The agency has failed to obtain or maintain any past or current hard population or inventory or monitoring data for the Sensitive species at issue in the project area or for the BDNF as a whole. Distribution, status and population trends have not been determined. FSM 2670.45. Viability cannot be assured without first establishing population objectives. FSM 2670.22(3) and 2672.1 and 32. These objectives have not been established. 36 CFR 219.12(d), 219.27(a)(5&6).

In response to USDA Regulation 9500-4 and NFMA's viability provisions, the Forest Service Manual outlines the need to design and implement conservation strategies for Sensitive and other species for which viability is a concern. The Forest Service Manual at FSM 2621.2 states:

To preclude trends toward endangerment that would result in the need for Federal listing, units must develop conservation strategies for those sensitive species whose continued existence may be negatively affected by the forest plan or a proposed project.

Since the BDNF does not meet species viability requirements, it is critical for the Forest to take steps to develop conservation strategies (15).

Response: The FEIS discloses all current information available on known boreal toad sites (Map 26) as well as westslope cutthroat trout (WCT) distribution (Map 23) and relative abundance in the planning area (page 3.162). The local WCT populations are discussed and displayed in the broader context of the Silver Bow Creek watershed (page 3.156, Map 24). Project effects to viability of these two species as well as northern leopard frog, the third sensitive aquatic species potentially present, are discussed in the aquatic Biological Evaluation for the project in an Appendix to the FEIS.

Development of conservation strategies for sensitive species is beyond the scope of this project. However, for westslope cutthroat trout the BDNF is developing sub-basin plans to restore this species focusing in the upper Missouri River basin. Plans are currently being developed for the Big Hole, Red Rock, and Ruby River basins to the south of this project area. In the context of the planning area for this project, the BDNF has been actively participating in the watershed restoration planning effort being led by the Natural Resource Damage Program for the Silver Bow Creek watershed.

The best available information about sensitive species records, known population trends, and quantity of habitat available was provided in the FEIS. Refer to comment 98 for discussion on wildlife species viability.

The FEIS discusses how project design, added mitigation measures, the large amount of the analysis area left untreated, and amount of habitat available across the planning area as a whole will continue to contribute to the conservation of sensitive species.

163. There is currently no designated MIS on the Forests to "indicate" population and habitat trends for forest songbirds that depend upon interior forest conditions. There is clearly a potential for significant cumulative impacts on forest songbirds in areas managed for timber. This management concern however was never addressed in the Forest Plans, Forest Plan EISs, nor DEIS (15).

Response: Designating a new MIS to represent forest songbirds is outside the scope of this project. However, a discussion of project effects on songbirds was added to the FEIS.

Hydrology

164. The Basin Creek public water supply is not treated via a filtration treatment system because the watershed is classified as A-Closed by Montana Water Quality Standards (ARM 17.30.21). These watersheds, however, have to be protected so waters can be maintained for drinking, culinary, and food processing purposes after simple disinfection. Public access and activities such as timber harvest (and livestock grazing) must be controlled by the water utility owner under conditions prescribed by the Montana Dept. of Environmental Quality (MDEQ). Allowable water quality changes in such watersheds are very limited. No change is allowed from naturally occurring turbidity or dissolved oxygen or temperature, and no increases are allowed above naturally occurring concentrations of sediment, suspended sediment, settleable solids, oils or floating solids which are likely to create a nuisance or render the waters harmful, detrimental, or injurious to public health, recreation, safety, welfare, livestock, wild animals, birds, fish or other wildlife.

The National Primary Drinking Water Regulations "Criteria for Avoiding Filtration" (40 CFR 141.71) require that the source water quality conditions must have a fecal coliform concentration equal to or less than 20/100 ml, or a total coliform concentration equal to or less than 100/100 ml, and a turbidity level equal to or below 5 NTUs. There are other requirements for avoiding filtration, including the need for the public water system owner (e.g., Butte Silver Bow Water Utility District) to implement a watershed control program that limits and monitors the occurrence of activities that may have an adverse effect on source water quality. We have contacted the Butte Silver Bow Water Utility District and have been advised that the raw water turbidity at their intake near the outlet of lower Basin Creek reservoir currently averages from 1 to 1.5 NTUs, rarely exceeding 2.5 NTUs.

It is important, therefore, that the Forest Service develop plans for road building and timber harvest in the municipal watershed in close cooperation with the MDEQ and Butte Silver Bow Water Utility District. Ground disturbances in the Basin Creek watershed that cause sediment to enter the water supply reservoir and increase turbidity levels at the water system intake could threaten Butte's opportunity to avoid filtration of the Basin Creek water supply. If disturbances in the Basin Creek watershed degraded the quality of the raw water supply it could require either use of another water supply (e.g. the Moulton plant; the Bighole/South Fork Divide Creek plant), or the need to construct an expensive filtration treatment system for the Basin Creek water supply for Butte.

We also note that the National Primary Drinking Water Regulations, Criteria for avoiding filtration at 40 CFR 141.71(a)(2) and (b)(1), allow some water quality criteria exceedances in the event of "unusual and unpredictable circumstances." The Montana DEQ has been delegated the primary authority for interpreting and enforcing drinking water program rules in Montana, and should be solicited for their interpretation of "unusual and unpredictable circumstances" in regard to future wildfire events in municipal watersheds (contact John Camden of MDEQ in Helena at 406-444-4071). It may be that wildfires could be considered by MDEQ to be "unusual and unpredictable events" that may not threaten Butte's filtration waiver if their occurrence was short-term. Butte has alternate water supply sources in the case of short-term problems with the Basin Creek water source. These situations should be fully explored with the MDEQ and the Butte-Silver Bow Water Utility District (14).

Response: Thank you for providing requirements for meeting state and federal laws and regulation as it pertains to A-closed and non-filtered municipal water supplies. The FEIS will reflect changes that Montana has adopted concerning non-filtered municipal water supplies, by replacing MT DEQ Circular PWS-3 with 40 CFR 141.71. Should an "unusual and unpredictable circumstance" occur, the Forest Service would do everything within its authority to work with DEQ and Butte-Silver Bow to maintain the

non-filtration waiver and restore watershed integrity. These criteria were taken into consideration when selecting Alternative 3 for implementation.

165. We also understand that water quality impacts from a severe wildfire could be much worse than effects of proposed vegetation treatments. We consider fuels reduction in the wildland urban interface and the municipal watershed to be a prudent course of action, as long as the fuels reduction treatments are planned, designed and implemented so that they do not unduly impact the watershed, water supply, fisheries, wildlife or other resources (14).

Response: Thank you for your comment. Management actions designed to reduce effects from wildfire within the municipal watershed have been designed to maximize efficacy to the extent possible, while carefully considering all resources potentially affected by implementation of treatment activities. Soil Quality Standards limiting the amount of detrimental disturbance are applied at both the unit and watershed scales. Literature cited on page 3.215 in the FEIS (DEIS 3.194) of the Soil Resources section of Chapter 3 concludes that more than 15 percent detrimental disturbance begins to severely constrain ecosystem productivity and that off-site effects become more pervasive and severe.

166. It is stated that the Water Erosion Prediction model (WEPP) predicts no erosion from skid trails, very little from thinning treatments (0.1 tons/acre) and the potential for moderate erosion from lodgepole pine regeneration units (up to 1.09 tons/acre). It is also stated that the risk of sediment reaching streams is very low as treatments are adequately buffered (page 3.179). Further it is stated that the WEPP model shows no sediment delivery to streams for all road segments with two exceptions within Herman Gulch and China Gulch (i.e., 900 foot long section of the temporary road along a 56 percent slope 50 feet from Herman Gulch that poses a high risk of sediment to the stream, and a 1000 foot long section of temporary road in lower China Gulch 100 feet from the stream that poses a moderate to high risk of sediment to the stream, page 3.156).

While the WEPP model shows that erosion and sediment production from treatments and road building would be low, there may be concern regarding any sediment delivery in the Basin Creek municipal watershed, since the A-Closed classification for waters in this watershed require no change from naturally occurring turbidity and no increases above naturally occurring concentrations of sediment (14).

Response: The potential for sediment production from implementing treatments is relatively highest outside the municipal watershed, namely Herman Gulch and China Gulch as stated in your comment. In addition, because of the coarse textured soils found within the Upper Basin watershed and the presence of two reservoirs which act as settling basins, turbidity exceedances from sediment appear to be a low risk. This was shown in the lab by comparing settling rates of suspended sediment using soil from the watershed with the time of travel that water takes through the reservoir system. Additionally, the WEPP model was configured to determine a worst-case scenario from the project. The probability of those results actually occurring is relatively low. In addition, one of the associated projects (see Past, Current, and Reasonably Foreseeable Actions, Chapter 2) is the restoration of these bad existing road segments. These reasons plus the buffers placed around the valley bottoms makes the likelihood of sediment reaching streams from these sites no more, or even less, likely than the likelihood of sediment occurring because of a wildfire.

167. The DEIS states (page 2.15) that treatment units were moved away from Basin Creek Reservoir to ridge tops where they would be more likely to influence fire behavior, and reduce potential for sediment delivery into the reservoir. It is also stated that there is a no treatment buffer on Basin Creek (page 3.154), and that INFISH

Standards and Guidelines will apply, and that RHCA layout would be conducted or overseen by a hydrologist or fisheries biologist (page 2.6).

Moving treatment units away from Basin Creek and having INFISH riparian buffers will certainly help reduce potential sediment production impacts. We would also encourage avoiding timber harvest and road building on steep slopes (>35%) and sensitive soils, minimizing road construction, carefully reviewing sediment and erosion control practices on lodgepole regeneration units, and using logging and yarding methods that minimize soil disturbance (e.g., forwarder systems, skyline cable, logging during winter on snow or frozen ground, helicopter logging) to minimize risk of sediment production and delivery to streams in the municipal watershed (14).

Response: Thank you for your comments. The practices you suggest will be implemented to ensure minimum soil loss and sedimentation.

168. It is stated that the annual water yield increase for the Upper and Lower Basin drainages are 13 percent and 12.5 percent, respectively for Alternative 4, the most impactful of all action alternatives (page 3.158). While it is stated that this is not much greater than the projected water yield increase for the no action alternative (12.5 percent), the water yield increase for the no action alternative included projections of future tree mortality due to pine beetle infestations. The Forest Service should analyze the water yield increase that would be experienced in the no action alternative if the pine beetle outbreak was arrested (e.g., by severe winter conditions). Also, to what extent will the water yield increase from the logging and pine beetle mortality along with normal erosion and sediment production from roads and skid trails contribute to increased sediment loads to the Basin Creek water supply reservoir and potential for increases above naturally occurring concentrations of sediment or increases in turbidity (14)?

Response: Typically, mountain pine beetle outbreaks in this region run their course without cessation due to extreme winter weather events exhausting their food supply. The chance of encountering a weather event sufficient enough (7-10 days of minus 30F) to arrest the present outbreak in Basin is small, thus the reason for only analyzing the most probable outcome. According to the report "Forest Insect and Disease Conditions in the United States, 2002" by the USFS, the seral status of lodgepole pine stands and weather conditions are both conducive to beetle survival. The prediction is for the cycle to continue in its present upward trend. Trying to predict alternate beetle survival scenarios and then relate it to changes in water yield and sediment delivery would be gross speculation at best. On page 3.201 of the FEIS (DEIS 3.180), it's stated that only nominal additional water yield is expected under the most aggressive treatment alternative (4) on Herman and China Gulches, both outside the municipal watershed. Increases in sediment delivery due to increases in water yield (channel scour) is widely recognized but difficult to predict and highly variable. Stream reaches at risk are listed on page 3.210 (DEIS 3.180). Sediment delivery after a severe fire event poses the biggest threat by far in terms of sediment delivery. Regardless of cause for sediment delivery, turbidity exceedances due to mineral soil are unlikely due to coarse soil textures and sufficient settling time experienced as water travels through the reservoirs. Turbidity exceedances are much more likely by increases in nutrients delivered to the reservoir system, causing uncontrollable algae blooms. Algae blooms can also cause increases in organic compounds such trihalomethanes when they interact with chlorine.

Based on previous reviews (e.g., West Fork Madison), with these soils and in this climate, we believe that approximately 50 percent of the watershed would have to be treated at about the same time with considerable soil disturbance. It is vegetation and litter near or in contact with the soil surface that resists precipitation/runoff energy and protects against soil erosion, not the canopy. Limiting treatment

area to a relatively small proportion of the watershed; limiting soil disturbance to no more than 15 percent; and providing buffers with relatively large factors-of-safety should prevent possible sediment/turbidity increases to a level well below what could occur under a wildfire/intense storm scenario. In addition, the soils in the project area generally have rapid infiltration and high sorptivity, owing to their large macropore volume to surface area ratio, which should leave water yield projections on the high end of what will likely occur.

169. The DEIS notes the trans-basin diversion of water from the Fish Creek watershed to the Basin Creek watershed augments Butte's domestic water supply (page 3.134). At times it is stated that approximately 30 to 60 percent of Basin Creek's stream flow into the lower reservoir can be attributed to the diversion. Many nonpoint source pollution problems in Montana have been related to stream channel and bank erosion caused by trans-basin diversions when water from one watershed is diverted to a stream in another watershed, and streams in the receiving watershed can not carry increased water flows without channel and bank erosion occurring with subsequent sediment transport downstream. For example, Muddy Creek has severe channel and bank erosion resulting from a trans-basin diversion that cause sediment pollution in Muddy Creek and the Sun River and Missouri River downstream in the Great Falls area.

The discussion of non-functioning Basin Creek stream reaches in the DEIS (pages 3.168, 3.169) evidences that the trans-basin diversion of water from the Fish Creek watershed is causing channel and bank erosion in Basin Creek. The DEIS states that the Fish Creek diversion has caused channel incision and loss of flood plain access, and vertical and lateral channel instability. We understand that there is approximately 1 mile of stream channel above the upper reservoir and ½ to ¾ mile of channel between the upper and lower reservoir that experiences these augmented flows. Basin Creek channel/bank erosion in these stream reaches may be increasing sediment loads downstream to the water supply reservoir system. The Forest Service should analyze how much sediment caused by Basin Creek channel erosion is delivered to the water supply reservoirs. There is a small settling basin at the inlet to the lower reservoir that is cleaned out every several years. Is this need for this settling basin clean out related to sediment loads caused by Basin Creek channel/bank erosion?

If Basin Creek channel and bank erosion caused by the Fish Creek diversion is significant, it makes one wonder if piping the Fish Creek diversion water to the Basin Creek reservoir would not offer a potential opportunity to reduce sediment load to the reservoir system that could mitigate sediment production associated with hazardous fuels treatments and road building. It is also likely that the non-functioning reaches in Basin Creek caused by the Fish Creek diversion would have greater opportunity to heal and stabilize over time if the excess water diversions into Basin Creek were piped to the reservoir system rather than dumped into a channel that can not carry the additional flows in a stable condition (14).

Response: Thank you for your comments regarding increased sediment delivery to the reservoir system. While turbidity has been recognized as an issue with regards to the Basin Creek reservoir municipal water system, turbidity resulting from in-channel erosion has not been targeted as a source that needs to get remedied (Marty Hovan, personal communications). The reasons for this are stated in the responses to comments 166 and 168. Therefore the USFS cannot justify doing an in-depth sediment analysis derived from in-channel erosion processes: The cause is non-USFS management related: the stream affected is on private land, and the amount and nature of sediment presently supplied by the stream system to the reservoirs is not an issue. Because the upper reservoir traps nearly all of the sediment contributed by the watershed at that point, the settling basin immediately above the lower reservoir likely traps sediment contributed only by the watershed below the upper

reservoir. Most of this sediment is likely generated by in-channel erosion on Basin Creek between the reservoirs. Again, these sources have not been identified as threatening to the filtration avoidance. While extending the piping of water from the Fish Creek pipeline to the lower reservoir may ensure preservation of high quality water and eventually improve stream function in the non-functioning reaches, it may be hard to justify the costs of an improvement. Monitoring results have not shown a problem with turbidity according to data supplied by the BSBWUD to the USFS. Because the stream is located on private lands owned by BSB, the USFS cannot expend funds or enter a coop agreement (via the Wyden Amendment) to improve stream conditions without public benefit.

170. It is stated that livestock grazing occurs on National Forest lands upstream and downstream of lower Basin Creek Reservoir (i.e., Blacktail Allotment 92 cow/calf pairs from June 16 to September 30) and a portion of the Moose Camp Allotment in the headwaters of Basin Creek upstream of the reservoirs (page 3.160, 3.171). The DEIS identifies Butte Silver Bow Water Utility District concerns about grazing in the municipal watershed, particularly regarding *Cryptosporidium* (page 3.171). Is this grazing practice consistent with the A-Closed Water Quality Standards classification for Basin Creek, and the 40 CFR 141.71 limitations on fecal coliform and total coliform in the Basin Creek source water for the City of Butte (14)?

Response: The City of Butte's Basin Creek public water supply is not treated by a filtration treatment system. Filtration treatment is not required since the Basin Creek municipal watershed is classified A-Closed by Montana Water Quality Standards (ARM 17.30.621) on page 3.187 of the FEIS. A-Closed watersheds have to be protected so waters can be maintained for drinking, culinary, and food processing purposes after simple disinfection. Public access and activities such as livestock grazing and timber harvest must be controlled by the water utility owner under conditions prescribed by the Montana DEQ. Allowable water quality changes are very limited. No change is allowed from naturally occurring turbidity or dissolved oxygen or temperature, and no increases are allowed above naturally occurring concentrations of sediment, suspended sediment, settleable solids, oils or floating solids which are likely to create a nuisance or render the waters harmful, detrimental, or injurious to public health, recreation, safety, welfare, livestock, wild animals, birds, fish or other wildlife.

The National Primary Drinking Water Regulations criteria for avoiding filtration (40 CFR 141.71) require that the source water quality conditions must have a fecal coliform concentration equal to or less than 20/100 ml, or a total coliform concentration equal to or less than 100/100 ml, and a turbidity level equal to or below 5 NTU. There are other requirements for avoiding filtration including the need for the public water system owner (e.g., Butte Silver Bow Water Utility District) to implement a watershed control program that limits and monitors the occurrence of activities that may have an adverse effect on source water quality.

171. It is stated that there are no water bodies within the analysis area that are listed as impaired or water quality limited on the Montana 303(d) list (page 3.175). That is essentially correct; however Silver Bow Creek downstream of the project and tributary to project area streams is on the Montana 303(d) list. It does not appear that this proposed project would cause measurable adverse impacts to Silver Bow Creek. However, the Forest Service should contact the MDEQ Total Maximum Daily Load (TMDL) program staff to assure that the MDEQ considers the Forest Service's proposed actions for this project to be consistent with the State's TMDL development to restore water quality for Silver Bow Creek (contact Carole Mackin of MDEQ in Helena at 444-7425 or Darren Kron at 444-4765) (14).

Response: Thank you for your comment. Two copies of the DEIS were sent to MDEQ. No comments were received from MDEQ.

172. The Forest Service should disclose the requirements of the state water quality standards and requirements under the Code of Federal Regulations and ensure project consistency with them (15).

Response: Please see sections titled Designated Beneficial Uses on page 3.187, Regulatory Framework on page 3.194, and Consistency with Laws, Regulations and Policy on page 3.210 of the FEIS.

173. The DEIS does not disclose the amount of error in its water quality analysis methodology, especially the erosion model (15).

Response: The online documentation for the WEPP model includes this description of the model in the Introduction section: "The accuracy of the predicted values from X-DRAIN and WEPP:Road are, at best, within plus or minus fifty percent. True erosion rates are highly variable due to large variations in local topography, climate, soil properties, and vegetative properties, so predicted values are only a single estimate of a highly variable process". We suggest you visit the WEPP web site and review their disclosures. The other source of error comes from the judgment used to set up the conditions for the model such as soil type, slope length, climate, etc. Between the model, my professional judgment, and nature, I estimate the error could be in the range of 20 to 50 percent. This is why we try to model on the high end of things, i.e., worst-case.

174. A study in mixed conifer forests of the southwestern U.S. revealed that logging (including partially cut areas) and other vegetative manipulations influence soil moisture and impact the magnitude of peak flows, including significant water yield increases (Gottfried, 1991). This study also found that the increased streamflow volumes and peak flows from harvesting accelerate natural channel erosion processes. A study in northwestern Oregon found that in small basins with partial logging (25% of basins) and with roads, large flood peaks have increased as a result of logging (Jones et al., 2000) (15).

Response: Analysis for changes in water yield were based on local research (Farnes, et. al.) at the Tenderfoot Experimental Watershed in central Montana, and the Yellowstone River basin in south central Montana and northern Wyoming. Changes in water yield including magnitude and timing of peak flows can vary widely due to regional differences in precipitation patterns, evapotranspiration rates and vegetative communities. The majority of water yield increase is the result of soil compaction limiting the storage of the soil reservoir and increasing runoff because of reduced infiltration (Horton runoff). As for the Oregon case, our climate is considerably different in terms of type, amount, and timing of precipitation.

175. Riparian studies should be undertaken and disclosed for all streams and wetlands on the allotments. Please disclose for each stream: encroachment of forest habitat into the riparian zones, overall percentage of stream bank damage/shear, degree of water table lowering due to livestock grazing, and estimate of stream widening and water level lowering. Disclose the condition of all watersheds and other riparian areas in the analysis area, especially in regards to past management activities including livestock grazing. Please disclose the locations of seeps, springs, bogs and other sensitive wet areas, and the effects on these areas of livestock grazing. How have livestock grazing impacted riparian areas in the analysis area (16)?

Response: Effects of livestock to streams, riparian zones and wetlands are discussed in both the Fisheries and Aquatic Resources in the FEIS on pages 3.178-3.83 and the Hydrology/Riparian sections on pages 3.191-3.193. The detail of information requested has not been collected. From our observations elsewhere and limited data here, it appears that preferred riparian forage areas (livestock) have been compacted. The kinds of sites with compaction are those that produce cinquefoil/tufted hairgrass and similar mesic habitat types. Those sites that are saturated through much of the growing season such that produce beaked sedge generally aren't damaged by compaction but are 'hummocked' or puddled, which destroys soil structure and prevents, reduces, or alters preferential flow between the channel and valley bottom soil. Generally, livestock use on allotments within the analysis area has been light and/or limited in the past few years. No changes in livestock management are proposed in this document, making this issue outside the scope of the EIS.

176. It is necessary to emphasize that maintaining water quality to assure public health and keeping a filtration waiver (for Basin Creek water sources) is very important to the Butte-Silver Bow community. Without sustained protection of the watershed, the county would be faced with extremely costly construction (~\$15 million) and operation (~\$300,000/year) of a third water treatment plant. The economic impact would be devastating; our ratepayers already pay the highest rates for drinking water in Montana resulting from our \$30 million investment in the 1990s to build and operate two other filter plants to treat the other 60 percent of our drinking water supply. The Forest Service shares the responsibility, liability, and accountability for the costs to build and operate a new filtration plant (18).

- **Response:** Part of the purpose and need for the project is reduce the risks to water quality in the event of wildland fire in the Basin Creek Municipal Watershed. As documented throughout the process, the Forest Service has worked with Butte-Silver Bow, Montana DEQ and EPA to address water quality concerns.

Soils

177. The DEIS stated that it is assumed that Regional soil quality standards to allow no more than 15 percent disturbance reduction in soil quality by compaction, displacement, erosion, puddling, etc, will be met in all treatment units within each sub-watershed (page 3.196). It would be more appropriate if it was stated that it will be required that soil quality standards will be met in all treatment units within each sub-watershed (14).

Response: We agree. It is required. Fifteen percent is the maximum but is not the target.

178. The DEIS fails to disclose the ongoing impacts of sediment and other problems caused by roads that will receive no treatments (15).

Response: Please see discussion titled "Roads and Trails" on page 3.193 of the FEIS (DEIS 3.172), "Road Construction/Maintenance on page 3.198 of the FEIS (DEIS 3.177), and Cumulative Effects of implementing alternatives on individual watersheds on pages 3.204-3.209 (DEIS 3.183-3.188), as well as the WEPP erosion modeling covered in Soil Resources Effects Analysis. All roads, trails, and other existing disturbance were considered the Cumulative Effects, in addition to the estimated project alternative effects.

179. The DEIS contains lengthy discussions of soil types and penetrometer surveys in the area, enough to keep the average person from following it at all, yet fails to deal with the very basic questions that everyone can understand—what are the cumulative effects of management activities on the productivity of the land? What results of research studies can you cite that have examined changes in soil productivity in the soil types that exist in the project area following similar management activities, including the cumulative effects of grazing, motorized travel, logging, and other human activities (15)?

Response: Based on the research (cited in the document, Soil Resources, Chapters 3 and 4) as well as our data from the area, we believe the existing condition is a little below both the potential of similar undisturbed areas, and the typical condition of similar sites in southwestern Montana. This condition is likely the result of long-term relatively heavy use by a large human population. The closing of the municipal watershed has probably allowed some recovery, but there are still measurable, observable remnant effects. Realize that the Basin Creek project area is relatively naturally sterile compared to many other soil and site types within the region even without disturbance.

The project effects at the unit scale should all be within standards, which mean that we do not expect significant effects on soil quality, productivity, or function compared to the existing condition (no-action). The cumulative effects at the watershed scale (existing condition, plus project effects, plus foreseeable future effects) are expected to be within standards, which means that the total watershed disturbance should not cause effects that would be severe as the expected 'no-action' effects (see No-Action alternative, Soil Resources, Chapter 4).

180. The DEIS assumes that maintaining soil productivity is achieved simply by limiting detrimental disturbance to no more than 15 percent. Unfortunately, the scientific adequacy of the FS's methodology for maintaining soil productivity on has never been demonstrated. The FS's determination that it may permanently damage the soil on 15 percent of an area and still meet NMFA and planning regulations is arbitrary. The DEIS does not cite adequate scientific basis for adopting 15 percent as the numerical limit. The Northern Region recognizes that Soil Standards must be validated. FSM 2500-99-1 requires that Forest Supervisors must:

- Assess ... whether (soil quality standards) are effective in maintaining or improving soil quality;
- Evaluate the effectiveness of soil quality standards and recommend adjustments to the Regional Forester; and
- Consult with soil scientists to evaluate the need to adjust management practices or apply rehabilitation measures.

This all implies that monitoring must be undertaken. Furthermore, FSM 2500-99-1 recognizes that soil productivity is defined not merely in terms of the absence of meeting the 15 percent standard. "Soil Function" is defined thus:

Primary soil functions are: (1) the sustenance of biological activity, diversity, and productivity, (2) soil hydrologic function, (3) filtering, buffering, immobilizing, and detoxifying organic and inorganic materials, and (4) storing and cycling nutrients and other materials.

And "Soil Quality" is defined as "The capacity of a specific soil to function within its surroundings, support plant and animal productivity, maintain or enhance water and air quality, and support human health and habitation." Neither soil function nor soil quality, as FSM 2500-99-1 defines it, have ever been monitored on the Beaverhead-Deerlodge NF following management activities. The Forest Management Handbook at FSH 2509.18 directs the FS to do validation monitoring to "Determine if coefficients, S&Gs, and requirements meet

regulations, goals and policy" (2.1 – Exhibit 01). It asks: "Are the threshold levels for soil compaction adequate for maintaining soil productivity? Is allowing 15 percent of an area to be impaired appropriate to meet planning goals? (15).

Response: We agree with the premise of your comment. We are instituting the monitoring and administrative studies needed to answer your question on a statistically confident basis. In the meantime, we rely on research literature, experience and extrapolation from elsewhere, and professional judgment.

181. Despite the fact that "Large woody debris is in short supply compared to what is known to be required to maintain soil productivity, soil quality, and the carbon cycle, and has probably been in this condition for many years" and the fact that "Surface litter/duff layers are less extensive and generally thinner than what is normally encountered in other, similar landscapes, soil units, and habitat types on the Forest" (3.195), the FS now proposes to further reduce potential large woody debris and LWD recruitment over the next several decades, and damage surface litter/duff layers (15).

Response: Actually, we expect to increase coarse woody debris to up to 15 tons per acre from residual slash. Litter layers and soil should be disturbed no more than 15 percent.

182. Conditions of the forest floor are treated superficially and without on-ground data from the project area. On-ground evaluation surveys for the project area are necessary to define the first line of watershed development and maintenance, that being the organic layers on the forest floor. It is here, in the litter, duff and humus, that moisture and considerable energy is gently captured, filtered and gradually released to underlying soil strata. If these indicators are depleted, further biomass removal activities will exacerbate the situation and can lead to long-term impairment of the forest resource. Without it, rainfall soon compacts and often concretes the surface leading to the first stages of runoff and erosion. The DEIS does not provide sufficient description of the present condition of the litter, duff and humus for the proposed units and the previously logged units in the cumulative effects area. Without on the ground surveys, indirect, direct and cumulative effects to the soils cannot be ascertained.

This same set of layers is the principal abode of mycorrhizal fungi, which are essential, both for successful establishment of tree seedlings and later tree growth. When the duff and humus layers have been reduced or eliminated, by past extensive and repeated logging, and post-logging slash burns, studies have shown very poor survival among planted seedlings. The Project area has been extensively logged. In much of the previously logged area ground-based log removal methods were used that not only destroyed the organic layers but also permanently changed the mineral soil structure beneath. Regeneration logging methods such as clearcutting also have an adverse effect on mycorrhizal production. The amount of duff and humus loss relative to mycorrhizal content also has not been measured on ground and the cumulative effects are thus not disclosed.

It is also this set of organic layers that supports a host of microorganisms including those acting as antagonists to pathogenic fungi such as root-rotting fungi. There was little in the DEIS disclosing the diseases that are present and their current levels of activity. A lack of attention to these likely problems is unsuitable in such planning and cannot be omitted if true EM is being practiced.

This same set of organic layers also contains mites, ants, nematodes and other roundworms, small rodents and too many other small organisms to enumerate here. These constitute a serious part of the lower food chains that sustain animals higher in the food chain, including animals and birds, many of which actively keep insect

pests under natural control. Without these layers the lives and activities of all animal life in the forest are restricted or eliminated. Diverse animal activity is rare for years in heavily cutover areas for these reasons. This system is unexplored in the DEIS.

The organic floor of forest also hold the majority of soil-building invertebrates and microorganisms which act slowly to develop structure in the inorganic layers below and return nutrients to those layers.

There is no inventory or monitoring of indicators, including lichens, fungi, insects, etc. although these can and do define existing and probable future forest conditions. Lichens in particular, while capturing atmospheric nitrogen for later release to higher plants and trees, are sensitive indicators of atmospheric and ground conditions and cannot be ignored in attempts at EM. Fungi and insects indicate and largely drive forest condition. Those that act as antagonists or parasites to destructive forms like root disease fungi or bark beetles should be recognized, as should tree pathogens and pests. When all of these are missing from Environmental Impact Statements such as this one, and there are no planned inventories or monitoring, the plans are superficial and seriously subject to failures when implemented (15).

Response: The Basin Creek project area, and in particular, the proposed treatment units, were traversed and transected as extensively as any timber project done on the Forest in the past 25 years for the purpose of determining relevant information on the soil resource existing condition. A forest soil scientist spent approximately a week with the assistance of two college students with earth science backgrounds transecting the area with a proving-ring penetrometer. The students spent an additional 2.5 weeks completing the transecting of the area. In addition to soil cone resistance, soil moisture and woody debris measurements were taken. Litter depth was not often recorded but litter depth must be acknowledged each time the penetrometer is driven, an average of about 60 plots per unit. The litter and woody debris observations are evidence to the soil scientist that past management has been somewhat inappropriate from a soil-watershed perspective. These data and conclusions are noted in the Existing Condition, Chapter 3, Soil Resources, and reconsidered in the Direct Effects and Cumulative Effects calls for Soil Resources.

We agree with the rest of your comment about the importance of mycorrhizae, arthropods, nematodes, and other forest floor/soil organisms. After all, about 80 percent of terrestrial biodiversity is belowground and belowground processes underpin forest productivity. We have observed that litter and other epigeic to anegeic spiders could make excellent indicator species for old-growth conditions and of the recovery of below-ground processes following logging. We have in the past considered basing soil existing condition and effects on a soil food-web model, as has been advocated by Elaine Ingham of Oregon State University and others. In fact, in the Flume Creek Timber Sale several years ago, such an approach was used for soil resources. However, it was feared that the newness and uncertainty inherent in this new approach would make some of our critics incredulous, and the attempt was substituted with a more traditional model, such as the one taken here in the Basin Creek project area. It is this newness and inherent uncertainty that has thus far prevented us from allocating resources to performing the assessment and analysis that you suggest. Niwa, Peck, and Torgersen (2001) summarized the situation well: "Possible effects of timber harvesting on arthropods include mechanical effects on soil and litter, microclimate changes, and the addition of organic matter to the forest floor. Soil compaction reduces pore size, which may result in the loss of habitat and decreased nutrient retention, and changes the microbial and nematode communities, which can affect nutrient cycling and food resources for microarthropods. **Thresholds required for healthy ecosystem function, and predictive and decision-support tools that include these components in relation to**

disturbances are not available” (emphasis added). (C.G. Niwa, R.W. Peck, and T.R. Torgersen. 2001. Soil, litter, and coarse woody debris habitats for arthropods in eastern Oregon and Washington. Northwest Science, Vol. 75, Special Issue). Until thresholds for these components are at least as well understood as those in the current Soil Quality Standards which, as you have suggested earlier need more work, it is unlikely that standards based on them will be developed or used.

183. The DEIS's discussion of the no-action alternative's effects on soils is again little more than the playing of the "fire scare" card (15).

Response: The discussion attempts to display and compare the worst-case scenario of what could happen if nothing is done, with the worst-case scenario of what could happen if management action is taken, as well as the scenarios that can more probably be expected.

184. The DEIS states, "At the treatment unit or "activity area" scale, no unit will have detrimental soil effects greater than 15 percent, the maximum allowable by the Forest Service Soil Quality Standards (SQS)." The DEIS fails to support this statement with results of numerical data collection within project activity areas, and fails to cite the results of monitoring that validates the assumptions and mitigation measures proposed (15).

Response: As described in the FEIS, we believe that the numerical data collected supports this statement. The proving-ring data generally shows a typical soil profile cone resistance (undisturbed), and we believe we have explained in the FEIS why there are some points recorded that are higher. Also, see the response to comment 180.

185. The DEIS is also vague regarding the consideration of the impacts of the existing road and trail system in the analysis area, in terms of meeting soil productivity or soil quality standards. Much detrimental disturbance is in the form of roads and trails. This is true also of the log landings proposed (15).

Response: Existing non-system roads and trails are counted toward the limits in Soil Quality Standards (SQS). Both existing system and non-system roads and trails are counted toward the SQS in the cumulative effects by sub-watersheds. Please see Soil Resources, Effects to Soils (3.217-3.229 of the FEIS, DEIS 3.198). Also see response to comment 186.

186. Disclose the amount of soil compaction and surface erosion from past actions and what the increases for each of the proposed alternatives would be (16).

Response: Please see the FEIS. The unit numbering is the same for Alternatives 2 and 3; the unit numbering is the same for Alternatives 3 and 4 (i.e., unit boundaries differ from 1 and 2). Use caution if comparisons are made between alternatives because the units are not necessarily the same.

Roadless

187. The DEIS does not define early enough in the document where the roadless area is. Maybe it could have been highlighted near the start of the document (2).

Response: Thank you for your comment. No treatment will occur in inventoried roadless lands.

188. The long-term health of the forest requires elimination of any and all roadless area designations and fire roads and trails should be constructed to facilitate fire suppression and fuels reduction (4, 8).

Response: The Forest Service Roadless Area Conservation FEIS on pages 1-1, 1-3, 1-4, 3-3, 3-5, and 3-7 describes nine resources or features that are often present in and characterize inventoried roadless areas. These characteristics include high quality or undisturbed soil, water, and air; source of public drinking water; diversity of plant and animal communities; and habitat for threatened, endangered, proposed candidate, and sensitive species. Inventoried roadless areas also provide healthy forests and recreation opportunities. (Roadless Area Conservation FEIS, pg. 1-4).

189. The so-called roadless area was previously logged using mechanized equipment, and this activity required the use of roads. The DEIS only mentioned one wagon road but went on to say, "The remnants of historic timber harvest and old roads are also likely" (4, 8).

Response: The inventoried roadless section in the FEIS on pages 3.233-3.234 (DEIS pgs. 3.210 – 3.211) describes past activities in the roadless area, including past timber harvest. It acknowledges the presence of old logging skid trails and unimproved, abandoned roads in 5 sections of the roadless area.

190. Fuels reduction, beetle control and salvage opportunities in the roadless areas should also be implemented under this project. If all these areas are not treated now, they will remain a problem into the future (11).

Response: Alternative 4 addresses treating fuels in the inventoried roadless area. The purpose and need of the project is stated on page 1.3 of the FEIS and does not include beetle control or salvage of beetle killed trees. This project is a hazardous fuels reduction project. The "Rationale for Decision" is stated in the Record of Decision on pages 4-5 and explains the reasons for selecting the preferred alternative.

191. We note that Alternative 4 proposing timber harvest with helicopters and mechanical equipment in the Basin Creek inventoried roadless area may impact roadless characteristics. Areas with fewer or no roads often have improved aquatic health, and provide population strongholds and key refugia for listed or proposed species and narrow endemic populations that need to be protected. For example, bull trout are exceptionally sensitive to the direct, indirect, and cumulative effects of roads. The USFWS in its 1998 Bull Trout Interim Conservation Guidance identified the importance of road densities for bull trout conservation, showing general exclusion of bull trout in watersheds with high road densities (e.g., over 1.7 mi/mi² of roads), and showing bull trout strongholds to have low road densities (e.g., an average 0.45 mi/mi² of roads). EPA encourages protection of resource values and characteristics in the roadless area (14).

Response: Thank you for your comment. The Forest Service Roadless Area Conservation FEIS discusses the values of inventoried roadless areas including providing public drinking water; supporting greater ecosystem health; and providing habitat for threatened, endangered, proposed, candidate, and sensitive species. The effects of implementing Alternative 4 on the roadless characteristics and

wilderness attributes of the Basin Creek Roadless Area are discussed in the Basin Creek FEIS on pages 3.238-3.246 (DEIS, pages 3.215-3.223).

192. The DEIS does not disclose the project's impacts on the unique social, ecological, and other values represented by roadless areas, nor does it adequately disclose the impacts on potential Wilderness designation. Neither does the DEIS adequately analyze the linked issues of un-inventoried roadless areas and validity of the boundaries of the Inventoried Roadless Areas. Nothing is discussed as far as the possibility that other areas outside of IRAs may be eligible for IRA or Wilderness status. Furthermore, proposing logging and road building activities in roadless areas of any status would irretrievably alter their wilderness characteristics, and the American public, in the context of commenting on the Roadless Rule proposal, has clearly spoken against such activities. There is much restoration work of a higher priority that could be accomplished outside of un-roaded areas. The DEIS pretends there is some biological difference between un-roaded lands that were included in the roadless inventories, when in fact there is none. There is an extensive body of documentation available to show the controversial nature of logging in un-roaded areas, and the scientific support for not engaging in commercial extraction activities in them (15).

Response: The Forest Service Roadless Area Conservation FEIS lists nine characteristics or features that are often present in many inventoried roadless areas. The project's effects to the Basin Creek IRA's nine characteristics and the four wilderness attributes described in the Wilderness Act are discussed in the FEIS on pages 3.238-3.246 (DEIS pages 3.315-3.223). The impacts on potential wilderness designation are discussed in the FEIS on page 3.245-3.246 (DEIS page 223). The manageability of the Basin Creek Roadless Area to meet the size criteria for wilderness consideration and maintain the wilderness attributes is discussed in the DEIS on page 3.212 and in the FEIS on page 3.237. The FEIS on pages 3.299-3.304 discusses the unroaded areas in the project area with respect to the nine roadless characteristics and the four wilderness attributes. The eligibility of areas outside of IRA for wilderness or IRA status is discussed in the FEIS on page 3.305-3.308.

193. Because of the increasing scarcity of roadless land in the Northern Rockies, and the ever-increasing awareness of the importance that these areas have for the conservation of biological diversity, any impacts that would degrade the wilderness characteristics of a roadless area are unacceptable, unwise, and scientifically indefensible. Roadless area boundaries are a major issue, never receiving a NEPA process for their validation—only arbitrary Forest Service designation. As part of this analysis, the roadless boundaries should be validated. This is addressed clearly by the California v. Block decision and others (16).

Response: In 1972, the Forest Service initiated a review of NFS roadless areas larger than 5,000 acres to determine their suitability for inclusion in the National Wilderness Preservation System. The second and final review process, known as Roadless Area Review and Evaluation II (RARE II), resulted in a nationwide inventory of roadless areas. RARE II was an inventory process, not a decision process. Also, see response to comment #192. Roadless area boundaries were validated as part of this project.

194. Under recent Ninth circuit ruling, The Sierra Club v. Austin, roadless areas are areas without roads. Further, roadless areas can include areas "where logging is not evident" [National Audubon Society v. U.S. Forest Service, 21 E.L.R. 20828, 20829, n.1 (D. Ore. 1990)] (16).

Response: Thank you for your comment. We took this ruling into consideration through analysis presented in the FEIS on pages 3.238-3.246.

195. Butte-Silver Bow believes the resistance that comes with proposing to enter roadless areas is clearly a "Catch-22" situation and may well be a fight worth fighting at this time. On the one hand, going into a roadless area requires the approval of the Forest Chief in Washington D.C., if not the President, and that the Forest Service is precluded by law from cutting trees in the roadless area, even under the new Healthy Forest legislation. On the other hand, it is precisely the dead and dying trees in the roadless area that will one day, if not already, present the most serious threat of fire in the watershed—a fire danger which portends unacceptable adverse impacts on the watershed and the quality of Butte's drinking water (18).

Response: On July 14, 2003, the U.S. District Court for the District of Wyoming issued a permanent injunction and set aside the Roadless Rule as described in 36 CFR 294.10 to 294.14. In the absence of the Roadless Rule and / or an Interim Directive, the Forest Supervisor will be the Responsible Official signing the Basin Creek decision.

The new categorical exclusions for hazardous fuels reduction activities do not apply where there are extraordinary circumstances, such as adverse effects on inventoried roadless areas. A categorical exclusion was not used for the Basin Creek project. Instead, an Environmental Impact Statement (EIS) was prepared.

The Healthy Forests Restoration Act (HFRA), Section 102 (a) (d) Exclusion of Certain Federal Land states, "The Secretary may not conduct an authorized hazardous fuel reduction project that would occur on (1) a component of the National Wilderness Preservation System; (2) Federal land on which the removal of vegetation is prohibited or restricted by Act of Congress or Presidential proclamation (including the applicable implementation plan); or (3) a Wilderness Study Area." The Basin Creek project was prepared outside of the HFRA.

Watershed effects, in terms of changes in sediment and water yield, are described on pages 3.204-3.210 of the FEIS, in the hydrology section's effects to Upper Basin watershed. Effects, in terms of nutrient export, is discussed in the soils portion of this chapter, on pages 3.217-3.229 of the FEIS. Alternative 4 addresses treating fuels in the inventoried roadless area. The "Rationale for Decision" is stated in the Record of Decision on pages 4-6 and explains the reasons for selecting the preferred alternative.

196. The Roadless Area designation should not be revoked in the study area and I interpret the Final Rule quoted on page 3.209 of this DEIS to mean that hazardous fuels reduction would be possible without changing this designation (20).

Response: There is no alternative in the Basin Creek Hazardous Fuels Reduction FEIS that proposes revoking the roadless area designation of the Basin Creek Roadless Area. The Final Rule allowed for timber cutting, sale, or removal in inventoried roadless areas under certain conditions listed in the Rule. The FEIS, on page 3.238 (DEIS, page 3.215), displays why Alternative 4 would not meet the exceptions outlined in the Rule if it were in effect.

197. Roadless areas, by law, should be just that—roadless. Humans have encroached on just about all the land in the United States. Very little roadless or wilderness lands remain. Helicopter logging should be used in roadless areas where applicable. ATV trail must be limited where allowed, to ensure some wildlife security (21).

Response: Thank you for your comment. Alternative 4 is the only alternative that proposes treatment in the inventoried roadless area. The description of this alternative can be found on pages 2.2-2.3 of

the FEIS. Helicopter yarding methods would be used. Feller bunchers and other equipment would enter on maintenance trails. Excavators would be used to pile slash and remaining trees. The selected alternative does not enter the inventoried roadless area.

Scenery

198. Impacts to view will be temporary (2).

Response: Thank you for your comment. Please refer to the analysis of scenery on pages 3.252-3.260 of the FEIS (pages 3.224-3.231 of the DEIS).

199. Bug killed trees are an eyesore (8).

Response: Please refer to the response to comment number 198.

200. The DEIS's range of alternatives is too narrow if it doesn't attempt to include and fully analyze an alternative that meets VQOs (15).

Response: *Initial analysis of the effects of the proposed project on scenery did not involve a detailed visibility analysis, but estimated effects based on the impact of the Mature Lodgepole treatment. A detailed visibility and effects analysis of the effects of the project on scenery was conducted as described in the Environmental Effects section of the scenery report, and it was determined that both Alternatives 2 and 3 meet Deerlodge Forest Plan standards for scenery. Alternatives 4 and 5, on the other hand, will require an amendment to the forest plan standards for scenery, due to the extent and location of both thinning and clearcutting treatments. See the effects analysis for each alternative for description of these effects and why alternatives do or do not meet forest plan standards for scenery. This amendment, which is more fully explained in the FEIS, aids in helping these alternatives fulfill the purpose and need while crafting an appropriate mix of VQOs given the changes in condition of the project area between the adoption of the Deerlodge Forest Plan and the current and anticipated future condition of the project area. Please refer to Chapter 2 and the analysis of effects to scenery for Alternatives 4 and 5 for discussion of this amendment.*

Recreation

201. Impacts to public access will be temporary (2).

Response: Correct, during timber harvest public access would be closed in certain areas to avoid potential safety hazards to the public. This project does not propose any permanent area closures.

Air Quality

202. The air quality impact analysis and disclosure from proposed burning in the DEIS is good and is thorough (14).

Response: Thank you for your comment.

Economics

203. Whatever timber values are derived from these activities will benefit local communities, Montana, and this Nation (2).

Response: The FEIS contains estimates of jobs generated by all alternatives in the Economic Analysis. That section shows that Alternative 4 would generate the most jobs. Other alternatives generate fewer, and the No Action Alternative generates none.

204. Could you please provide an analysis of the costs and/or benefits in dollars for each alternative? In this, we would be interested in the burning costs per acre, road construction costs, weed treatment costs on the 17 miles of new roads, and the cost of revegetation, if necessary (10).

Response: Please refer to the FEIS Economic Analysis. This section analyzes job and income benefits and contains summarized data. More specifics are in the project file. Our economic analysis costs are best used for comparing alternatives rather than as absolute costs. We used the following costs for activities: Planting = \$400/ac, prescribed burning = \$80/ac, spraying weeds = \$38/ac. We used \$7,000 /mile to install and rehabilitate temporary roads. The summary also contains an estimate of revenue per ccf of timber harvested: ranging from \$56/ccf harvested in alternative 5 to \$26/ccf harvested in alternative 4 with other alternatives between these extremes.

205. The economy needs this timber harvest (7) and the industry could support many families and businesses (9).

Response: Thank you for your comment. Please refer to response to comment number 203.

206. Bug killed trees are a waste of good lumber (8).

Response: Several sections in the FEIS discuss ecological roles played by dead and decaying biomass. For example, several bird species are benefited by dead standing trees (see wildlife section). Soil health is maintained by adequate amounts of woody debris (see soils section).

207. We request that you document how your decisions and the selected alternatives maximize net public benefit. In other words, you should give consideration to, and adequately document, who benefits by these projects and who "pays" for them. Additionally, please disclose an itemized list of monetary costs and benefits for each alternative. The DEIS states that the economic analysis will not be done until the FEIS. We believe this violates NEPA. NEPA requires that if substantial changes are made between the DEIS and the FEIS, the DEIS must be redone. By not allowing people to comment on the economics of this timber sale you are living the public out of the process (16).

Response: The economic effects section of the FEIS discloses how the alternatives compare with each other in relative terms in jobs created, sale viability, and volume harvested. These figures are best used for an "Estimation of Employment and Income Effect" does indeed describe where the jobs are created. For example, Alternative 3 shows a total of 193 jobs created, 3 Forest Service jobs, and 66 in

the private sector. The economics of these proposals are provided as information to the public and the decision maker in the FEIS. Economics are not a key factor in making this decision as the purpose and need is directed at providing firefighter and public safety, reducing the potential for wildfire to spread into Basin Creek Municipal Watershed, and reducing the potential for damage to public and private property.

208. Butte-Silver Bow encourages the Forest Service to utilize a stewardship contract and ensure that any proceeds from the project will accrue to the citizens. We understand that any benefits need to stay in the project area, but it would appear there will be several opportunities, e.g. improvements in the Bear Gulch area, to fulfill that obligation (18).

Response: This analysis is geared to analyze and disclosing tradeoffs. The decision on how to implement the project will be made later. We appreciate the feedback on importance of these projects to citizens.

209. Lack of action will result in an inevitable fire that will do nothing to help our struggling economy and only add to the increasing tax burdens to fight another senseless fire as well as threatening the lives and homes of the people who live in and around Butte (17).

Response: Commenter addresses a part of the purpose and need of this project, which is "reducing the potential of damage to public and private property and structure within the project area from wildland fire."

210. The economics of harvesting the dead and dying trees in Basin Creek is paramount to the membership of the Montana Wood Products Association. We strongly support the use of science-based work on the ground, but it is imperative that social and economic sustainability has equal footing with ecological sustainability to ensure the vibrancy of Montana's communities. We would encourage the addition of some level of economic analysis in the final document (19).

Response: Please refer to the response to comment numbered 204 and 207.

211. The economic aspect obviously is of extreme importance to the local community as well, not only from the jobs that could be produced by this activity, but whether Butte-Silver Bow will have to build a water treatment plant when, not if, the watershed lights on fire. It only takes a telephone call to discover the impacts the 2002 Hayman fire had on Denver's watershed. It suffered irreparable harm and Denver citizens are paying the price for inactive forest management and will for years to come (19).

Response: Economic aspects are disclosed in the Final EIS in the economics effects section. The fire/fuel section contains abundant discussion on effects of treatment versus non-treatment on predicted fire activity and effects to other resources.

Maps

212. The harvest unit numbers are not legible on the alternative description maps (10).

Response: Thank you for your comment. The maps have been improved for the FEIS.

213. It would be very helpful if the maps in Appendix B, including or in addition to map 22, showed more clearly the boundaries for the Basin Creek municipal watershed for Butte, and identified the water supply diversion locations and locations of the Fish Creek diversion to Basin Creek so that the potential effects of proposed treatments and road construction on the public water supply could be better understood and evaluated. The Butte Silverbow Source Water Delineation and Assessment Report available on the State website (<http://www.deq.state.mt.us/ppa/swp/nrisreports/MT0000170.htm>) does not include much information on the Basin Creek water source and water system intake locations (14).

Response: Thank you for your comment. Larger, more detailed maps are included in the project file and are available for review.

214. The maps in Appendix B in the DEIS are not of sufficient size or clarity to clearly assess road location relative to streams, steep slopes, sensitive soils, number of stream crossings, etc... Thank you for providing EPA with additional maps at a larger scale for review (14).

Response: Thank you for your comment. Larger, more detailed maps are included in the project file and are available for review..

Implementation

215. The specific time frames for the project were never provided. The Forest Service is limited to a 5-year period for site-specific actions, and needs to demonstrate this project will not continue beyond this time period. A timeline needs to include when the new roads will be built, when the timber harvest will take place, when burning will take place, when slash piles will be burned, when reforestation will occur, and when firewood harvest will be allowed. It also needs to clearly identify when the new roads will be restored and closed to further use (10).

Response: The Forest Service is not limited to a 5-year period for site-specific actions. FSH 1905.15, Chapter 18.03 states "Review the environmental documentation of actions that are awaiting implementation and those of ongoing programs or projects at least every 3 to 5 years to determine if the environmental analysis and documentation should be corrected, supplemented, or revised. After a decision to implement a proposed action has been made and when the consideration of new information leads to the supplementation or revision of environmental documents, a new decision based on the supplemented or revised environmental documents must be consistent with the scope of the new environmental analysis." Chapter 18.1 defines the process for reviewing and documenting new information received after a decision has been made.

It is anticipated that a contract would be awarded in the fall of 2004 to do the work specified in the final decision. The contract would likely be for a period of 3 to 5 years. Due to the anticipated deterioration of the commercial material and the continued spread potential of Mountain Pine Beetle mortality, any logging of commercial material will be on the shorter end of that timeframe. On-the-ground implementation of the contracted work will proceed with its issuance of the contract, beginning in the fall of 2004, with all contracted activity completed by or prior to the date specified in the contract, likely no later than 2009.

The normal progression of contracted work will be to install the temporary road system, then do the commercial cutting and hauling, then treat the residual slash and rehabilitate the temporary roads. This may occur simultaneously on more than one road/unit. Slashing and burning activities may likewise

occur simultaneously, with burning opportunities being dependent on weather, but when included in contracted work would be anticipated being completed, again, within 3 to 5 years.

Reforestation examinations take place at 1, 3 and 5-year intervals after the work in the unit has been accepted. This can occur during the term of the contract or afterward depending on when the work is done in any individual unit. If natural regeneration is insufficient, then planting is scheduled. Such a request is only made when it is determined that natural regeneration is insufficient, which may be 3 to 5 years after the unit is accepted, and seedlings are normally available 2 years after the request is made.

In some units, it is anticipated that temporary road rehabilitation may occur after the unit slash is reduced to the specified level. In some cases, this may be best accomplished by allowing fuelwood gathering on those units. While public fuelwood gathering may be effective in reducing slash to the desired level, it may be ineffective due to the relative lack of controls compared to a timber sale or service contract. It is anticipated that any units made available to the public for fuelwood gathering would be available for no more than one season, since the best fuelwood should have been gathered by that time.

216. I own property near the project area and have consulted logging companies about the potential for logging the dead and dying trees. After due consideration, I have decided that the roads that have to be constructed and the mess the slash will leave, poor log prices, and most important, possible noxious weed introduction, logging at this time is not a valid option. The Forest Service is going through this same kind of analysis and it is imperative that the right decisions be made regarding the DEIS. The Forest Service has a poor past history regarding logging and the protection of the environment which has made the public wary (21).

Response: Please refer to the analyses in Chapter 3 of the DEIS and FEIS. This chapter includes analyses of fire and fuels, vegetation, wildlife, fisheries and aquatics resources, hydrology, soils, roadless, scenery recreations, minerals, lands, air quality, heritage resources, roads, and economics. Please also refer to the mitigation measures in Chapter 2, BMPs in Appendix D, Noxious Weeds Management Guidelines in Appendix E, and Rationale for Decision in the Record of Decision.

Harvest/Logging

217. The harvest volumes for the alternatives and units were not identified. Can you please provide the timber volume in board feet for each harvest treatment unit? Will you also identify the timber volume by alternative (10)?

Response: The economic analysis in the FEIS (FEIS page 3.316) provides timber volume in ccf by alternative and the associated stumpage value.

218. It appears that many of the clearcut units will exceed the 40-acre maximum allowed without Regional Forester approval and public notification. Please discuss the effective size of clearcuts that will be contiguous (10).

Response: The size of the clearcuts varies with alternative. The largest clearcut occurs under Alternatives 4 and is approximately 200 acres. The Basin Creek area has had extensive mountain beetle activity since 1999. FSM 2471 Regional supplement states: The size of harvest openings created by even-aged silviculture in the Northern Region will be normally 40 acres or less. Creation of

larger openings will require 60-day public review and Regional Forester approval, with the following exceptions: 1. Where natural catastrophic events such as fire, windstorms, or insect and disease attacks have occurred, 40 acres may be exceeded without 60-day public review and Regional Forester approval, provided the public is notified and the environmental analysis supports the decision. This exception applies to Basin Creek Hazardous Fuels Reduction Project.

219. Careful logging and even helicopter logging on the steeper slopes would make for a far healthier watershed now and for years to come (8).

Response: The project proposes helicopter yarding in Alternative 4. In this and all other alternatives, Best Management Practices will be followed. Please refer to the mitigation measures in Chapter 2 of the FEIS and the effects analyses in Chapter 3.

220. Stating that "The largest diameter and oldest trees would be retained" is meaningless since the DEIS does not adequately quantify the terms "largest diameter" and "oldest." Additionally, helicopter logging makes meeting any such specifications more logistically difficult, and the EIS should admit that (15).

Response: Leaving the largest and oldest trees in a stand means exactly that. No matter the average age or diameter of the stand, the biggest and oldest individual trees in that stand will be retained. Generally, in the Basin Creek project area this means in mature Douglas-fir the largest trees will average 18 inches and greater in diameter, in DF pole the largest trees average 10-14 inches and greater in diameter, in mature lodgepole 12-14 inches and greater in diameter and in lodgepole pole, 6-8 inches in diameter.

Recent examples of helicopter logging in thinnings or shelterwood prescriptions have shown very positive results in maintaining leave stand densities, minimizing damage to leave trees, and minimizing additional leave trees cut for operations trees. The reasons for this are obvious since harvested trees are lifted through the tree canopy rather than yarded or skidded through an entire stand. Additional operations trees are not needed for skid trail or cable corridor clearing and bole damage is nearly non-existent.

Approximately 200 acres of shelterwood cutting have been recently completed on the Bozeman District of the Gallatin National Forest where lodgepole pine and other white woods were removed along with some high risk Douglas fir in predominantly Douglas fir stands. Less than half (60-70 sq ft.) of the original basal area was removed with 80 to 90 square feet of basal area per acre retained. This resulted in an average leave tree spacing of approximately 25 x 25 feet with bole and crown damage negligible.

221. It is imperative that some form of logging take place. Live trees other than lodgepole pine should not be harvested. Private loggers should not have the final word on which trees to cut. Loggers must be held to the highest standards regarding leaving trash on public land. This includes bottles, cans, machine parts, etc. This has not been dealt with on some Forest Service logging sales (21).

Response: Please refer to the alternative descriptions and mitigation measures in Chapter 2 and also to Appendix D, which discusses BMPs in relation to timber sales and standards that needs to be met.

Roads

222. The DEIS should assume that the 17 miles of new roads to be constructed will actually be permanent roads, since this is the way temporary roads are used by the Forest Service. These roads will continue to be used for various activities in perpetuity. Even though the DEIS states the roads will be obliterated, the Forest Service will simply amend this decision if the roads need to be used again. Therefore, the DEIS should be upfront and call them permanent roads and the permanent loss of unroaded lands should be fully addressed in the analysis. Please identify if the road beds of the new roads will be obliterated or if they will be put into cold storage for future use. Please also identify which roads will be open for public firewood harvest, when they will be open, and for how long they will be open for this purpose (10).

Response: A roads analysis was conducted for the entire Basin and Blacktail Watersheds and none of the proposed temporary roads were identified as being needed in the future as part of the forest transportation system. Issues taken into consideration during this analysis included the need for future timber access, fire protection, and access for management of grazing permits and general public access. Based on this roads analysis the proposed temporary roads will not be considered as permanent roads and therefore, there would be no permanent loss of unroaded lands. The unroaded analysis considered the temporary roads as part of the effects to all alternatives, including the no action alternative. All newly constructed temporary roads will be restored by recontouring, reseeding and spreading slash.

223. Construction of roads, even temporary roads, is one of the more significant aspects of a project in terms of environmental effects, since road construction greatly increases the possibility of erosion and sediment transport from road surfaces and cut-and-fill slopes.

Reductions in road density, improvements in road drainage, and reductions in sediment delivery from roads are often important components for improving aquatic health in project area streams, and may be important for protecting wildlife resources for the project area. Also, there is often a direct relationship between roads and increased forest use and increased human caused fire occurrences. Reduction in road density, therefore, often reduces occurrences of human caused fires.

The narrative descriptions of alternatives in Chapter 2 indicate that from 8 to 17 miles of temporary roads would potentially be built for the proposed project. The amount of proposed road construction with this proposed project appears to be relatively high, and may be a cause for concern especially in the Basin Creek watershed where no change from naturally occurring turbidity or no increase above naturally occurring concentrations of sediment are allowed. Since road construction and road maintenance is often the activity that produces the greatest amount of sediment, we encourage careful evaluation of the need for all proposed roads. It may be that helicopter yarding should be preferred in the municipal watershed to reduce road construction, and thus, sediment production in the municipal watershed, or maybe timing of logging and road construction could be adjusted to minimize the number of open roads constructed and being maintained at any one time, or maybe logging during winter on snow or frozen ground could reduce erosional effects of road use over snow (and skid trails) (14).

Response: A discussion of the effects of temporary road building on erosion and sediment transport can be found in the Fisheries and Aquatic Resources section on pages 3.173-3.175 of the FEIS (pages 3.154-3.157 of the DEIS), in the Hydrology/Riparian section on pages 3.198 and 3.200 of the FEIS (pages 3.176-3.177 and page 3.179 of the DEIS), and in the Soils section on pages 3.217-3.229 of the FEIS (pages 3.197-3.207 of the DEIS). On pages 3.7-3.8 of the FEIS (page 3.10-3.11 of the DEIS), a

discussion of fire occurrence identifies that there is a relatively small probability that a fire will occur in the project area. All temporary roads will remain closed during implementation.

All yarding in the Inventoried Roadless Area will be by helicopter. Best Management Practices will be followed to meet soil standards.

224. Table 2.3 (page 2.21) and Table 3.57 (page 3.155) identify miles of road construction within 300 feet of streams, and includes mileage numbers followed by other mileage figures in parentheses labeled as temporary roads. This implies that some of the road construction may not be temporary. This is inconsistent with the narrative descriptions of road construction where all road construction is identified as temporary. Are any new roads intended to be permanent or is all proposed new road construction temporary as stated in the narrative? The amount of new road construction- temporary and permanent, and amount of reconstruction of existing roads should be more clearly disclosed for each alternative (14).

Response: We agree that this information was displayed in a confusing manner in the DEIS. We have attempted to correct that in the respective tables in the FEIS on pages 3.173-3.174 (page 3.155 of the DEIS). In summary all road construction described in the DEIS is temporary with the exception of some maintenance work that would be required on about 0.6 mile of the existing Herman Gulch Road and about 0.7 mile of the existing China Gulch Road to facilitate timber haul in Alternatives 2 and 3. This maintenance would be limited to only the 0.6 mile of the Herman Gulch Road in Alternatives 4 and 5. The maintenance is worthy of mention because these roads are in riparian areas and run parallel to their respective streams so some sedimentation is likely to result from reconstruction activities.

The portion of the China Gulch Road proposed for maintenance in Alternatives 2 and 3 has an existing roadbed that is currently closed to public use. Upon completion of this project, this road would subsequently be closed to public use (gated) although the roadbed would be left intact with drainage features installed (drain dips and water bars). No culverts would be left in place upon completion of this project as this would increase maintenance needs for this roadbed and increase the risk of watershed impacts due to plugged culverts.

The portion of the Herman Gulch Road proposed for maintenance in all action alternatives is currently open to the public but is not suitable for timber haul in its current condition due to rutting and localized gullyng. Maintenance would be necessary to make the road useable for log trucks. This road would remain open to the public upon completion of this project.

Page 2.4 in Chapter 2 of the FEIS displays the road miles by road type for each alternative. No new permanent roads are proposed for this project.

225. The DEIS notes particular concerns regarding the 900 foot long section of the temporary road along a 56 percent slope 50 feet from Herman Gulch that poses a high risk of sediment to the stream (page 3.156), and a 1000 foot long section of temporary road in lower China Gulch 100 feet from the stream that poses a moderate to high risk of sediment to the stream. It is our understanding that these roads are outside of the Basin Creek municipal watershed, but we would still encourage reconsideration of proposed roads that pose high risks of sediment entry to area waters (14).

Response: Thank you for your comment. The 900-foot long temporary road proposed near Herman Gulch in the DEIS has been excluded from consideration in the FEIS. The area proposed for treatment with this road in the DEIS is now proposed for helicopter logging in the FEIS so that this road is no

longer necessary. The 1000-foot long section of temporary road in lower China Gulch 100-feet from the stream is still proposed for construction and subsequent obliteration in Alternative 2 of the FEIS. This road would be located on the ground to minimize potential aquatic resource impacts to China Gulch. This would likely entail trying to locate this road as far away from the stream as possible so that any sediment derived from this road would have less chance of accessing China Gulch. We remain committed to minimizing road impacts to aquatic resources with this project.

226. The DEIS displays road mileage within 300 feet and within 150 feet of streams by alternative (Tables 2.3, 3.57, 3.58). On page 3.156 it is stated that Alternatives 2, 3, 4, and 5 have four, three, two and two stream crossings, respectively. This is very useful information relative to evaluating road impacts upon aquatic habitat. Reducing proximity of roads to streams and minimizing road stream crossings are critical to reducing impacts of roads to water quality and aquatic habitat. Construction of roads on steep slopes or in areas of erosive soils is also important factors influencing aquatic effects. Are any roads proposed for construction on steep slopes or erosive soils (14)?

Response: There are no roads proposed for construction on steep slopes. Hillslope gradients for proposed temporary roads are generally 40 percent or less. Between the draft and final stages of this project, two proposed temporary roads were eliminated from consideration due to their potential to create sedimentation impacts to streams. One of these roads would have been located on a 55 percent slope located near but outside the RHCA for Herman Gulch. The unit this road would have accessed (unit 74 in alternatives 2 and 3) is now proposed for helicopter logging. Similarly, the originally proposed road in the southwestern-most portion of unit 18 in alternatives 2 and 3 in the DEIS was eliminated in the FEIS with the western portion of this unit being proposed for helicopter logging. This original road location was proposed to be located at the edge of the RHCA on China Gulch. In addition, there would be opportunities during project layout to "fine tune" other proposed temporary road locations such that they are as far away from riparian areas as possible but still located in feasible locations for project implementation.

227. The Forest Service should minimize road construction and reduce road density as much as possible to reduce potential adverse effects to watersheds (particularly in municipal watersheds); locate roads away from streams and riparian areas as much as possible; minimize the number of road stream crossings; stabilize cut and fill slopes; provide for adequate road drainage and control of surface erosion with measures such as adequate numbers of waterbars, maintaining crowns on roads, adequate numbers of rolling dips and ditch relief culverts to avoid drainage running on or along roads and avoid interception and routing sediment to streams; consider road effects on stream structure and seasonal and spawning habitats; and allow for adequate large woody debris recruitment to streams and riparian buffers near streams.

Culverts should be properly sized to handle flood events, pass bedload and woody debris, and reduce potential for washout, and should be properly aligned with the stream channel and designed and placed to allow for fish migration. Undersized culverts should be replaced and culverts which are not properly aligned or which present fish passage problems and/or serve as barriers to fish migration should be adjusted. Bridges or open bottom culverts that simulate stream grade and substrate and that provide adequate capacity for flood flows, bedload and woody debris are recommended to minimize adverse fisheries effects of road stream crossings.

We also support inspections and evaluations to identify existing road conditions that cause or contribute to nonpoint source pollution and stream impairment. Erosion control should be kept current with log skidding activities and road maintenance (e.g., blading) should be focused on reducing road surface erosion and

sediment delivery from roads to area streams. Blading of unpaved roads in a manner that contributes to road erosion and sediment transport to streams and wetlands should be avoided, as should road use during spring breakup conditions (14).

Response: INFISH standards and guidelines for roads would be followed as described on pages 2.8-2.9 of the FEIS (pages 2.6-2.7 of the DEIS). In addition, the soil and water conservation practices listed in Appendix D of the FEIS would be implemented. Proposed temporary road locations have been identified to minimize presence of roads in and adjacent to riparian areas. This should minimize reduced recruitment of large wood to streams and riparian areas. Stream crossings would be designed to accommodate 100-year storm events. No stream crossings are proposed on fish-bearing streams so fish passage is not an issue with this project. Construction of temporary roads would follow accepted Forest Service construction specifications and would be identified in the contract. Temporary roads would be designed to be as low maintenance as possible making use of outsloping as much as possible and adequate spacing of drain dips and water bars. No ditch relief culverts would be used as this would create increased road maintenance needs and the potential for ditch relief culverts to get plugged and cause drainage diversion. Timber sale administrators would conduct regular inspections of roads during project implementation to determine whether they are in a satisfactory condition.

228. Some proposed roads are in locations of old logging roads or ATV trails, and upgrading these old roads to current standards, even on a temporary basis followed by road obliteration when the project is completed, may improve watershed conditions. Is this correct? The condition of these old existing roads or ATV trails and their upgrading should be more completely described in the FEIS (14).

Response: Most existing old roadbeds proposed for use as temporary roads with this project are currently in a revegetated state and have minimal erosion and watershed concerns associated with them at this time. After reconstruction and use for this project, these roads would be obliterated with appropriate maintenance-free drainage structures left in place and slash pulled back onto portions of them to provide ground cover and prevent public use.

229. There is also some concern that the DEIS states that only approximate locations of temporary roads are identified in relation to treatment units, with final locations to be flagged by the purchaser and then approved by the Forest (page 2.4). Road locations should be established sufficiently in the environmental document to allow adequate assessment and disclosure of potential environmental impacts associated with road construction, particularly road proximity to streams, sensitive soils, steep slopes, and road stream crossings (14).

Response: We agree that road locations need to be as specific as possible, recognizing the limitations for establishing sideboards on temporary roads. Alternative maps in the FEIS display approximate road locations as closely as possible based on field reviews. Roads located in potentially more sensitive locations, such as in relatively close proximity to riparian areas, would be reviewed in an interdisciplinary manner prior to final location on the ground.

230. The proposal to log and construct so many miles of new road with a municipal watershed seems to be inconsistent with state water quality standards and requirements under the Code of Federal Regulations (15).

Response: According to ARM 17.30.621(2): "Public access and activities such as livestock grazing and timber harvest are to be controlled by the utility owner under conditions prescribed and orders issued by the department." Both MT DEQ and the EPA agree that preventative proactive treatments that reduce the risk and/or intensity of wildfire are acceptable means of maintaining a filtration waiver for the Basin Creek watershed, when all reasonable and practical measures are employed to reduce risks from treatment activities (John Camden MT DEQ, Steve Potts EPA, personal communication, 12/11/2003). Road mileage within 300 feet of aquatic habitat amounts to 0.2 miles within the municipal watershed for Alternatives 4 and 5, and 0 for the rest of the Alternatives (see page 3.172 of the FEIS, 3.155 of the DEIS).

231. What is and what would be the Open Road Density in the general area including the analysis area? A summary of all roads—temporary, system, nonsystem, other public and private, etc. - and their locations is also requested for inclusion in the environmental analysis. As per Forest Service Manual 7703.1 and 7711.2, has the Forest documented each road in the project area? When will unnecessary roads be obliterated and revegetated, as required by NFMA? Locations of road closures should be revealed, the method of closure, and what if any traffic would be allowed on the "closed" roads. In addition, the FS must examine the de facto effectiveness of its road closures. The Forest Service should fully consider the negative affects on wildlife habitat and biodiversity of closed roads in addition to the open roads. Nobody would argue that an area with all closed roads is as secure for wildlife as if it had no roads at all, so the Forest Service should consider this in the analysis (16).

Response: The current open road density is 42.83 miles/55.61square miles. In each of the action alternatives the open road density would remain the same as the existing condition as all the temporary roads would be obliterated after treatment. A Roads Analysis was completed for the Basin and Blacktail Watersheds. Roads were identified using the current database information for classified and unclassified roads in the watersheds. Roads identified for obliteration in the roads analysis does not constitute a decision that can be implemented without first completing the NEPA process. At this time there is no schedule for beginning the NEPA process for proposals stemming from the roads analysis. During the NEPA process, a proposal of roads to be closed, closure method, and the type of traffic that may be allowed on the roads would be made during public scoping. A discussion of the effects on wildlife and associated TES and MIA species can be found in the FEIS on pages 3.105-3.150 (DEIS pages 3.97-3.132)

232. There is no need to destroy the roads built for this project. Keep them in the inventory. They may be needed for fire suppression or further forest treatment. Just berm them or lock them (2).

Response: The proposed temporary roads are currently not on the forest road inventory. A Roads Analysis was completed for the Basin and Blacktail Watersheds. The analysis did not identify the need for the temporary roads for fire suppression, recreation opportunities, resource management (e.g. grazing allotments), or future forest treatments.

Monitoring

233. Monitoring should be an integral part of any management decision. The EPA endorses the concept of adaptive management whereby effects of implementation activities are determined through monitoring (i.e., ecological and environmental effects). It is through the iterative process of setting goals and objectives,

planning and carrying out projects, monitoring impacts of projects, and feeding back monitoring results to managers so they can make needed adjustments, that adaptive management works. In situations where impacts are uncertain, monitoring programs allow identification of actual impacts that occur so they may be mitigated. Monitoring and feedback of monitoring results to managers is critical to the success of land management projects.

Water quality/aquatics monitoring is a necessary and crucial element in identifying and understanding aquatic impacts, and for determining effectiveness in BMPs in protecting water quality and beneficial uses. Although BMPs are designed to protect water quality, they need to be monitored to verify their effectiveness. If found ineffective, the BMPs need to be revised, and impacts mitigated.

Proposed monitoring programs should be disclosed in NEPA documents. The DEIS does not propose water quality or aquatic monitoring in the Basin Creek watershed to document that water quality will not be degraded from logging and road building. Given the sensitive nature of the Basin Creek municipal watershed and the requirement that there be no change from naturally occurring turbidity and no increases above naturally occurring sediment concentrations, some level of monitoring is needed to validate that such requirements can be met.

Examples of potential aquatic monitoring parameters that could be considered for Basin Creek include reservoir turbidity, suspended sediment, nitrates, phosphorus, etc., as well as Basin Creek channel cross-sections, bank stability, width/depth ratios, riffle stability index, pools, large woody debris, fine sediment, pebble counts, macroinvertebrates, etc.,. Monitoring of the aquatic biological community is often recommended since the aquatic community integrates the effects of pollutant stressors over time and, thus, provides a more holistic measure of impacts than grab samples.

For your information, the EPA recommends consideration of the following reference materials in designing and disclosing a monitoring program:

Monitoring Guidelines to Evaluate Effects of Forestry Activities in the Pacific Northwest and Alaska; Lee H. McDonald, Alan W. Smart and Robert C. Wissmar; May 1991; EPA/910/9-91-001; (We appreciate the fact that the Moose Post-Fire Monitoring Plan in Appendix E already references these guidelines)

Rapid Bioassessment Protocols for use in Streams and Rivers; James A. Plafkin, May 1989, EPA/444/4-89-001.

"Aquatic Habitat Indicators and Their Application to Water Quality Objectives Within the Clean Water Act," Stephen B. Bauer and Stephen C. Ralph, 1999, EPA-910-R99-014. (This publication is available on-line at, <http://www.pocketwater.com/>)

"Aquatic and Riparian Effectiveness Monitoring Plan for the Northwest Forest Plan," Gordon H. Reeves, David B. Hohler, David P. Larsen, David E. Busch, Kim Kratz, Keith Reynolds, Karl F. Stein, Thomas Atzet, Polly Hays, and Michael Tehan, February 2001. Available on-line at, www.reo.gov/monitoring/watershed/aremp-compile.htm

Western Pilot Study: Field Operations Manual for Wadeable Streams; Environmental Monitoring and Assessment Program Protocols, Edited by David V. Peck, James M. Lazorchak, and Donald J. Klemm, April 2001, available on-line at, <http://www.epa.gov/emap/html/pubs/docs/groupdocs/surfwatr/field/ewwsm01.pdf>

The Forest Service Region 5 document entitled, Water Quality Management for Forest System Lands in California: Best Management Practices, September 2000, is a useful reference for BMP development and BMP effectiveness monitoring. It can be found at the website, <http://fswest.r5.fs.fed.us/unit/ec/water/water-best-mgmt.pdf> .

Montana DEQ's Water Quality Monitoring and Assessment information can be found on the website, http://www.deq.state.mt.us/wqinfo/MDM/WQMonitoring_Assessment.asp.

Montana Forestry BMP's; Extension Publications; July 1991, Montana State University; EB0096.

"Montana Stream Management Guide; for Landowners, Managers, and Stream Users", Montana Dept. Of Environmental Quality; December 1995.

We also encourage consultation and coordination with the water utility district and Montana DEQ in regard to appropriate monitoring to document compliance with the water quality limitations of the A-Closed classification (14).

Response: Thank you for your comment. Four long-term monitoring stations (X-sections) for stream channel morphology (width/depth ratios, streambed substrate, floodplain function, and stability) have been established in Basin Creek. Additional watershed monitoring items that address implementation and effectiveness monitoring will be drawn up during the FEIS stage, after the selection of the preferred alternative. These monitoring items may include silt fences to determine how much, if any, soil movement occurred following various treatment activities. The BSBWUD will continue monitoring parameters required to maintain a filtration waiver including nitrogen and turbidity.

Aquatic habitat inventories characterizing parameters such as pool quantities and depths, wood quantities, width/depth ratios, and streambed substrate within the fish distribution in Basin Creek were completed in support of this project. These inventories could easily be repeated at a future time to determine whether any of these parameters have changed. There are no firm plans to repeat these inventories specifically as a monitoring measure for this project at this time. Funding for project-level monitoring is not widely available so it is not possible to commit to such monitoring at this time.

Two known boreal toad sites would likely be monitored after project implementation to determine presence and relative abundance of toads. Funding to do this work is not ensured however so we cannot make a commitment to this monitoring at this time.

Respondents

- (1) Vaughn, Terry. Minutes of the Butte Fire Protection Association meeting.
- (2) Johnson, E.A. Letter to Thomas K. Reilly regarding the Basin Creek Fuels Reduction Project.
- (3) Sesso, Jon C. Letter to Chief Executive and Council of Commissioners Courthouse in Butte regarding the Draft Environmental Impact Statement for Basin Creek Hazardous Fuels Reduction Project.
- (4) Gorton, Candace M. Letter to Chief Executive and Council of Commissioners Courthouse in Butte regarding the Draft Environmental Impact Statement for Basin Creek Hazardous Fuels Reduction Project.
- (5) Kneebone, David. Email correspondence to Thomas K. Reilly regarding the Draft Environmental Impact Statement for Basin Creek Hazardous Fuels Reduction Project.
- (6) Anderson, Sherm. Email to USDA Forest Service regarding the Basin Creek Hazardous Fuels Reduction Project.

- (7) Ashcroft, Norm. Letter to Thomas Reilly regarding the Basin Creek Hazardous Fuels Reduction Project.
- (8) Baker, Forrest. Letter to Thomas Reilly regarding the Basin Creek Hazardous Fuels Reduction Project.
- (9) Heikkinen, Donna. Letter to Thomas Reilly regarding the Basin Creek Hazardous Fuels Reduction Project.
- (10) Johnson, Sara Jane. Letter to Thomas Reilly regarding the Basin Creek Hazardous Fuels Reduction Project.
- (11) Regan, Edward W. Letter to Thomas Reilly regarding the Basin Creek Hazardous Fuels Reduction Project.
- (12) Kneebone, David, representing the Little Basin Creek Volunteer Fire Department. Email to Thomas Reilly regarding the Basin Creek Hazardous Fuels Reduction Project.
- (13) Department of the Interior
- (14) United States Environmental Protection Agency. Letter to Thomas Reilly regarding the Basin Creek Hazardous Fuels Reduction Project.
- (15) The Ecology Center, Inc. Letter to Thomas Reilly regarding the Basin Creek Hazardous Fuels Reduction Project.
- (16) The Alliance for the Wild Rockies.
- (17) Anderson, Bonnie. Email Beaverhead-Deerlodge Forest regarding list for fuels reduction project.
- (18) Jacobson, Judith. Letter to Thomas Reilly regarding DEIS. Butte-Silverbow Office of Chief Executive
- (19) Engstedt, Ellen. Letter to Thomas Reilly regarding DEIS. Montana Wood Products Association.
- (20) Howard, Elaine. Email Beaverhead-Deerlodge Forest regarding list for fuels reduction project
- (21) Johnson, Duane. Email Beaverhead-Deerlodge Forest regarding list for fuels reduction project.
- (22) Vaughn, Terry. Email regarding comments on the Basin Creek hazardous fuels reduction project. Butte Fire Protection Association.
- (23) Flynn, Stephen J. Resource Manager—Louisiana Pacific Fax: Comments on the Basin Creek DEIS