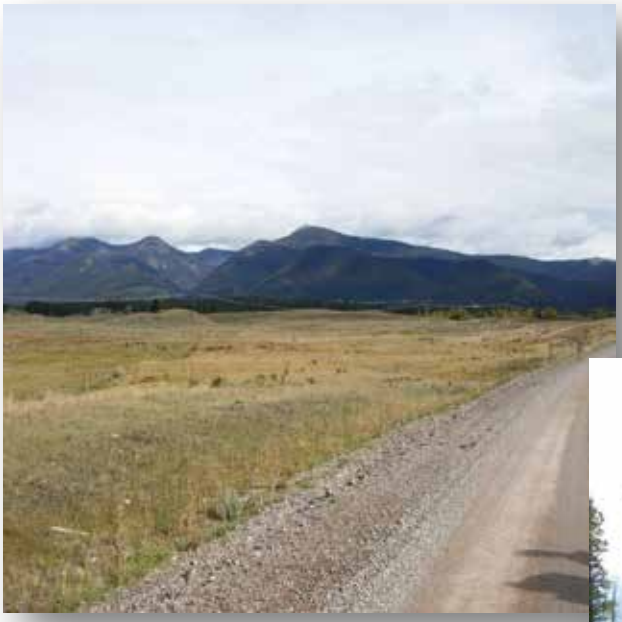
United States Department of Agriculture

Stonewall Vegetation Project

Final Environmental Impact Statement - Volume 2-Appendices



Forest Service | Helena National Forest | Lincoln Ranger District | August 2015

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Appendix A – Comments on the DEIS and Forest Service Response

Public Involvement Summary

The Notice of Intent was published in the *Federal Register* on January 13, 2010 (75 FR 1748). The Notice of Intent asked for public comment on the proposal to be received by February 22, 2010. The agency sent about 700 letters explaining the proposal and asking for comment to interested individuals, groups and agencies on January 15, 2010. In addition, as part of the public involvement process, we held an open house on February 3, 2010, and project information was available on the Forest website at www.fs.usda.gov/helena. The project has been listed in the Forest's Schedule of Proposed Actions since April 1, 2010. The DEIS Appendix A included the content analysis of the scoping comments received (USDA Forest Service 2013).

Notice of Availability

The Notice of Availability of the DEIS was published in the *Federal Register* on May 3, 2013 (78 FR 26027). The Notice of Availability started the 45-day comment period on the DEIS. We sent about 240 letters and electronic mail attachments announcing the availability of the DEIS to interested and affected individuals, groups and agencies on April 30, 2013. A legal notice announcing the opportunity to comment on the Stonewall Vegetation Project DEIS was published in the *Helena Independent Record* on May 6, 2013.

We received a total of seven comment letters on the DEIS. Appendix A of this FEIS lists the names of the individuals, organizations, and agencies that provided comments during the opportunity to comment period for the DEIS for the Stonewall Vegetation Project. Table A-1 lists the names of the individuals, organizations, and agencies that provided comments during the opportunity to comment period for the DEIS for the Stonewall Vegetation Project.

Table A- 1. Responded to the Stonewall Vegetation Project DEIS opportunity to comment

Name
Travis Belote, The Wilderness Society
Gary Burnett and K.D.Feeback, Lincoln Restoration Committee
Julie DalSoglio, United States Environmental Protection Agency, Region 8, Montana
Robert Stewart, United States Department of Interior, Office of Environmental Policy and Compliance
Michael Garrity, Alliance for the Wild Rockies and Sara Johnson, Native Ecosystem Council
Michael Garrity, Alliance for the Wild Rockies and Sara Johnson, Native Ecosystem Council Steve Kelly, Montana Ecosystems Defense Council
Sarah Johnson, Native Ecosystem Council - Michael Garrity, Alliance for the Wild Rockies

This appendix includes a copy of the letters received commenting on the DEIS, with comment topics coded, followed by the Forest Service response.

THE WILDERNESS SOCIETY

June 17, 2013

Amber Kamps
District Ranger
1569 Highway 200,
Lincoln, MT 59639

Dear Ranger Kamps,

Comment#1 Thank you for the opportunity to review the Draft Environmental Impact Statement of the Stonewall Vegetation Project. Overall, we appreciate the commitment to collaborative approaches to project development you and your staff have used in planning this project. We believe engaging stakeholders of diverse perspectives early in project planning has given many interested parties an opportunity to learn about resource issues and provide feedback.

We view one of your overall objectives to restore fire regimes as consistent with our view on the importance of safely returning fire to the landscape. We recognize the concerns of crown fire risk near communities and support fuel reduction near homes. We believe the use of prescribed fire in the backcountry areas will provide landscape heterogeneity that may prepare the landscape for future fires, especially under future climate conditions. We hope these treatments will increase the decision space and social license for allowing fire to play its ecological role on the landscape in the future (as suggested on page 194) and lower fire management costs, as articulated in the Forest Landscape Restoration Act.

Comment#2 We recognize that opening the canopy for fuels reduction can lead to decreased wildlife values associated with closed canopy or multistoried forests. We are concerned about effects the project will have on wildlife habitat, particularly security for elk, and see adjustments with Alternative 3 as positive. We recognize that effects of widespread mountain pine beetle (MPB) have eliminated canopy cover and complicated the ability to conduct fuels reduction projects. To conduct fuels reduction projects in compliance with current elk security standards our understanding is that MPB mortality (and associated canopy reduction) in some parts of the forest is so extensive that even the closure of all roads would still not address compliance for a subset of elk herds using the district.

Comment#3 Additional data collection and analyses including modeling of secure habitat characteristics may be informative for a forest plan amendment. Specifically, it seems the effect of MPB mortality on elk security needs additional scientific inquiry, which may lead to better understanding of the role of horizontal hiding cover, downed wood, forage, and other forest characteristics in maintaining elk security or habitat quality in stands with high levels of MPB mortality and high road densities. Overall, we believe investments in monitoring of wildlife species before and after treatments should inform future management decisions.

The complex relationships between closed canopy (e.g., hiding cover) and open canopy (e.g., reduced crown fire risk) values and patches, their composition and arrangement across landscapes, and their dynamics through time may require new approaches to modeling and active adaptive management. Specifically,

Comment#4 we believe modeling and assessment efforts that incorporate wildlife habitat and fire simultaneously (e.g., the simulation model FireBGCv2, Keane et al.

2011, RMRS-GTR-255, and see also methods described in Hessburg et al. 2013, *Sustainability* 5: 805-840) could improve forest restoration project planning. Using these new tools and approaches should provide the best available science to ensure forests remain "diverse, resilient, and sustainable." Please consider leveraging these new modeling tools for future projects, including any forest plan amendments. We also believe new science on spatial
Comment#5 heterogeneity of fuel reduction and restoration projects could inform new approaches that meet multiple objectives of reducing crown fire risk while maintaining important levels of canopy closure or horizontal hiding cover (*sensu* PSW-GTR-237, chapter 14, and see Churchill et al. 2013, *Forest Ecology and Management* 291: 442-457). At landscape scales, heterogeneity of patches with closed and open canopies may be one way of managing for multiple values and we see Alternative 3 as an improvement over Alternative 2.

We are happy that the southwestern Crown of the Continent (SWCC) monitoring efforts have already been conducted in the Stonewall Project and hope this effort will continue in the future. The integrated forest monitoring project that collects data on wildlife habitat characteristics, soil conditions, forest composition and structure, understory plant composition, and abundance of non-native invasive plants began pre-treatment data collection in 2012 on select units of the Stonewall Project. We hope these data and resulting analyses will be useful to you, your staff, the Lincoln Restoration Committee, and the SWCC. We further hope the data serve as a means of increasing our understanding of impacts of treatments and inform future management adjustments. We would like to see the SWCC be engaged in monitoring the impacts
Comment#6 of the temporary roads on vegetation and soils built and obliterated under either Alternative 2 or 3. Please let us know how we might help develop a monitoring project for this issue.

Thank you again for the opportunity to comment.

Sincerely,
/s/ Travis Belote

Research Ecologist
The Wilderness Society
Bozeman, MT 59715
travis_belote@tws.org
(406) 586 1600 x. 110

cc

Peter Aengst
Regional Director

Anne Carlson
Climate Associate

6/17/13 Belote, The Wilderness Society Letter

Comment #	Response	Assigned
1	Comment supporting collaborative approaches noted.	NEPA
2	Comment noted regarding concern of reduction in closed canopy forest on wildlife, especially security for elk, and alternative 3 adjustments as positive. Alternative 3 was developed to address project objectives, while reducing short-term effects to big game by maintaining greater levels of cover and closed canopy habitat. The big game analysis has been updated, and incorporates additional field information, in chapter 3 of the FEIS.	Wildlife – wildlife
3	There are many unknowns related to the effects of MPB mortality on elk. As a result elk hiding cover surveys were conducted in areas affected by MPB mortality to identify the level of cover provided, and to validate our assumption that the pre-disturbance condition was applicable for describing functional attributes of hiding cover. We also conducted field surveys to evaluate elk hiding cover within many of the proposed harvest units affected by MPB and will use this information to implement PDF's that retain buffers and which would provide cover during treatment. Future monitoring of stands affected by MPB mortality may be helpful in assessing elk use, however, anticipated effects are based on site specific conditions and available monitoring information. The big game analysis has been updated, and incorporates additional field information, in chapter 3 of the FEIS.	Wildlife monitoring
4	Fire modeling considers wildlife habitat vegetative conditions such as stand density and canopy closure. Methodology is discussed in chapter 3. The proposed action was developed after Forest resource specialists reviewed watershed conditions and identified opportunities to address fuels concerns and restorative treatments with the aim to create more resilient forested stands across the project area landscape. Although different tools were used, including field review, this landscape approach for the project area had similar aims as noted in Hessburg et al. 2013. Future analyses conducted on the Forest will consider available information, models and discuss methodology used.	Fire/Fuels – fire modeling
5	Restoration treatments are designed to improve vigor of various species across the landscape. Comment noted regarding alternative 3 as an improvement over alternative 2.	Fire/Fuels - fire
6	The Lincoln Ranger District will continue to work with the SWCC, including seeking joint monitoring efforts.	Soils – SWCC soil monitor

RESTORING MONTANA'S FORESTS

A NEW APPROACH

LINCOLN RESTORATION COMMITTEE
c/o P.O. Box 1715
Helena, MT 59624-1715

June 17, 2013

Ms. Amber Kamps, District Ranger
Lincoln Ranger District
Helena National Forest
1569 Highway 200
Lincoln, Montana 59639

Dear Ms. Kamps:

As you know, the Lincoln Restoration Committee (LRC) is a group of private citizens reflecting diverse community interests. We formed in the fall of 2008 with the purpose of developing recommendations for restoration projects on the Lincoln District of the Helena National Forest. The work of our group is supported by the Montana Forest Restoration Committee (MFRC), which in 2007 adopted 13 restoration principles for on-the-ground use. The LRC's monthly meetings have been devoted to assessing where and how these principles might be applied in ways that are beneficial to the Lincoln community, the broader public, and the health of the land.

Comment#1 The LRC believes that the decisions made in the Stonewall Vegetation Project Draft EIS are closely related to the MFRC Principles and to our purpose as a committee. These comments are based on our understanding of the Montana Forest Restoration Principles and the information that is currently available to us regarding the proposed activities in the Stonewall Vegetation Project Draft EIS. We hope that this comment letter is one of many steps in an ongoing, Comment#2 productive and positive dialogue that we hope will continue through all phases of project design, implementation and post-treatment monitoring.

As a committee, we sincerely thank you for devoting a significant amount of staff time and expertise in hosting multiple presentations and site visits for members of the LRC. These events were exceptionally well-organized, informative and highly relevant to the MFRC Principles. We Comment#3 are truly grateful for the professionalism and the clear commitment to collaborative forest restoration efforts you, the rest of the Lincoln Ranger District team and the Interdisciplinary Team have demonstrated in this effort.

Comment#4 The members of the LRC view the restoration potential described in the Stonewall Vegetation Project Draft EIS as significant and we are impressed with the integration of the restoration principles into your scoping notice. In our view, Alternative 2 in the Stonewall Vegetation Comment#5 Project Draft EIS provides the best balance of restoration opportunities, including significant opportunities for restoration work impacting Ponderosa pine, aspen, various water courses, as well as, and separately, fuels thinning in the Wildland Urban Interface. We appreciate the efforts of Alternative 3 to incorporate wildlife habitat restoration in the project to further enhance the restoration benefits. We feel that given a field review, we might find a balance

between vegetative restoration and the broad range of wildlife habitat restoration opportunities.

Comment#6 The Lincoln Restoration Committee requests we meet with you and other staff for a field review in order to advance a forest restoration project with the goal of achieving all of the following goals, consistent with the Montana Forest Restoration Principles:

- Restore functioning ecosystems by enhancing ecological processes;
- Apply an adaptive management approach;
- Use the appropriate scale of integrated analysis to prioritize and design restoration activities;
- Monitor restoration outcomes;
- Reestablish fire as a natural process on the landscape;
- Consider social constraints and seek public support for reintroducing fire on the landscape;
- Engage community and interested parties in the restoration process;
- Improve terrestrial and aquatic habitat and connectivity;
- Emphasize ecosystem goods & services and sustainable land management;
- Integrate restoration with socioeconomic well-being;
- Enhance education and recreation activities to build support for restoration;
- Protect and improve overall watershed health, including stream health, soil quality and function and riparian function; and
- Establish and maintain a safe road and trail system that is ecologically sustainable.

Comment#7 We accordingly request that you review our recommendations in relation to the Montana Forest Restoration Principles and all legal and regulatory requirements including the National Environmental Policy Act and National Forest Management Act.

We want to take this opportunity to thank you for the technical support you and your staff have provided during our efforts in developing the Stonewall Vegetation Project Draft EIS.

Sincerely,

Gary Burnett K.D. Feeback
Lincoln Restoration Committee, Co-chairs

cc: Bill Avey, Acting Forest Supervisor, Helena NF
Gordy Sanders, MFRC Chair
LRC members

6/17/2013 Burnett Feeback Letter

Comment #	Response	Topic
1	Support comment noted.	NEPA
2	Support comment noted. See responses to comments 5 and 6 pertaining to ongoing collaborative discussions.	NEPA
3	Support comment noted.	NEPA
4	Support comment noted.	NEPA
5	Support for alternative 2 noted. Support for alternative 3 noted with concerns to be discussed on a field review pertaining to finding a balance between vegetative restoration and the broad range of wildlife habitat restoration opportunities. Helena National Forest, Lincoln Ranger District staff scheduled a field trip with interested parties on 8/7/2013 to discuss the Stonewall Vegetation Project.	NEPA
6	Helena National Forest, Lincoln Ranger District staff scheduled a field trip with interested parties on 8/7/2013 to discuss the Stonewall Vegetation Project.	NEPA
7	Recommendations received have been considered for the Stonewall Vegetation Project.	NEPA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8, MONTANA OFFICE
FEDERAL BUILDING, 10 West 15th St, Suite 3200
HELENA, MONTANA 59626

Ref: 8MO

May 28, 2013

Ms. Amber Kamps, District Ranger
Lincoln Ranger District
Helena National Forest
1569 Highway 200
Lincoln, Montana 59639

Re: CEQ 20130109; EPA comments on Stonewall Vegetation Project DEIS

Dear Ms. Kamps:

The Environmental Protection Agency (EPA) Region VIII Montana Office has reviewed the Draft Environmental Impact Statement (DEIS) for the Stonewall Vegetation Project prepared by the Lincoln Ranger District, Helena National Forest. EPA's review has been conducted in accordance with our responsibilities under Section 102(2)(C) of the National Environmental Policy Act (NEPA), and Section 309 of the Clean Air Act, and the Council on Environmental Quality (CEQ) regulations, 40 CFR Parts 1500-1508. Section 309 of the Clean Air Act directs EPA to review and comment in writing on the environmental impacts of any major Federal agency action. EPA's comments include a rating of both the environmental impact of the proposed action and the adequacy of the NEPA document.

The EPA recognizes the forest health, hazardous fuels/wildfire risk, forest composition and structure, and insects/disease concerns in the Stonewall Project area, and the Helena National Forest's (HNF) need to improve vegetative conditions and move the landscape towards the desired conditions specified in the Forest Plan. Only two action alternatives were evaluated in detail in the DEIS; Alternative 2 involving treatments to approximately 36 percent of the project area, including timber harvest on a total of 3,099 acres (regeneration harvest, intermediate harvest, and precommercial thinning); 2.6 miles of new road construction; and 8,041 acres of total burning (pile burning, jackpot burning, broadcast burning, and underburning); and Alternative 3 involving treatments to approximately 27 percent of the project area, including timber harvest on 2,298 acres; 0.4 miles of new road construction; and 6,155 total acres of burning. Alternative 3 was identified as the preliminary preferred alternative in the DEIS.

Comment A The rationale for identification of Alternative 3 as the preliminary preferred alternative was not presented in the DEIS. The DEIS indicated that modifications in alternatives and/or revision in the preferred alternative may be considered for the FEIS depending on DEIS comments received and/or new information. We note that the potential environmental effects of both action alternatives were often discussed together, not disclosing many differences in environmental effects between the two action alternatives, or providing much basis for choice among the action alternatives.

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On a preliminary basis, however, the EPA tends to agree with the HNF's preliminary identification of Alternative 3 as the preferred alternative, since Alternative 3 involves less new road construction than Alternative 2 (i.e., 2.2 miles less new road construction); lower amounts of timber harvest and burning (including less burning within inventoried roadless areas); and appears to involve a lesser level of impacts to habitat for threatened, endangered and sensitive species and designated critical habitat, management indicator species, big game hiding cover, thermal cover, and security cover. We encourage minimization of new road construction, since roads are often the major anthropogenic sediment source adversely affecting hydrology, water quality, and fisheries; and roads and motorized uses can also adversely affect wildlife habitat, connectivity and security, and air quality, and promote spread of weeds and cause other adverse ecological effects.

Comment B

Although we also note that the higher levels of harvest and burn treatments with Alternative 2 may better meet vegetative objectives and fuel reduction/fire risk reduction objectives. Alternative 2 may also improve tree species diversity, age class diversity and tree resistance to insects and diseases more than Alternative 3 as a result of additional reductions in timber stand densities. Land management decisions involve environmental and resource management trade-offs (i.e., trade-offs in impacts among vegetation treatments, restoration of vegetative conditions, fire risk and fuels, forest health, wildlife, water quality and fisheries, air quality, weed spread, and other resource impacts). We recommend that additional discussion regarding the various trade-offs among alternatives be included in the FEIS to provide a clearer basis of choice among options for the decisionmaker and the public, and to more clearly explain the rationale for selection of the preferred alternative.

We are pleased that a relatively small amount of new roads are proposed with the action alternatives, and that these roads would be obliterated immediately following timber removal, and most new roads would be located in upland areas away from streams. We also appreciate the commitment to conduct extensive road maintenance and BMP improvements on project haul roads to reduce road sediment delivery to surface waters. Forty-eight miles of road used for Alternative 2 and 44 miles of road under Alternative 3 would receive BMP improvements (i.e., surface grading, re-establishment of drainage features -grade dips and ditch-relief culverts-, replacing undersized culverts, and application of sorted gravel at stream crossings and other sediment delivery points).

Comment C

As you know segments of the Blackfoot River downstream from the project area are designated as water quality impaired and included on Montana's Clean Water Act, Section 303(d) list of impaired waters. It is important that the HNF coordinate with Montana Dept. of Environmental Quality (MDEQ) Total Maximum Daily Load (TMDL) program staff to assure that the MDEQ considers the proposed Stonewall Vegetation Project to be consistent with the Blackfoot Headwaters Sediment TMDL and Water Quality and Habitat Restoration Plan (e.g., contact MDEQ staff such as Mr. Robert Ray at 406-444-5319 and/or Mr. Dean Yashan at 406-444-5317). We also encourage review of the MDEQ's pamphlet, ***"Understanding the Montana TMDL Process,"*** http://deq.mt.gov/wqinfo/TMDL/default.mcpx .

The DEIS acknowledges that some sediment delivery may occur over the short-term during road construction and road maintenance, but over the long-term reductions in sediment delivery by 2 tons per

year are estimated to result from proposed road maintenance and road BMP improvements. We are pleased that a goal of no net sediment increase or preferably, a reduction in sediment delivery from current levels for the proposed project has been set for the project.

Comment D

We do have some concerns regarding the adequacy of funding to properly maintain road BMPs over the long-term for roads within the Stonewall Project area. Funding for road maintenance is often limited, and there is a significant backlog of road maintenance needs on National Forests (Source: *"Rightsizing" the Forest Service Road System Part 1: Road Trend Analysis,* March 22, 2007). Older roads were often built with outdated BMPs (those dating from the 1950s to the mid-1970s) that need regularly scheduled repair and upgrading. Roads need to be routinely inspected and road BMPs evaluated in regard to their effectiveness, and BMPs improved and/or maintained as needed over time to remain effective. The DEIS states that many of the existing roads in the project area are known sources of sediment to streams and characterized as moderate-to high-risk in the HNF Roads Analysis Process. A continuous and effective road maintenance program is needed to avoid delivery of excess road sediment to the Blackfoot River downstream.

Comment E

The DEIS also states that long-term sediment reductions would result from road obliteration. However, it is not clear if any obliteration or decommissioning of existing roads is proposed. The DEIS seems to indicate that the only proposed road obliteration is the obliteration of the 2.6 miles or 0.4 miles of new temporary road proposed with Alternatives 2 and 3, respectively. It is not clear if other road decommissioning or obliteration is proposed (i.e., obliteration of existing roads). We recommend that this be clarified in the FEIS.

Comment F

We fully support decommissioning of roads, since as noted above roads often impact water quality and many roads cannot be properly maintained resulting in road sediment transport to streams. Reductions in road density especially road stream crossing density has often been correlated with improved aquatic health. Lower road densities are also often associated with improved wildlife habitat, connectivity and security. In addition, there is often a relationship between higher road density and increased forest use and increased human caused fire occurrences. Reduction in road density, therefore, may also reduce risks of human caused fires, which could be important in an area with high fuels/fire risk and/or wildland/urban interface issues. We encourage the HNF to consider decommissioning existing roads that are causing resource damages and that may be difficult to maintain. We encourage closure and/or decommissioning of roads near streams with many stream crossings, since removal of these roads are more likely to have water quality benefits than closure and decommissioning of roads on upper slopes and ridges.

Comment G

The DEIS indicates that three reaches of Keep Cool Creek and one reach of Beaver Creek were assessed as functioning-at-risk (FAR), yet little discussion of the causes for these FAR ratings was provided. We recommend that the causes or reasons for the "functioning-at-risk" stream reaches be discussed further in the FEIS. The DEIS states that the FAR stream segments are expected to remain in that condition under the action alternatives. If there are anthropogenic causes on National Forest lands for these FAR ratings (e.g., grazing or road management), we encourage the HNF to include additional actions to help mitigate the adverse effects on stream functions occurring in these FAR stream segments.

Comment H It also appears that some harvest units with high detrimental soil disturbance (DSD) exceeding 15% would not show a net improvement in soil quality (i.e., units 14, 15, 59, 65 would not show reductions in DSD). We recommend that additional information and/or discussion be provided in the FEIS to show how treatment units exceeding 15% DSD, with no decrease in DSD after the project, would be consistent with the Regional Soil Quality Standards, which require a net improvement in soil quality in units exceeding 15% DSD. Perhaps additional active soil restoration may be needed in such units.

Comment I Finally, it would be helpful if an improved waterbody/watershed map showing locations of all project area waterbodies in relation to proposed roads and treatment units be included in the FEIS. A clear waterbody/watershed map showing locations of all waterbodies in relation to proposed management activities was lacking in the DEIS.

The EPA's further discussion and more detailed questions, comments, and/or concerns regarding the analysis, documentation, or potential environmental impacts of the Stonewall Vegetation Project DEIS are included in the enclosure with this letter. Based on the procedures EPA uses to evaluate the adequacy of the information and the potential environmental impacts of the proposed action and alternatives in an EIS, the DEIS has been rated as Category EC-2 (Environmental Concerns - Insufficient Information).

Comment J EPA concerns involve the potential for adverse environmental effects from new road construction and availability of funding to properly maintain existing and proposed new roads. We also recommend improved disclosure regarding functioning-at-risk stream segments, road decommissioning, and road locations and management activities relative to streams. A copy of EPA's rating criteria is attached. We recommend additional analysis and information to fully assess and mitigate all potential impacts of the management actions.

The EPA appreciates the opportunity to review and offer comments on the DEIS. If you have any questions please contact Mr. Philip Strobel of our NEPA Review and Compliance Group in Denver at 303-312-6704 or via e-mail at strobel.philip@epa.gov. Thank you for your consideration.

Sincerely,

Julie A. DalSoglio
Director
Montana Office

Enclosures
cc: Suzanne Bohan/Judy Roos, EPA 8EPR-N, Denver
Dean Yashan/Robert Ray, MDEQ, Helena

4

EPA COMMENTS ON THE STONEWALL VEGETATION PROJECT DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)

Brief Project Overview:

The Lincoln Ranger District, Helena National Forest (HNF), developed the Stonewall Vegetation Project to improve long-term forest health and vegetative diversity, reduce hazardous fuels, improve resilience to insects and wildfire, enhance and restore aspen, western larch, and ponderosa pine species and habitats, utilize economic value of trees, integrate restoration with socioeconomic considerations, and move the Stonewall area towards desired conditions described in the Forest Plan. The project area, consisting of approximately 24,010 acres (23,670 acres National Forest System [NFS] lands), is located approximately 4 miles north and west of the Town of Lincoln, within Lewis and Clark and Powell Counties, Montana, and includes drainages of Lincoln Creek, Beaver Creek and Keep Cool Creek all tributary to the upper Blackfoot River. No action and two action alternatives including the proposed action were evaluated in the DEIS.

Alternative 1 is the no action alternative involving no vegetative treatments and timber harvest, prescribed fire, road construction or other actions, and is evaluated to provide a baseline for comparison to the environmental consequences of the action alternatives.

Alternative 2, the proposed action, involves a total of 8,564 acres (about 36 percent of analysis area) of commercial and noncommercial treatments. Harvest treatments (regeneration harvest, intermediate harvest, and precommercial thinning) are proposed on a total of 3,099 acres (1944 acres tractor logging, 663 acres skyline cable logging, 493 acres hand thinning). Fuels treatments would follow timber removals, including slashing, pile burning, jackpot burning, and underburning. In addition to post-harvest burning, prescribed fire is also proposed within the inventoried roadless areas (IRAs) to promote ecological restoration of a mix of vegetation composition and structure across the landscape. Prescribed fire is proposed on 4,182 acres (about 0.5 percent) within the Bear Marshall Scapegoat Swan Inventoried Roadless Area and on 664 acres (about 3.8 percent) within the Lincoln Gulch Inventoried Roadless Area. Outside of the IRAs, approximately 2.6 miles of road would be built then obliterated immediately following timber removal, and 48.2 miles of road would be used. Project haul routes would be maintained and improved in accordance with BMPs to accommodate haul vehicles. Treatments proposed under alternative 2 would reduce elk hiding and thermal cover in both the Beaver Creek and Keep Cool Creek herd units, whereas the amount and distribution of forage would increase. Neither herd unit would meet Forest Plan standard 3 or 4a. This alternative would require a site-specific, nonsignificant forest plan amendment for standards 3 and 4(a) for the reductions in elk hiding cover and thermal cover. Commercial harvests would provide 22,022 CCF in sawtimber, and generate 171 jobs. Alternative 2 has the highest present net value (PNV) for the timber harvest and required design criteria at positive $178 thousand, and negative $1.2 million when considering all proposed activities,

Alternative 3, the preferred alternative, was developed to address scoping issues reducing potential impacts to habitat for threatened, endangered and sensitive species and designated critical habitat; management indicator species (MIS); big game hiding cover, thermal cover, and security cover.

Alternative 3 proposes a total of 6,564 acres (about 27 percent of analysis area) of commercial and noncommercial treatments. Harvest treatments (regeneration harvest, intermediate harvest, and precommercial thinning) are proposed on a total of 2,298 acres (1834 acres tractor logging, 491 acres skyline cable logging, 285 acres hand thinning). Fuels treatments would follow timber removals, including slashing, pile burning, jackpot burning, and underburning. In addition to post-harvest burning, prescribed fire is proposed within the Bear Marshall Scapegoat Swan Inventoried Roadless Area to promote ecological restoration of a mix of vegetation composition and structure across the landscape. Prescribed fire is proposed on 3,565 acres (about 0.4 percent) within the Bear Marshall Scapegoat Swan Inventoried Roadless Area. The Lincoln Gulch Inventoried Roadless Area would not be treated. Outside of the IRAs, approximately 0.4 mile of road would be built then obliterated immediately following timber, and 44.2 miles of road would be used. Commercial harvests would provide 14,299 CCF in sawtimber, and generate 118 jobs. The PNV for the timber harvest and required design criteria is positive $68 thousand, and negative $1.1 million for all proposed activities.

Comments:

Comment K-1. We appreciate the inclusion of clear narrative descriptions of alternatives in the DEIS providing introductory and background information; treatment descriptions; Table 8 summarizing treatments for the alternatives; maps of the action alternatives (Figures 13 and 14); Table 9 showing project design features, best management practices and mitigation; maps showing INFISH buffers (Figures 15 and 16); discussion of monitoring; alternatives considered but eliminated from detailed study; comparison of effects of the alternatives; as well as Appendices discussing public involvement, treatment descriptions/silviculture, cumulative effects, and roadless areas. The DEIS narrative, tables, maps, and Appendices facilitate improved project understanding, help define issues, and assist in evaluation of alternatives.

Comment K-2. We do suggest that an improved waterbody/watershed map identifying all waterbodies and showing locations of waterbodies in relation to proposed roads and treatment units be included in the DEIS. In addition to the three main waterbodies in the project area, Lincoln, Beaver, and Keep Cool Creek, the DEIS mentions unnamed tributaries of Lincoln Creek, and Theodore, Yukon, Klondike, Stonewall, Park, Liverpool and Sucker Creeks, yet a map clearly showing the location of all these waterbodies in relation to the proposed actions was not found. Figure 83 (page 546) shows project area watersheds in relation to roads for alternative 2, but waterbodies are not identified on this map, and locations of proposed roads and treatments in relation to waterbodies for both action alternatives are not clearly shown. We recommend that the FEIS provide a clearer map showing the location of all waterbodies in the project area in relation to the proposed actions.

Water Resources/Hydrology/Fisheries

Comment L-3. We appreciate the DEIS disclosure that existing water quality concerns in the project area are mainly related to sediment delivered from roadways, and that undersized road culverts are a concern (i.e., culvert failure during flood flows could result in significant sediment delivery to streams, page 523). The DEIS states that many of the existing roads in the project area are known sources of sediment to

streams and characterized as moderate-to high-risk in the HNF Roads Analysis Process (page 537). Table 133 (page 538) shows 22 miles of roads with a high risk of sediment delivery and 33 miles of roads with a moderate risk of sediment delivery, and 41 sediment delivery points. We appreciate these disclosures regarding aquatic effects of roads. Roads and motorized uses often affect watershed conditions, water quality and fisheries in streams on National Forests. Sediment from roads, particularly during road construction, and from poorly maintained roads with inadequate road drainage and many stream crossings, is often of concern.

We are pleased that extensive road maintenance to meet State BMPs is planned for project roads to reduce road sediment delivery to surface waters, since older roads were often built with outdated management practices (those dating from the 1950s to the mid-1970s) that need repair and upgrading. Although the DEIS acknowledges that some sediment delivery may occur over the short-term during road construction and road maintenance (page 551, 564). We are also pleased that a relatively small amount of new roads are proposed with the action alternatives (0.4 miles with Alternative 3 and 2.6 miles with Alternative 2), and these roads would be obliterated immediately following timber removal. In addition, we appreciate locating roads in upland areas away from streams (page 532).

Comment L-4. The DEIS states that long-term sediment reductions would result from road obliteration (page 551). However, it is not clear if any obliteration or decommissioning of existing roads is proposed. The DEIS seems to indicate that the only proposed road obliteration is the obliteration of the 2.6 miles or 0.4 miles of new temporary road proposed with Alternatives 2 and 3, respectively. Is any other road decommissioning/obliteration proposed?

We fully support decommissioning of roads, since as noted above roads often impact water quality and many roads cannot be properly maintained resulting in road sediment transport to streams. Reductions in road density especially road stream crossing density has often been correlated with improved aquatic health. We also note that lower road densities are often associated with improved wildlife habitat, connectivity and security. In addition, there is often a relationship between higher road density and increased forest use and increased human caused fire occurrences. Reduction in road density, therefore, may also reduce risks of human caused fires, which could be important in an area with high fuels/fire risk and/or wildland/urban interface issues.

We encourage the HNF to consider decommissioning existing roads that are causing resource damages and difficult to maintain. We encourage closure and/or decommissioning of roads near streams with many stream crossings, since removal of these roads are more likely to have water quality benefits than closure and decommissioning of roads on upper slopes and ridges.

Comment L-5. The DEIS indicates that segments of the Blackfoot River are water quality impaired and included on Montana's Clean Water Act, Section 303(d) list of impaired waters (page 537), and it acknowledges that the Montana Dept. of Environmental Quality (MDEQ) prepared the Blackfoot River Sediment Total Maximum Daily Load (TMDL) for the river segment below the Forest boundary. It is important that Stonewall Vegetation Project activities be consistent with the Blackfoot Headwaters

Sediment TMDL and Water Quality and Habitat Restoration Plan (which can be downloaded at, http://deq.mt.gov/wqinfo/TMDL/finalReports.mcpx).

We are pleased that the DEIS states that mitigation measures sufficient to offset any project-related sediment delivery (from treatment units and haul routes) in the form of road BMPs and project design features have been incorporated into the project action alternatives (page 537), and that a goal of no net sediment increase or preferably, a reduction in sediment delivery from current levels for the proposed project has been set (page 538). We also appreciate the conduct of sediment/pollution source surveys and road sediment and culvert surveys for the project analysis (page 531). Table 139 (page 547) shows an estimated reduction of 2 tons of sediment delivery per year with the proposed BMP maintenance and road improvements to be carried out in action alternatives 2 and 3.

The DEIS states that 76.4 miles of NFS roads are located within the Stonewall Project area, equating to a road density of approximately 2.04 miles per square mile (page 163). Forty-eight miles of road used for Alternative 2 and 44 miles of road under Alternative 3 would receive BMP improvements (i.e., surface grading, re-establishment of drainage features -grade dips and ditch-relief culverts-, replacing undersized culverts, and application of sorted gravel at stream crossings and other sediment delivery points). We fully support proposed road BMP improvements including the new culvert to be installed where National Forest System (NFS) Road 626-B1 crosses the tributary to Lincoln Gulch; a sediment-filtering device (i.e., riprap, weed-free straw bales, filter fence, and/or slash filter windrows) at the crossing outlet; and the sediment-filtering device (i.e., weed-free straw bales, filter fence, bio-logs/waddles, and/or slash filter windrows) where NFS Road 607-E1 parallels Stonewall Creek (page 171).

We note, however, that funding for road maintenance is often limited, and there is a significant backlog of road maintenance needs on National Forests (Source: *"Rightsizing" the Forest Service Road System Part 1: Road Trend Analysis,* March 22, 2007). We often have concerns regarding the adequacy of funding to properly maintain road BMPs over the long-term, since roads need to be routinely inspected and road BMPs evaluated in regard to their effectiveness, and BMPs improved and/or maintained as needed over time to remain effective. Will adequate funding for road maintenance and implementation of road BMPS, stream crossings and drainage improvements be provided over the long-term for all roads within the Stonewall Project area?

Specific concerns regarding road BMPs s include addressing road drainage and surface erosion, adequacy of waterbars, drain dips, ditch relief culverts to avoid drainage running on or along roads/trails; interception and routing of sediment to streams; unstable stream crossings and potential for washout; culvert sizing, culvert allowance of fish migration and effects on stream structure and seasonal and spawning habitats; supplies of large woody debris; road density; reducing unnecessary stream crossings; eliminating fords, armoring stream channels at stream crossings, graveling roads, reducing motorized uses in more erosive areas; road encroachment on stream, riparian, and wetland habitats; and relocating roads away from streams where possible.

We recommend that the HNF coordinate with Montana DEQ TMDL program staff to assure that the MDEQ considers the proposed Stonewall Vegetation Project to be consistent with the Blackfoot Headwaters Sediment TMDL and Water Quality and Habitat Restoration Plan (e.g., contact MDEQ staff such as Mr. Robert Ray at 406-444-5319 and/or Mr. Dean Yashan at 406-444-5317). We also encourage review of the MDEQ's pamphlet, ***"Understanding the Montana TMDL Process,"*** http://deq.mt.gov/wqinfo/TMDL/default.mcpx .

Comment L-6. The DEIS states that three reaches of Keep Cool Creek and one reach of Beaver Creek were assessed to be functioning-at-risk (FAR) (Table 135, page 540), yet little discussion of the causes for these FAR ratings was provided. We recommend that the causes or reasons for the FAR ratings for these "at-risk" stream reaches be discussed further in the FEIS. The DEIS states that the FAR stream segments are expected to remain in that condition under the action alternatives (page 550). If there are anthropogenic causes for these FAR ratings on National Forest lands (e.g., grazing or road management), we encourage the HNF to include actions to help mitigate the adverse effects on stream functions for these at-risk stream segments in the proposed project.

Comment L-7. The DEIS states that proposed roads would not develop sediment delivery points because they would be located in upland locations without hydrologic connection to any channels (page 533). Although it is later stated that proposed road segment number 5, accessing units 10 and 11, crosses a small drainage of a headwater tributary basin to Lincoln Creek (pages 537, 547), and proposed new road number 1 crosses the drainage of a headwater tributary basin to Lincoln Creek (page 547). This discussion on page 533 about roads in upland locations without hydrologic connections seems inconsistent with the later discussion regarding roads number 1 and 5 crossing drainages. Also as noted in comment #2 the location of existing and proposed roads relative to all project area streams is not clear due to lack of a good waterbody map. We recommend that an improved waterbody/watershed map showing proposed roads in relation to streams be included in the FEIS to assist in project understanding and evaluation. It would also improve disclosure if the proposed new temporary roads to be built were more clearly displayed on Figures 38 and 39 (pages 166, 169) showing roads for Alternatives 2 and 3.

Comment L-8. Table 9 specifies some road design features and BMPs to mitigate adverse effects from roads. For your information we are providing some general recommendations regarding roads as follows:

* minimize road construction and reduce road density as much as possible to reduce potential adverse effects to watersheds;

* locate roads in uplands, away from streams and riparian areas as much as possible;

* minimize the number of road stream crossings;

* locate roads away from steep slopes or erosive soils and areas of mass failure;

* 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 promote drainage off roads avoid drainage or along roads and avoid interception and routing sediment to streams;

* consider road effects on stream structure and seasonal and spawning habitats;

* allow for adequate large woody debris recruitment to streams and riparian buffers near streams;

* properly size culverts to handle flood events, pass bedload and woody debris, and reduce potential for washout;

* replace undersized culverts and adjust culverts which are not properly aligned or which present fish passage problems and/or serve as barriers to fish migration;

* use bridges or open bottom culverts that simulate stream grade and substrate and that provide adequate capacity for flood flows, bedload and woody debris where needed to minimize adverse fisheries effects of road stream crossings.

Blading of unpaved roads in a manner that contributes to road erosion and sediment transport to streams and wetlands should be avoided. It is important that road grading focus on reducing road surface erosion and sediment delivery from roads to area streams. Practices of expediently sidecasting graded material over the shoulder and widening shoulders and snow plowing can have adverse effects upon streams, wetlands, and riparian areas that are adjacent to roads. These practices should be avoided.

Roads are particularly vulnerable to damage during spring breakup as overly-saturated roadbeds from winter freezing are working to dry out, and this typically occurs between March 30 and June 30, but can vary depending on the severity of the winter and spring weather conditions. We encourage avoiding road use during spring breakup conditions, and closing roads to log haul during spring break up to reduce rutting of roads that increase road erosion and sediment delivery, and graveling of haul roads. Snow plowing of roads later in winter for log haul should also be avoided to limit runoff created road ruts during late winter thaws that increase road erosion (i.e., ruts channel road runoff along roads increasing erosion and sediment transport).

We encourage routine conduct of inspections and evaluations to identify conditions on roads and other anthropogenic sediment sources that may cause or contribute to sediment to streams, and to include activities in the project to correct as many of these conditions and sources as possible. Forest Service Region 1 provides training for operators of road graders regarding conduct of road maintenance in a manner that protects streams and wetlands, (i.e., Gravel Roads Back to the Basics). If there are road maintenance needs on unpaved roads adjacent to streams and wetlands we encourage utilization of such training (contact Fred Bower FS R1 Transportation Management

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Engineer, at 406-329-3354).

We also note that there are training videos available from the Forest Service San Dimas Technology and Development Center for use by the Forest Service and its contractors (e.g., "Forest Roads and the Environment"-an overview of how maintenance can affect watershed condition and fish habitat; "Reading the Traveled Way" -how road conditions create problems and how to identify effective treatments; "Reading Beyond the Traveled Way"-explains considerations of roads vs. natural landscape functions and how to design maintenance to minimize road impacts; "Smoothing and Reshaping the Traveled Way"-step by step process for smoothing and reshaping a road while maintaining crowns and other road slopes; and "Maintaining the Ditch and Surface Cross Drains"-instructions for constructing and maintaining ditches, culverts and surface cross drains).

Comment L-9. In regard to water yield, Table 142 (page 549) entitled "Percent estimated cumulative water yield increase over baseline conditions (%)" evidences relatively low water yield increases in the Lincoln, Beaver, and Keep Cool Creek drainages as a result of project implementation. We are pleased that the DEIS states that it is unlikely there would be a detectable cumulative increase in water yield, and that the estimated water yield increase for project watersheds would be below the DEQ-recommended threshold of 10 percent, and below the 15 percent stipulated in ARM 17.30.715. The DEIS also reported that project area streams appear to lose flow as they move from steeper areas and encounter deep valley floor sediments, further reducing risk of adverse effects from any increases in water yield (page 549). We agree that it does not appear that estimated increases in water yield would cause adverse effects (i.e., channel or bank erosion from peak flow increases).

Comment L-10. Thank you for including Table 9 (pages 45-57) identifying project design features, best management practices and mitigation for the Stonewall Vegetation Project, including soil, watershed and fisheries mitigation measures. We appreciate the listing of project design features and mitigation measures to protect water quality and soils (e.g., using cable logging on steeper slopes; reusin existing skid trails where practicable; harvesting on dry, frozen or snow covered soils on sensitive sites; 100 ft distances between skid trails; placing slash on skid trails; seeding landings, scattering coarse down woody throughout harvest units, etc.).

We fully support use of appropriate BMPs to reduce water quality impacts of timber harvests, prescribed burns and road construction activities. We often suggest mitigation measures such as use of existing skid trails wherever possible; restrictions on skidding with tracked machinery in sensitive areas; using slash mats to protect soils; constructing water bars; creating brush sediment traps; adding slash to skid trail surfaces after recontouring and ripping; scarifying compacted soils prior to seeding/planting of forbs, grasses or shrubs to reduce soil erosion and hasten recovery; as well as recontouring, slashing and seeding of temporary roads and log landing areas following use to reduce erosion and adverse impacts to soils.

Wetlands and Riparian Areas

Comment M-11. 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. It is important that wetlands and riparian areas be properly managed to maintain and restore the health of watersheds and aquatic resources to sustain aquatic and terrestrial species and provide water of sufficient quality and quantity to support beneficial uses. Adequate riparian vegetation in stream-side areas must be maintained to stabilize streambanks and stream channels during floods and other periodic high flow events.

The DEIS states that no wetlands have been identified within the project boundaries (page 544). It is hard to believe that a project area of over 24,000 acres does not include any wetlands within the project boundaries (i.e., marsh areas, small seeps, springs, etc.). We recommend that all the treatment units be reviewed in the field to determine the presence of wetlands, and if wetlands are found that they be identified on the Sale Area Map and flagged on the ground to better assure that timber contractors will be able to avoid them.

We are pleased that Table 9 (page 52) states that for wetlands greater than one acre, the riparian habitat conservation area (RHCA) would be a minimum of 150 feet and extend to the outer limits of riparian vegetation, the extent of seasonally saturated soil, the extent of highly unstable areas, or the distance equal to the height of one site-potential tree. For wetlands less than 1 acre, the RHCA boundary would be one-half site potential tree from the edges of the stream channel, wetland, landslide, or landslide prone area, or a 50-foot slope distance, whichever is greatest. Such buffers would appear to provide adequate protection for wetlands as long as the wetlands are identified and marked on the ground and on sale area maps. We are also pleased that design feature S/WS/F-22 indicates that heavy equipment use in wetlands will be avoided (page 53),and that INFISH standards including RHCA riparian buffers would be met during the proposed project (page 563).

Soils

Comment N-12. Table 124 (page 506) shows soil characteristics in the project area, but does not identify the potential for higher erosion risks for the various soil types in the treatment units or where road work would take place. Are any of the soils, particularly soils in summer tractor harvest units or where new roads are proposed, susceptible to high erosion risk or risk of mass failure? We generally recommend avoidance of tractor timber harvest and road construction in areas with sensitive soils and/or high risk of erosion potential.

Comment N-13. The DEIS states that existing detrimental soil disturbance (DSD) plus the DSD predicted for proposed activities would not exceed 15% of a given activity area, and in areas where more than 15% DSD exists from prior activities, the cumulative detrimental effects should not exceed the conditions prior to the planned activity and should move toward a net improvement in soil quality, thus, setting the threshold value for DSD at 15 % (page 509). Table 125 shows DSD exceeding 15% in some units (e.g., units 1, 12, 14, 15, 59, 65). Appendix B shows that Unit 1 involves 96 acres of regeneration harvest; Unit 12 involves 80 acres of regeneration harvest; Unit 14 involves 11 acres of intermediate harvest; Unit 15 involves 15 acres of intermediate harvest; Unit 59 involves 16 acres of intermediate harvest; and Unit 65 involves 25 acres of intermediate harvest. High DSD in units 12-

15 result from past mining activity, and high DSD in the other units are stated to result from past skid trails and landings (page 509).

Units 14, 59 and 65 would be hand thinned, and unit 1 would be harvested during winter on snow or frozen ground (Table 9). It is stated that HNF soil monitoring has shown that for traditional summer-based harvest activities in dry conditions, there is a 11.5 percent increase in DSD (9 percent from skid trails, 2.5 percent from landings); for winter-based harvest, there is a 5 percent increase in DSD (3 percent from skid trails, 2 percent from landings); for skyline harvest (page 503). It is not clear to us why harvest units 12 and 15 with existing high DSD would not also be harvested during winter on snow or frozen ground or via skyline cable to reduce the increase in DSD.

Also Table 129 (pages 520-522) shows DSD for harvest units before and after treatments and after soil restoration. This table shows unit 1 to go from 19% DSD currently to 27.1% DSD after treatments and then to 17% DSD after restoration; unit 12 goes from 18% DSD currently to 25.5 % DSD after treatments and 15.8% DSD after restoration; unit 14 remains at 30 % DSD even after restoration; unit 15 remains at 22% DSD even after restoration; unit 59 remains at 27% DSD after hand treatments; and unit 65 remains at 25% DSD after hand treatment (no restoration is shown for units 59 and 65). It is not clear how the high DSD (>15%) remaining the same before and after treatments for units 14, 15, 59 and 65 is considered to promote a move toward a net improvement in soil quality.

The DEIS indicates that for units 14 and 15 there is an ample amount of area previously disturbed that would be redisturbed by the proposed project, and then restored to show a net decrease in detrimental disturbance (page 524). However this net reduction in DSD is not shown in Table 129 for those units or for units 59 and 65. It would appear that additional active soil restoration (subsoiling or tilling) may be needed to effect an improvement in soil quality for units 14, 15, 59, and 65 to promote a reduction in DSD to show an improved trend in soil quality.

We recommend that additional information and/or discussion be provided in the FEIS to show how units exceeding 15% DSD, with no decrease in DSD after the project, including after restoration, would show a net improvement in soil quality, and thus, be consistent with the Regional Soil Quality Standard. It may be that consideration should be given to dropping harvest units with existing high DSD levels unless improved soil quality can be demonstrated (i.e., net reduction in DSD).

Comment N-14. We are pleased that Table 9 shows that 5 to 20 tons per acre of coarse woody material (greater than 3-inch diameter) would be retained in harvest units for warm, dry types, and 10 to 20 tons per acre for other types following vegetation treatments. We fully support retaining adequate amounts of woody debris on-site following vegetative treatments to maintain soil productivity and for nutrient cycling.

Comment N-15. While there is discussion of prior soil quality monitoring in the DEIS we did not see much discussion or disclosure relating to proposed monitoring of soils during and after the Stonewall Vegetation Project. Will HNF staff conduct soil monitoring before and after the project to verify

compliance with soil quality standards? How many sites will be monitored and evaluated for soil disturbance and compliance with soil quality standards? If no soil monitoring is proposed for the project how will compliance with soil quality standards be verified?

Monitoring

Comment O-16. We consider monitoring to be an integral part of land management. 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, so that adverse impacts may be identified and appropriately mitigated. Monitoring also allows verification and documentation of environmental effects predicted during NEPA evaluation.

EPA particularly believes that water quality/aquatics monitoring is a necessary and crucial element in identifying and understanding the consequences of one's actions, and for determining effectiveness in BMPs in protecting water quality. The achievement of water quality standards for non-point source activities occurs through the implementation of BMPs. Although BMPs are designed to protect water quality, they need to be monitored to verify their effectiveness. If found ineffective, BMPs need to be revised, and impacts mitigated. We encourage adequate monitoring budgets for conduct of aquatic monitoring to document BMP effectiveness and long-term water quality improvements associated with road BMP work and road decommissioning.

Project monitoring is discussed in DEIS Chapter 2 where it is stated that BMP monitoring will be performed periodically by the sale administrator, focusing on BMP effectiveness and on whether BMPs were applied (page 60). It is also states that the Stonewall Project area is within the Southwestern Crown Collaborative (SWCC), one of the original 10 Collaborative Forest Landscape Restoration Projects (CFLR) selected for funding where 10 percent of the CFLR funds would be allocated to monitoring. A Long-term Monitoring Plan for the SWCC is being prepared, but details of specific SWCC monitoring plans for the Stonewall project are not yet available. Soil and water are stated to be among the goals of SWCC monitoring.

We recommend that the FEIS include more detail regarding monitoring, particularly regarding water quality or aquatic monitoring to verify that the BMPs are effective as implemented to meet State water quality standards, or to validate DEIS predictions of minimal water quality impacts (e.g., if, where and when such monitoring may occur). We encourage adequate monitoring budgets for conduct of monitoring to document BMP effectiveness and effects of road construction and timber harvests, although we recognize that funding for monitoring is limited. We encourage conduct of some aquatic monitoring to document and measure water quality impacts of the activities that are implemented. We generally recommend that some aquatic monitoring be included in projects, using aquatic monitoring parameters such as channel cross-sections, bank stability, width/depth ratios,

riffle stability index, pools, large woody debris, fine sediment, pebble counts, macroinvertebrates, etc.. Biological monitoring can be particularly helpful, since monitoring of the aquatic biological community integrates the effects of pollutant stressors over time and, thus, provides a more holistic measure of impacts than grab samples.

We note that there may be PACFISH/INFISH Biological Opinion (PIBO) monitoring sites in the project area that could be used to help evaluate actual project effects (http://www.fs.fed.us/biology/fishecology/emp/index.html). If there are PIBO monitoring sites in the area, perhaps they may be considered for their potential to evaluate project effects.

Air Quality

Comment P-17. The Stonewall Vegetation Project action alternatives include 8,041 or 6,155 total acres of burning for Alternatives 2 and 3, respectively (page 34), including pile burning, jackpot burning, broadcast burning, and underburning. Although we note that slightly different acreage burn totals are shown in Table 51 (page 211), and on page 172 it states that prescribed burning treatment are proposed on approximately 8,560 acres. We recommend that consistent burn acreage information be presented in the FEIS, or at least clearer explanation of the various burn acreages that are disclosed. Burning would take place over a 5 to 10 year period (page 214).

The EPA supports judicious and well planned use of prescribed fire to reduce hazardous fuels and restore fire to forest ecosystems. We support the national goal reduce the risk of uncontrolled wildfire in wildland-urban interface areas. Although as is well known, smoke from fire contains air pollutants, including tiny particulates (PM_{10} and $PM_{2.5}$) which can cause health problems, especially for people suffering from respiratory illnesses such as asthma or emphysema, or heart problems. PM_{10} and $PM_{2.5}$ particles are both of concern, although $PM_{2.5}$ is greater concern because it can penetrate into the lungs whereas larger particles (included in the coarse fraction of PM_{10}) deposit in the upper respiratory tract. Particulate concentrations that exceed health standards have been measured downwind from prescribed burns.

In addition to health-based standards to protect ambient air quality, the Clean Air Act requires special protection of visibility in the nation's large National Parks and Wilderness Areas (identified as mandatory Class I Federal areas) and establishes a national goal for "the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I federal areas which impairment results from man-made air pollution." EPA's Clean Air Act implementing regulations require states to submit State Implementation Plans that, among other things, demonstrate attainment of the National Ambient Air Quality Standards (NAAQS), as well as reasonable progress toward the national visibility goal. Actions by Federal Land Managers that lack adequate mitigation of air quality impacts could impede a state's ability to meet Clean Air Act requirements. It is important that Project activities, when combined with air quality impacts from external sources, do not adversely impact the NAAQS or air quality related values (AQRVs) such as visibility. Although we also recognize and agree that wildfires often result in high levels of particulate emissions and the worst visibility (page 67).

The Stonewall Vegetation Project area is located in Montana/Idaho Airsheds 3B and 6 (page 205). The nearest Class I air quality areas are the Scapegoat Wilderness, 1 air mile north; the Bob Marshall Wilderness approximately 18 air miles northwest; Mission Mountain Wilderness 48 air miles northwest; Gates of the Mountains 36 air miles southeast; and the Flathead Reservation 40 air miles west of the project area (page 206). The only nonattainment areas reported in the vicinity are Lewis and Clark County for sulfur dioxide and lead. Sensitive receptors for particulates are shown in Table 49 along with their distances from the Stonewall Project area (page 209).

We appreciate the inclusion of Figure 49 (page 207) showing the locations of the Class I areas, and Figure 50 (page 213) showing the potential smoke impact area for the Stonewall Project; and Tables 52 and 53 (pages 211, 212) showing estimated $PM_{2.5}$ concentrations at various distances from burning activities.

We are pleased that all prescribed burning would be implemented in full compliance with the MDEQ air program and in coordination with the Montana/Idaho Airshed Group and reported to the Airshed Coordinator on a daily basis, with burning dependent upon site conditions and weather conditions (page 214). We suggest that the website for the Montana/Idaho State Airshed Group, http://www.smokemu.org/ be displayed in the FEIS, since it may be of interest to the public.

We are also pleased that notice of the pile and prescribed burning timeframes, or burn windows, would be shared with the public through paper notices and announcements on the Forest website (page 214). This is important for residents downwind of burn areas, since even though burns will be scheduled during periods of favorable meteorological conditions for smoke dispersal, the weather can change causing smoke not to disperse as intended. This can be especially problematic for smoldering pile burns when a period of poor ventilation follows a good ventilation day.

We encourage consideration of additional disclosures when air pollutants are projected to be emitted in substantial amounts (e.g., see pages 24 - 27 of the 2010 Montana/Idaho Airshed guide found at, http://www.smokemu.org/docs/20100601OpsGuide.pdf); and consideration of disclosure of mitigation measures such as fugitive dust control requirements/road surfacing requirements, or use of combustion technology such as air curtain destructors, http://www.airburners.com/principle.html, etc.). It would be of interest to identify and discuss these other methods and their cost in comparison to pile burning.

We also recommend that the FEIS include: (1) discussion of appropriate smoke monitoring techniques and mitigation to minimize effects to nearby residents downwind of prescribed burns (including meteorological conditions favorable for mitigated prescribed fire smoke and alternatives to prescribed fire such as mechanical fuel reduction methods); (2) requirements for the incorporation of the Interagency Prescribed Fire Planning and Implementation Procedures Guide (July 2008, http://www.nwcg.gov/pms/RxFire/rxfireguide.pdf) into the site-specific burn plans designed for each prescribed burn conducted under this project.

The EPA also supports the beneficial use of biomass for energy recovery, or other uses that would not release biomass carbon into the atmosphere. It would be beneficial for the EIS to disclose any opportunities that might exist to utilize logging slash as a fuel for heat, electricity (or both), as well as any saleable markets for the material other than as a combustion fuel (such as novel construction materials like concrete reinforced with chipped slash, http://www.materia.nl/575.0.html?&user_material%5Bmaterial_uid%5D=2145&cHash=b3a6a6a500). There are efforts to promote the use of available biomass waste streams such as those that will be available from projects like the Stonewall Vegetation Project, and it is therefore important for forest management decisions to be informed of all available beneficial uses for wastes generated by the project. The presentation of such information in the FEIS would also better align with national goals for increasing the availability and use of biomass as a fuel, while maintaining ecological balances necessary for the responsible use of biomass as a fuel source.

Forest Vegetation

Comment Q-18. We appreciate the presentation and discussion of the treatment descriptions and effects in the 8 treatment groups. The Chapter 3 DEIS discussion of forest vegetation (pages 89-162) provides helpful information to better understand project effects on forest habitat types, stand structure and species composition, and insects and disease impacts to forest vegetation. We also appreciate the discussion of fire/fuels, fire regimes, fire behavior and fire ecology in Chapter 3 (pages 172–203). We support the need to restore fire as a natural disturbance process, and to help address competing and unwanted vegetation and fuel loads, fire risk and forest health.

While we do not oppose regeneration harvests to improve forest health and address other aspects of the project purpose and need, we often favor understory thinning from below, slashing and prescribed fire to address fuels build-up with reduced ecological impacts. We also favor retention of the larger more vigorous trees, particularly trees of desirable tree species whose overall composition may be in decline (e.g., Ponderosa pine, aspen, whitebark pine, western larch). Larger trees are generally long-lived and fire resistant, and provide important wildlife habitat. Harvest of many live mature trees could potentially increase fire risk, as well as reduce wildlife habitat. If the forest canopy is opened too much by removal of large fire resistant trees it may promote more vigorous growth of underbrush and small diameter trees that would increase fuels and fire risk in subsequent years, contrary to the fire risk reduction purpose and need. We encourage consideration for retaining the best trees (i.e., insect and disease free, growing, full crowned trees) and most desirable tree species.

We note that the DEIS indicates that both action alternatives would increase resistance to insects and diseases by increasing tree species diversity and age class diversity, reducing stocking and so increasing individual tree resistance, and modifying structures; but that Alternative 2 would reduce susceptibility to a greater degree than Alternative 3, largely because a greater area is being treated (page 161).

Comment Q-19. EPA supports protection of old growth habitats and maintenance or restoration of native, late-seral overstory trees and forest composition and structure within ranges of historic natural variability. Old growth stands are ecologically diverse and provide good breeding and feeding habitat for many bird and animal species, which have a preference or dependence on old growth (e.g., barred owl, great gray owl, pileated woodpecker). Much old growth habitat has already been lost, and it is important to prevent continued loss of old growth habitat and promote long-term sustainability of old growth stands, and restore where possible the geographic extent and connectivity of old growth (e.g., using passive and active management-such as avoiding harvest of old growth trees, leaving healthy larger and older seral species trees, thinning and underburning to reduce fuel loads and ladder fuels in old growth while enhancing old growth characteristics). Often lands outside the forest boundary have not been managed for the late-seral or old growth component, so National Forest lands may need to contribute more to the late-seral component to compensate for the loss of this component on other land ownerships within an ecoregion.

The DEIS states that no activities are proposed in old growth in 3rd order drainages, and all old growth would continue to develop successionally under all alternatives (page 68). About 49 percent of the Stonewall project area is stated to be within 3rd-order drainages, and 51 percent outside of these drainages (page 219). In the long term, dense forest conditions with multiple-layer stands and increasing surface fuels would support increasingly intense fire behavior and severe fire effects (page 69), and stand replacement fire would become more likely on the landscape and old growth stands more susceptible to the impacts. Some thinning and prescribed burning is proposed in old growth outside of the 3rd-order drainages in Alternatives 2 and 3 (pages 69, 236, 240), but it is stated that potential and verified old growth stands would still qualify as old growth following the proposed treatments outside 3rd order drainages, and Forest Plan requirements for old growth would be met.

For your information, we generally do not object to treatments in old growth that are intended to protect old growth characteristics, such as thinning of understory or under burning to reduce fuel loads and ladder fuels in old growth. Such treatments may lessen the threat of stand removal by a wildfire and reduce competition with other vegetation to promote more resilient, larger diameter old growth trees. Careful prescribed burning in old growth stands can reduce fuel loads and fire risk in such stands, and thus, may promote longer-term protection and sustainability of old growth stands.

Noxious Weeds

Comment R-20. Weeds are a great threat to biodiversity and can often out-compete native plants and produce a monoculture that has little or no plant species diversity or benefit to wildlife. Noxious weeds tend to gain a foothold where there is disturbance in the ecosystem, such as road building, logging, livestock grazing or fire activities. We are pleased that the DEIS includes a section addressing noxious weeds (pages 493 to 502); the HNF has a program to control noxious weeds (2006 HNF Noxious Weed Treatment Project); and design features to manage weed infestations are shown in Table 9 (pages 46, 47, NOX-1, NOX-2, NOX -3, NOX-4 NOX-5, NOX-6 and NOX-7).

EPA supports integrated weed management, and we encourage use of weed control measures at the earliest stage of invasion to reduce impacts to native plant communities. Weed prevention is the most cost-effective way to manage and control weeds by avoiding new infestations and spread of weeds, and thus, avoiding the need for subsequent weed treatments. We encourage tracking of weed infestations, control actions, and effectiveness of control actions in a Forest-level weed database. We note with the large amount of prescribed fire that is proposed it will be important to monitor burned areas for weed infestation. We encourage seeding of burned areas after burning to reduce risk of weed spread.

It is stated that the there are approximately 564 acres of weeds mapped on National Forest System land within the Stonewall Project boundary (page 493), with the general distribution of noxious weeds in the area shown in Figure 82 (page 494). It is also stated that the HNF treats approximately one-third of its mapped weeds on an annual basis under its normal weed treatment program; therefore for this analysis it is assumed that one-third of the acres of weeds, would treated annually (page 495), or approximately 188 acres of the 564 acres of weeds mapped in the Stonewall Project area.

While we support weed control, it is also important to recognize that herbicide use for weed control has the potential to cause adverse effects to water quality and fisheries. Herbicide drift into streams and wetlands could adversely affect aquatic life and wetland functions such as food chain support and habitat for wetland species. Montana's Water Quality Standards include a general narrative standard requiring surface waters to *be free from substances that create concentrations which are toxic or harmful to aquatic life*. We recommend that herbicide weed treatments be coordinated with the Forest botanist to assure protection to sensitive plants, and coordinated with fisheries biologists and wildlife biologists to assure that sensitive fisheries and wildlife habitat areas are protected.

Some suggestions to reduce potential water quality and fisheries effects from herbicide spraying that we didn't see listed among these weed management measures are: 1) streams and wetlands in any area to be sprayed be identified and flagged on the ground to assure that herbicide applicators are aware of the location of wetlands, and thus, can avoid spraying in or near wetlands; 2) use treatment methods that target individual noxious weed plants in riparian and wetland areas (depending on the targeted weed species, manual control or hand pulling may be one of the best options for weed control within riparian/wetland areas or close to water). We also recommend that use of picloram based herbicides (e.g., tordon) be avoided near aquatic areas, and that potentially toxic herbicides be applied at the lowest rate effective in meeting weed control objectives and according to guidelines for protecting public health and the environment.

Please also note that there may be additional pesticide use limitations that set forth geographically specific requirements for the protection of endangered or threatened species and their designated critical habitat. This information can be found at http://www.epa.gov/espp/bulletins.htm. You may also want to consider use of a more selective herbicide (clopyralid) in conifer associated communities to reduce impacts on non-target vegetation. We also note that spotted knapweed, which

is a prevalent noxious weed species in western Montana, is non-rhizomatous and should be relatively easy to control with lower rates of the most selective low toxicity herbicides.

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 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).

Comment R-21. Weed seeds are often transported by wind and water, animal fur, feathers and feces, but primarily by people. The greatest vector for spread of weeds is through motorized vehicles-cars, trucks, ATVs, motorcycles, and even snowmobiles. Weed seeds are often caught on the vehicle undercarriage in mud and released on the Forest. A single vehicle driven several feet through a knapweed site can acquire up to 2,000 seeds, 200 of which may still be attached after 10 miles of driving (Montana Knapweeds: Identification, Biology and Management, MSU Extension Service).

We believe an effective noxious weed control program should consider restrictions on motorized uses, particularly off-road uses, where necessary. Off-road vehicles travel off-trail, disturbing soil, creating weed seedbeds, and dispersing seeds widely. Restrictions on motorized uses may also be needed after burning and harvest activities until native vegetation is reestablished in the disturbed areas to reduce potential for weed infestation of the disturbed sites. Weed seed dispersal from non-motorized travel is of lesser concern because of fewer places to collect/transport seed, and the dispersal rate and distances along trails are less with non-motorized travel.

Wildlife/T&E Species

Comment S-22. The Stonewall Project area is rich in wildlife resources. The DEIS indicates that several threatened endangered (T&E) species occur in the Stonewall Project area (i.e., grizzly bear, Canada lynx and wolverine (a proposed species)), as well as several sensitive and federal candidate species and management indicator species (MIS) (pages 70, 240-475). In regard to effects of both action alternatives on T&E species it is stated that alternatives, "*may affect, but are not likely to adversely affect*" the threatened grizzly bear, Canada lynx and its critical habitat, and "*would not jeopardize*" the wolverine (pages 72-73). It is also stated that both action alternatives, "*may affect, but are not likely to adversely affect*" the threatened bull trout (page 566).

If it is found that the finally selected project alternative may adversely affect any T&E species, we recommend that the final EIS include the associated USFWS Biological Opinion or formal concurrence for the following reasons:

(a) NEPA requires public involvement and full disclosure of all issues upon which a decision is to be made;

(b) The CEQ Regulations for Implementing the Procedural Provisions of NEPA strongly

encourage the integration of NEPA requirements with other environmental review and consultation requirements so that all such procedures run concurrently rather than consecutively (40 CFR 1500.2(c) and 1502.25); and

(c) The Endangered Species Act (ESA) consultation process can result in the identification of reasonable and prudent alternatives to preclude jeopardy, and mandated reasonable and prudent measures to reduce incidental take. These can affect project implementation.

Since the Biological Assessment and EIS must evaluate the potential impacts on listed species, they can jointly assist in analyzing the effectiveness of alternatives and mitigation measures. If T&E species are subsequently identified in the project area, EPA recommends that the final EIS and Record of Decision not be completed prior to the completion of ESA consultation. If the consultation process is treated as a separate process, the Agencies risk USFWS identification of additional significant impacts, new mitigation measures, or changes to the preferred alternative.

Comment S-23. The DEIS includes helpful discussion regarding availability of snags for cavity nesting species such as pileated and black-backed woodpeckers and flammulated owls (page 68, 215-240). It is stated that snag numbers are currently very high (i.e., ~40 snags per acre, page 220), and snag numbers would remain high over the short-term due to insect related tree mortality, but in the long-term snag numbers would decline greatly as snags fall down. It further states that Alternative 2 treatments would reduce snag levels to the Forest Plan requirements within the treatment units, and prescribed burns would increase snag levels within the burn units. After the treatments snag levels would slightly increase in the project area, and would exceed 19 times the Forest Plan requirements. Under Alternative 3, treatments would reduce snag levels to the Forest Plan requirements within treatment units, and prescribed burns would increase snag levels with burn units. Project design features shown in Table 9 identify protections to retain adequate snag habitat (e.g., WL-4, WL-6, WL-7, WL-15).

We are pleased that after the treatments snag levels would slightly increase in the project area, and would exceed 20 times the Forest Plan requirements (pages 236, 240), and that the DEIS concludes that both action alternatives *"may impact individuals, but are not likely to result in a trend towards federal listing"* for sensitive cavity nesting species (black-backed woodpeckers and flammulated owls) (page 74-75), and would *"not likely to cause a local or regional change in habitat quality or population status"* for pileated or hairy woodpeckers (page 76).

Comment S-24. Biodiversity may be an important consideration for new projects or when special habitats (i.e., wetlands, threatened and endangered species habitat) will be affected. The state of the art for this issue is changing rapidly. We are pleased that biodiversity of plants and animals is one of the monitoring priorities for the Southwestern Crown Collaborative (page 61). We recommend that potential project impacts on biodiversity be at least briefly evaluated and discussed in the FEIS. CEQ prepared guidance entitled, "Incorporating Biodiversity Considerations Into Environmental Impact Analysis Under the National Environmental Policy Act," http://ceq.hss.doe.gov/publications/incorporating_biodiversity.html.

Climate Change

Comment T-25. The DEIS includes some discussion regarding climate change effects (pages 90, 216, 245, 483). We encourage inclusion of climate change information in NEPA documents, since it contributes to improved public understanding of the effects of climate change on forest ecosystems and forest management, particularly the effects of hotter and drier conditions in stressing trees, increasing the frequency of bark beetle outbreaks, and allowing bark beetles to move northward or higher in elevation and into other ranges of their hosts or the ranges of new potential hosts. Climate change research indicates that earth's climate is changing, and that the changes will accelerate, and that human greenhouse gas (GHG) emissions, primarily carbon dioxide emissions (CO2), are the main source of accelerated climate change (United Nations Intergovernmental Panel on Climate Change (IPCC) , http://www.ipcc.ch/). We often encourage inclusion of a specific section in the NEPA document to discuss and present climate change information and effects to further emphasize the importance of this topic to the public.

Forest Service guidance on how to consider climate change in project-level NEPA documents can be found at, http://www.fs.fed.us/emc/nepa/climate_change/includes/cc_nepa_guidance.pdf, and suggests EIS analysis and disclosure of the following:

- **The effect of a proposed project on climate change.** (GHG emissions and carbon cycling). Examples include: short-term GHG emissions and alteration to the carbon cycle caused by hazardous fuels reduction projects, and avoiding large GHG emissions pulses and effects to the carbon cycle by thinning overstocked stands to increase forest resilience and decrease the potential for large scale wildfire.

- **The effect of climate change on a proposed project**. Examples include: effects of expected shifts in rainfall and temperature patterns on the seed stock selection for reforestation after timber harvest and effects of changed stream hydrographs due to earlier snowmelts.

Climate change appears to be a factor influencing some bark beetle outbreaks. Temperature influences everything in a bark beetle's life, from the number of eggs laid by a single female beetle, to the beetles' ability to disperse to new host trees, to individuals' over-winter survival and developmental timing. Elevated temperatures associated with climate change, particularly when there are consecutive warm years, can speed up reproductive cycles and reduce cold-induced mortality. Shifts in precipitation patterns and associated drought can also influence bark beetle outbreak dynamics by weakening trees and making them more susceptible to bark beetle attacks, (http://www.fs.fed.us/ccrc/topics/bark-beetles.shtml). Insect attacks are likely to intensify in severity, frequency, and size due to climate change. Climate change may also increase stress to ponderosa pine seedlings, and affect the ability of ponderosa pine and other species to prosper through time, and may have added to stress factors leading or affecting the current bark beetle attacks.

Wildland fire frequency has increased in the west and altered fire regimes over the last twenty years due to climate change. More frequent fires are currently burning for extended periods of time (average of 5 weeks) compared to the infrequent fires lasting less than one week that were common prior to the mid-1980s. Large wildfire activity increased in the 1980s, with higher large fire frequency, longer wildfire durations, and longer wildfire seasons; with the greatest increases occurring in mid-elevation.

EPA Region 8 suggests a general four step approach to address climate change in NEPA documents that appears consistent with the Forest Service guidance.

- Briefly discuss the link between greenhouse gases (GHGs) and climate change, and the potential impacts of climate change, (see http://www.epa.gov/climatechange/ , http://www.fs.fed.us/ccrc/ , http://www.ipcc.ch/).
- Describe the capacity of the proposed action to adapt to projected climate change effects, including consideration of future needs.
- Characterize, quantify and disclose the expected annual cumulative emissions of GHGs attributable to the project, using annual CO2-equivalent as a metric for comparing the different types of GHGs emitted. It is suggested that the project's emissions be described in the context of total GHG emissions at regional, national and global scales (over the lifetime of the project).
- Discuss potential means to mitigate project-related emissions as appropriate pursuant to CEQ regulations (40 CFR Sections 1502.14(f), 1502.16(h), 1508.14).

Roadless

Comment U-26. The DEIS indicates that the Stonewall project area includes portions of two inventoried roadless areas (IRAs), the Bear-Marshall-Scapegoat-Swan IRA (#A1485) and the Lincoln Gulch IRA (#1601). The portion of the BMSS IRA managed by the Lincoln Ranger District of the Helena National Forest is 53,995 acres in size and the project area overlaps with 12,254 acres (page 587). The Lincoln Gulch IRA is 8,246 acres in size and the project area overlaps with 3,193 acres (Table 152 and Figure 86).

Roadless areas often provide population strongholds and key refugia for listed or proposed species and narrow endemic populations due to their more natural undisturbed character. EPA supports protection of the pristine character and integrity of remaining minimally disturbed roadless areas to prevent further fragmentation and degradation of wildlife habitat, and to maintain or restore solitude and primitive recreation characteristics in such areas.

The DEIS indicates that the only actions proposed within the BMSS and Lincoln Gulch IRAs are construction of fire handlines, hand slashing of small diameter trees and prescribed fire (page 596). Commercial harvest and road construction would not occur in the two roadless areas. Alternative 2 includes prescribed fire on 4,182 acres (about 0.5 percent) within the BMSS IRA and on 664 acres (about 3.8 percent) within the Lincoln Gulch IRA. Table 154 (page 597, 598) shows proposed

treatments within IRAs for Alternative 2 (i.e., units 76-77, 79-88).

Alternative 3 includes prescribed fire on 3,565 acres (about 0.4 percent) within the BMSS IRA, and no fire or slashing of trees in the Lincoln Gulch IRA. Burn units 76 and 77 are removed from the Lincoln Gulch IRA and unroaded lands contiguous to the IRA. The mixed severity prescribed fire proposed for unit 80 in Alternative 2 is changed to unit 80a, Jackpot burn in Alternative 3; and units 81 and 86 of mixed severity prescribed fire are removed from the Bear-Marshall-Scapegoat-Swan IRA and unroaded contiguous lands in Alternative 3 (page 599).

We do not object to prescribed burning in roadless areas that would benefit the resiliency and long-term health of vegetative communities and reduce risk of catastrophic wildfire and improve wildlife habitat. We are pleased that the DEIS states that both action alternatives will protect and maintain the natural integrity and characteristics of roadless areas, although it would appear that less impacts to roadless areas may occur with Alternative 3 (pages 599-600).

U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements

Definitions and Follow-Up Action*

Environmental Impact of the Action

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

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

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

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

Adequacy of the Impact Statement

Category 1 - - Adequate: EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 - - Insufficient Information: The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 - - Inadequate: EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

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

05/28/2013 EPA, DalSoglio Letter

Comment #	Response	Topic
A	The EIS discloses the proposed actions and effects of the alternatives. Alternative 3 was developed to address issues pertaining to wildlife habitat effects raised during scoping. The adjustments to the proposed action were in response to issues and updated habitat information resulted in relatively small adjustments to the proposed action to better meet or move towards desired conditions identified in the Forest Plan. The record of decision will include discussions of the rationale for alternative selection.	NEPA
B	See response to comment A regarding rationale for the selected alternative.	NEPA
C	The requirements of the Blackfoot River Headwaters Sediment TMDL were considered and will be complied with for this analysis. Information from the MDEQ's pamphlet, "Understanding the Montana TMDL Process," was considered during this analysis. Project design features for watershed protection are incorporated in the action alternatives.	Hydrology/Fisheries
D	The Stonewall Vegetation Project does not include changes to the permanent road system, such as obliteration of existing roads. The Blackfoot Travel Management Plan analysis evaluated the transportation system on the Lincoln Ranger District, including the area covered with the Stonewall project, and recommended changes to the road system. The Blackfoot Travel Management Plan was considered in cumulative effects for this analysis. Costs of road work related to the proposed actions were considered in the site specific incremental economic analysis completed for the Stonewall Vegetation Project. Road maintenance funding to address backlog road maintenance needs on National Forests is beyond the scope of this project analysis.	Transportation
E	The Stonewall analysis considered the cumulative effects of other projects, including the Blackfoot Travel Management Plan. See response to comment D pertaining to changes to the permanent road system, such as obliteration of existing roads.	Hydrology/Fisheries
F	Support for decommissioning of roads, and the associated resource impacts noted. See also response to comment D regarding travel management.	Transportation/NEPA
G	The cause of the FAR results are predominantly cattle grazing. Continued grazing in riparian areas and cattle trailing along streams within grazing allotments will likely continue to contribute elevated sediment levels to streams in the watershed; although, adaptive management provisions in	Hydrology/Fisheries

Comment #	Response	Topic
	allotment management plans should be implemented where necessary to reduce livestock impacts. Cattle grazing and allotment management is not the focus of this project. Areas rated FAR will be addressed in the implementation and administration of allotment management plans. The project includes road maintenance and the implementation of BMP measures that would improve surface drainage and reduce sediment routing to streams reducing effects of the road system on streams.	
H	Pages 518-524 of the DEIS as well as Table 129 contain a discussion of restoration treatments in units with high current detrimental soil disturbance (DSD). The restoration treatments described will leave the units with high DSD in better conditions then they are currently. The soils analysis has been updated in chapter 3 of the FEIS.	Soils
I	A map showing suggested waterbodies related to the proposed action will be provided in the FEIS.	Hydrology
J	See response to comment D regarding road decommissioning and funding, see response to comment G regarding functioning-at-risk streams, and see response to comment L7 regarding effects from new road construction.	Fisheries
K1	Appreciation of DEIS narrative, tables, maps and appendices noted.	NEPA
K2	See response to comment I. Improved map added to FEIS.	Hydrology
L3	Appreciation of disclosure of water quality concerns and effects related to roads noted.	NEPA
L4	The Stonewall Vegetation Project does not include overall travel management. See response to comment D.	NEPA
L5	See response to comment D regarding funding for road management.	NEPA
L6	See response to comment G regarding functioning-at-risk stream reaches. Road related sediment inputs to streams would be reduced with project road maintenance and the implementation of BMPs.	Hydrology/Fisheries
L7	Clarification has been added to the FEIS to note road 1 and 5 segments are *predominantly* located in upland areas, or areas with poorly defined drainages. The proposed new road segment number 5, accessing units 10 and 11, crosses a small drainage of a headwater tributary basin to Lincoln Creek. This apparent crossing was reviewed in the field—there is an old abandoned irrigation ditch at this site, but no stream channel or evidence of overland flow. Flow may occur in the ditch during snowmelt. The proposed new road number 1 crosses the drainage of a headwater tributary basin to Lincoln Creek. This apparent	Hydrology/Fisheries

Comment #	Response	Topic
	crossing was reviewed in the field—there is a vegetated old roadbed at this site, but no stream channel or evidence of overland flow. Channel features were observed roughly 60 feet below the roadbed. Sediment that appeared to be from the old roadbed was observed in this channel, indicating that in the past, this road probably contributed sediment to the uppermost reach of this intermittent stream. Both of these new road segments would be constructed with BMPs such as adequate culverts, proper road drainage, sediment fencing (if appropriate) and it is recommend the segment be obliterated soon after the project ends, in order to minimize sediment impacts. An updated map will be included in the FEIS showing waterbodies in relation to proposed roads and treatment units	
L8	For both action alternatives, riparian areas would have at least a 50-foot no-ignition buffer around ephemeral, intermittent, and perennial channels for slopes less than 35 percent, and a 100-foot buffer for slopes more than 35 percent. Additionally, the standard SMZ-law protection prohibits the operation of ground-disturbing equipment within riparian areas. Therefore, activities proposed under these alternatives would not adversely affect riparian areas. No wetlands have been identified within the project area boundaries. If wetlands are identified during unit marking, they would be avoided by heavy equipment unless during winter conditions. Wetlands over one acre connected to stream channels would be protected by a no-harvest SMZ buffer. The general recommendations for roads listed in your letter were included in the project design. Required BMP implementation includes criteria for snowplowing, blading, wet conditions and monitoring. The soils analysis has been updated in chapter 3 of the FEIS. See also response to L7.	Hydrology/Fisheries/Soils
L9	Agreement with analysis of water yield noted.	Hydrology
L10	Appreciation of listing project design features noted. See also response to comment L8.	Hydrology/Fisheries
M11	See response to comment L8.	Hydrology/Fisheries
N12	There are no units (tractor or otherwise) in soils with high erosion potential. Table 124 of the DEIS contained soil limitations for treatment units. This table would list any high erosion potential soils under the column “limitations”. The limitations listed (wet soils and ashcap soils) have potential negative effects mitigated by treating during the dry periods of the year. In regards to roads, all roads that would be built and then obliterated immediately following timber removal are not	Soils

Comment #	Response	Topic
	located on highly erosive soils. As with the treatment units above, other soil limitations will be mitigated to decrease negative effects. The soils analysis has been updated in chapter 3 of the FEIS.	
N13	Pages 518-524 of the DEIS as well as Table 129 contain a discussion of restoration treatments in units with high current detrimental soil disturbance (DSD). The restoration treatments described will leave the units with high DSD in better conditions then they are currently. The soils analysis has been updated in chapter 3 of the FEIS.	Soils
N14	Thank you for your comment.	Soils
N15	Monitoring of the Stonewall project area will comply with the direction in the Helena National Forest Management Plan. The Helena National Forest Management Plan requires monitoring for Soil Productivity on projects in management areas T-1, T-2, T-3, T-4, T-5, and H-2 (Table III-3 of the forest plan). The Stonewall project area contains T-1, T-2, T-3, and T-4 management areas. In an attempt to provide a more comprehensive result, this monitoring is further stratified by activity type (such as cable vs. ground-based logging and winter vs. summer logging). The number of annual monitoring sites will be dependent upon the level of implementation done on an annual basis. The soils analysis has been updated in chapter 3 of the FEIS.	Soils
O16	No post project hydrologic monitoring is being considered at this time. During the project, BMPs including design features will be monitored by the timber sale administrator. On-going monitoring of fisheries habitats includes core samples to track fines at depth trends.	Hydrology/Fisheries
P17	Acre information was reviewed and acres verified for more accurate display in the FEIS. Estimated impacts to air quality are disclosed in the FEIS with applicable references cited. Comment letters received on the DEIS will be included, in full, in an appendix to the FEIS. Providing site specific burn plans for the various alternatives is outside the scope of this analysis, however, a site specific burn plan will be prepared after a decision for this project is made, which will include specific measures to ensure compliance with the MDEQ air program and in coordination with the Montana/Idaho Airshed Group and reported to the Airshed Coordinator on a daily basis, with burning dependent upon site conditions and weather conditions. Harvest areas are generally available for fuelwood gathering after operations are completed to avoid conflicts with operator equipment. Development of saleable market opportunities for	Air quality

Comment #	Response	Topic
	post-harvest biomass products may be considered as proposals are presented, and beyond the scope of the Stonewall Vegetation Project analysis. Available economic information was considered during the analysis of the Stonewall .Vegetation project.	
Q18	Comment generally supports the analysis of proposed treatments, while exploring the proposed amount and need for regeneration harvest, as opposed to possible thinning or improvement cutting to culture desirable large trees. The proposed action alternatives apply regeneration harvest cutting only to stands in which the stocking of desirable live trees is insufficient to continue the rotation. Where this is the case, the lack of large mature trees is usually caused by current mortality from bark-beetle attack or related disturbance vectors. Lack of large mature trees may also be due to past and current stand density, making the present trees unable to respond to cultural improvement treatments. The proposed regeneration harvest would retain, as available, desirable live individual or groups of mature trees for seed or shelter, to help establish a new age-class. The continued presence of these mature trees may create future options for dual- or multi-age class management within a given stand. Fuel treatments would follow harvest treatments to address existing and activity related fuels. Fire risk is analyzed and disclosed in chapter 3.	Silviculture
Q19	Comments regarding support of old growth management and no objections to proposed treatments. Noted.	NEPA
R20	Noxious weed treatment will continue to occur in accordance with the requirements specified in the Final Environmental Impact Statement: Helena National Forest Noxious Weed Treatment Project and accompanying Record of Decision (USDA Forest Service 2006c,d) (DEIS pages 481, 495). The effects of herbicides on water quality, fisheries and threatened and endangered species was analyzed in that document and all noxious weed treatment on the Helena National Forest occurs under the guidance of that document to assure all resources are protected.	Noxious weeds
R21	The Stonewall Vegetation Project is not a travel planning project and does not propose to change the permanent road system in the project area. Travel management of existing routes is addressed in the “Blackfoot-North Divide Winter Travel Plan” and the “Blackfoot Travel Plan (Non-Winter)” analyses (DEIS page ii).	Noxious weeds
S22	Consultation with the USFWS is ongoing and would be completed prior to issuing a decision on this project.	Wildlife

Comment #	Response	Topic
S23	Comments regarding the presence of snag analysis discussions noted.	Snags
S24	Biological diversity is a term that covers the variety of life and its processes (CEQ 1993). The Stonewall Vegetation Project proposes actions to promote native species, protects habitat for threatened and sensitive species, proposes burning to mimic natural processes and includes project design features to avoid introduction of non-native species, Potential impacts to plants and wildlife habitat, along with other resources, and discloses the anticipated effects in chapter 3. Information from the *Incorporating Biodiversity Considerations Into Environmental Impact Analysis Under the National Environmental Policy Act* pamphlet (CEQ 1993) was considered. Stand structures and species composition are discussed in the in the vegetation and botany sections as well as in wildlife habitat discussions. Wildlife diversity was addressed throughout the document by looking at species most at risk or with potential viability concerns (threatened, endangered and sensitive species), as well as management indicator species, or species that are representative of Forest habitats, changes in historical habitat conditions that affect wildlife distribution and at high interest species such as big game. So while there was not a separate heading for biodiversity, the diversity of native wildlife and their habitat were fully evaluated in the DEIS.	Wildlife/Silviculture
T25	Comments in support of discussions in the DEIS about possible effects of ongoing climate change to current and future forest resource conditions. The Forest Service has used these and other ecological considerations to help design the project. Concerning possible effects of the project to climate, the DEIS section “Carbon Storage” and its underlying technical report Atmospheric Carbon Report (Amell and Klug 2013) address carbon exchange—consistent with current USFS Northern Region practice and based upon the Council on Environmental Quality (CEQ) issuance “Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions” (Sutley 2010), in which CEQ explains that questions about whether or how to analyze effects to climate resulting from federal land and resource management are still under consideration. To date the CEQ has not issued further guidance to land and resource management agencies on these questions. Agencies are cautioned to “recognize the scientific limits of their ability to accurately predict climate change effects … and not devote effort to analyzing wholly speculative effects.” Therefore this subject in the DEIS and its underlying analysis is limited to carbon storage or release that may be caused by the	Silviculture

Comment #	Response	Topic
	project, as opposed to predicting climate change effects. The Forest Service believes that changes to on-site carbon storage resulting from proposed activities can be qualitatively discussed to help inform decisions about projects affecting this component of the human environment. This has been done in the DEIS and its underlying analysis. Amell, Larry. 2012a. Stonewall Vegetation Project Silviculture Report. U.S. Department of Agriculture, Forest Service, Helena National Forest. Project file. Amell, L. and Klug, P. 2013. Stonewall Vegetation Project Atmospheric Carbon Report. U. S. Department of Agriculture, Forest Service, Helena National Forest. Helena, MT.	
U26	Support for protection of roadless areas and no objection to prescribed burning in roadless areas noted.	Inventoried Roadless Areas

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Denver Federal Center, Building 67, Room 118
Post Office Box 25007 (D-108)
Denver, Colorado 80225-0007

June 4, 2013

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ER 13/294

Kevin Riordan, Forest Supervisor
Helena National Forest
2280 Skyway Drive
Helena, MT 59602

Dear Mr. Riordan:

Comment 1- The U.S. Department of the Interior has reviewed the Draft Environmental Impact Statement for the Stonewall Vegetation Project, Helena National Forest, MT, and has no comments on the document.

Sincerely,

Robert F. Stewart
Regional Environmental Officer

cc: Amber Kamps, District Ranger

6/4/2013 DOI Letter responses

Comment #	Response	Topic
1	Comment of no comments noted.	NEPA

June 1, 2013

Amber Kamps
District Ranger
Lincoln Ranger District
Helena National Forest
1569 Hwy 200
Lincoln, MT 59639

Transmitted via email--please acknowledge receipt!

RE: Stonewall DEIS

Dear Ranger Kamps:

Thank you for the opportunity to comment. Please accept these comments on the Stonewall Restoration Project Draft Environmental Impact Statement (DEIS) on behalf of the Alliance for the Wild Rockies and Native Ecosystems Council. The U.S. Forest Service has proposed to implement various logging and burning prescriptions on 8640 acres in the Lincoln Ranger District of the Helena National Forest, near Lincoln, Montana. These activities will require the construction of 5 miles of new roads.

The Alliance for the Wild Rockies and Native Ecosystems Council (collectively "Alliance") submit the following comments on the DEIS for the proposal.

Comment #01 We believe that the Forest Service must formally consult with the U.S. Fish and Wildlife Service to examine the impact of this project on threatened and endangered species and their habitat.

THE PROJECT VIOLATES SECTION 9 BECAUSE IT ALLOWS

UNPERMITTED TAKE.

The project allows unpermitted take of lynx, grizzly bear, wolverine, whitebark pine.

The agencies' failure to implement legally adequate and scientifically sound management direction for grizzly bears, lynx, wolverines, and whitebark pine at both the Helena National Forest level, through the Forest Plan, and at the regional level, violates the ESA as set forth below.

Comment #2

THE AGENCIES MUST COMPLETE A BIOLOGICAL ASSESSMENT, BIOLOGICAL OPINION, INCIDENTAL TAKE STATEMENT, AND MANAGEMENT DIRECTION FOREST PLAN AMENDMENT FOR THE FOREST PLAN FOR WHITEBARK PINE.

The agencies do not have in place any forest plan biological assessment, biological opinion, incidental take statement, and management direction amendment for whitebark pine.

Comment #3

THE AGENCIES MUST PREPARE REGIONAL DIRECTION FOR WHITEBARK PINE.

The agencies do not have in place any recovery plan and regional management direction amendment for whitebark pine.

Comment #4

THE AGENCIES MUST CONDUCT ESA CONSULTATION FOR THE WHITEBARK PINE.

Whitebark pine is present throughout the analysis area for the Project. There may be whitebark pine in the proposed logging units:

Comment #5

The Stonewall Project may affect whitebark pine. The agencies' failure to conduct ESA consultation for a species that may be present and may be affected by the Project violates the ESA.

Whitebark pine is currently warranted for ESA listing and will be listed under the ESA this year, likely pursuant to litigation by the parties, and thus will be listed before this Project is complete, and possibly before the final decision authorizing this Project or before Project activities commence. Regardless, even candidate species must be included in a biological assessment. The Forest Service's biological assessment for the Project does not address whitebark pine.

Whitebark Pine

Not all ecosystems or all Rocky Mountain landscapes have experienced the impacts of fire exclusion. In some wilderness areas, where in recent decades natural fires have been allowed to burn, there have not been major shifts in vegetation composition and structure (Keane et al. 2002). In some alpine ecosystems, fire was never an important ecological factor. In some upper subalpine ecosystems, fires were important, but their rate of occurrence was too low to have been significantly altered by the relatively short period of fire suppression (Keane et al. 2002). For example, the last 70 to 80 years of fire suppression have not had much influence on subalpine landscapes with fire intervals of 200 to several hundred years (Romme and Despain). Consequently, it is unlikely that fire exclusion has yet to significantly alter stand conditions or forest health within Rocky Mountain subalpine ecosystems.

Whitebark pine seedlings, saplings and mature trees, present in subalpine forests proposed for burning, would experience mortality from project activity. Whitebark pine is fire intolerant (thin bark). Fire favors whitebark pine regeneration (through canopy opening and reducing competing vegetation) only in the presence of **adequate seed source** and dispersal mechanisms (Clarks Nutcracker or humans planting whitebark pine seedlings).

White pine blister rust, an introduced disease, has caused rapid mortality of whitebark pine over the last 30 to 60 years. Keane and Arno (1993) reported that 42 percent of whitebark pine in western Montana had died in the previous 20 years with 89 percent of remaining trees being infected with blister rust. The ability of whitebark pine to reproduce naturally is strongly affected by blister rust infection; the rust kills branches in the upper cone bearing crown, effectively ending seed production.

Montana is currently experiencing a mountain pine beetle epidemic. Mountain pine beetle prefer large, older whitebark pine, which are the major cone producers. In some areas the few remaining whitebark that show the potential for blister rust resistance are being attacked and killed by mountain pine beetles, thus accelerating the loss of key mature cone-bearing trees.

Whitebark pine seedlings and saplings are very likely present in the subalpine forests proposed for burning and logging. In the absence of fire, this naturally occurring whitebark pine regeneration would continue to function as an important part of the subalpine ecosystem. Since 2005, rust resistant seed sources have been identified in the Northern Rockies (Mahalovich et al 2006). Due to the severity of blister rust infection within the region, natural whitebark pine regeneration in the project area is prospective rust resistant stock.

Although prescribed burning can be useful to reduce areas of high-density subalpine fir and spruce and can create favorable ecological conditions for whitebark pine regeneration and growth, in the absence of sufficient seed source for natural regeneration maintaining the viability and function of whitebark pine would not be achieved through burning. Planting of rust-resistant seedlings would likely not be sufficient to replace whitebark pine lost to fire activities.

Comment #6 The ROD and FEIS do not show that surveys have been conducted to determine presence and abundance of whitebark pine re-generation or if whitebark pine seedlings and saplings are present, what measures will be taken to protect them.

Comment #7 The Stonewall project should have included an alternative that excludes logging in the presence of whitebark pine regeneration (consider 'Daylighting' seedlings and saplings as an alternative restoration method).

Restoring Whitebark Pine Forests of the Northern Rocky Mountains, USA

Robert F. Keane and Russell A. Parsons 2010 wrote:

Whitebark pine (Pinus albicaulis) has been declining across much of its range in North America because of the combined effects of mountain pine beetle (Dendroctonus ponderosae) epidemics, fire exclusion policies, and widespread exotic blister rust infections. Whitebark pine seed is dispersed by a bird, the Clark's nutcracker (Nucifraga columbiana), which caches in open, pattern-rich landscapes created by fire. This study was initiated in 1993 to investigate the effects of vari ous restoration treatments on tree populations, fuel dynamics, and vascular plant cover on five sites in the U.S. northern Rocky Mountains. The objective of this study was to restore whitebark pine ecosystems using treatments that emulate the native fire regime—primarily combinations of prescribed fire, silvicultural cuttings, and fuel enhancement cuttings.

The main effects assessed included tree mortality, fuel consumption, and vegetation response measured just prior to the treatment, one year after the treatment(s), and five years posttreatment. While all treatments that included prescribed fire created suitable nutcracker caching habitat, with many birds observed caching seed in the burned areas, there has yet to be significant regeneration in whitebark pine. All burn treatments resulted in high mortality in both whitebark pine and subalpine fir (> 40%). Fine woody fuel loadings marginally decreased after fire, but coarse woody debris more than doubled because of falling snags. Vascular species decreased in cover by 20% to 80% and remained low for five years. While the treatments were successful in creating conditions that favor whitebark pine regeneration, the high level of blister rust mortality in surrounding seed sources has reduced available seed, which then forced the nutcracker to reclaim most of the cached seed. Manual planting of whitebark pine seedlings is required to adequately restore these sites. A set of management guidelines is presented to guide restoration efforts.

<u>LYNX</u>

Comment #8 The conclusion that the project will have "No Effect" on Canada Lynx is in error. … Page 266 of the Stonewall DEIS [on the] says lynx critical habitat applies to all NFS lands, mapped or not. … Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery. **This is excerpts from the paragraph below**

The conclusion that the project will have "No Effect" on Canada Lynx is in error. Page 8 of the DM says that the project area is within lynx critical habitat but "is currently unsuitable in an unsuitable condition for lynx." The DM illegally decided that it can make a new determination on what is suitable and unsuitable habitat for lynx. Page 266 of the Stonewall DEIS on the says lynx critical habitat applies to all NFS lands, mapped or not. The Department of Interior website defines critical habitat as habitat that contains features essential for the conservation of a threatened or endangered species and that may

require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery.

http://www.fws.gov/midwest/endangered/saving/CriticalHabitatFactSheet.html

What is critical habitat?

Critical habitat is a term defined and used in the Act. It is a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery. An area is designated as "critical habitat" after we publish a proposed Federal regulation in the *Federal Register* and then we receive and consider public comments on the proposal. The final boundaries of the critical habitat area are also published in the *Federal Register*.

There is nothing in the legal definition of critical habitat that allows the Forest Service to say that they can adversely modify parts of lynx critical habitat because it is not important.

Comment #9 It is clear that this project is about protecting Forest Service jobs, corporate welfare for the timber industry and large Forest Service budgets rather than protecting and recovering lynx as the law requires. The Stonewall project is in violation of the Endangered Species Act.

Comment #10 As lynx home ranges are large, displaced lynx would move to an undisturbed area of the home range during project implementation. Implementation of the Stonewall project will harm lynx by

displacing them, which constitutes take in violation of the ESA.

Comment #11 The Endangered Species Act requires the FS to insure that the Stonewall project is not likely to result in the destruction or adverse modification of critical habitat.

16 U.S.C. §1536(a)(2). Activities that may destroy or adversely modify critical habitat are those that alter the physical and biological features to an extent that appreciably reduces the conservation value of critical habitat for lynx. 74 Fed. Reg. 8644.

Comment #12 The Forest Service must comply with the Northern Rockies Lynx Management Direction (NRLMD).

Because of instructions in the Northern Rockies Lynx Management Direction appeal decision Forest Service is required to consult with the United States Fish and Wildlife Service (USFWS) Forest Service did not consult with the USFWS regarding lynx or the Northenr Rockies Lynx Management Direction (NRLMD), which is a violation of the Endangered Species Act.

The NRLMD as applied in the Stonewall project violates the ESA by failing to use the best available science to insure no adverse modification of critical habitat. The NRLMD carves out exemptions from Veg Standards S1, S2, S5, and S6. In particular, fuel treatment projects may occur in the WUI even though they will not meet standards Veg S1, S2, S5, or S6, provided they do not occur on more than 6% of lynx habitat on each National Forest. See NRLMD ROD, Attachment 1, pages 2-3. Allowing the agency to destroy or adversely modify any lynx critical habitat has the potential to appreciably reduce the conservation value of such habitat.

Comment #13 The agency cannot simply set a cap at 6% forest-wide without looking at the individual characteristics of each LAU to determine whether the project has the potential to appreciably reduce the conservation value. The ESA requires the use of the best available science at the site-specific level. It does not allow the agencies to make a gross determination that allowing 6% of lynx critical habitat to be destroyed forest-wide will not appreciably reduce the conservation value.

Comment #14 The recent Salix decision in Montana Federal District Court ruled the FS has to formally consult on the NRLMD for lynx critical habitat and the Fleecer timber sale decision ruled the FS has to consult on the NRLMD for lynx travel corridors outside of lynx critical habitat. We are a nation of laws and the Forest Service needs to follow the law like the American public. Please find the court's order attached.

Previous comments deal with critical habitat, this one introduces lynx travel corridors

The FS also states that the project will result in disturbance to lynx in the project area and that lynx will move to an undisturbed area of the home range during project implementation.

In December 1999, the Forest Service and Bureau of Land Management completed their "Biological Assessment Of The Effects Of National Forest Land And Resource Management Plans And Bureau Of

Land Management Land Use Plans On Canada Lynx" (Programmatic Lynx BA). The Programmatic Lynx BA concluded that the current programmatic land management plans "may affect, and are likely to adversely affect, the subject population of Canada lynx." The Lynx BA team recommended amending or revising Forest Plans to incorporate conservation measures that would reduce or eliminate the identified adverse effects on lynx. The Programmatic Lynx BA's determination means that Forest Plan implementation is a "taking" of lynx, and makes Section 7 formal consultation on the HNF Plan mandatory, before actions such as the proposed project are approved.

Comment #15 Continued implementation of the Forest Plan constitutes a "taking" of the lynx. Such taking can only be authorized with an incidental take statement, issued as part of a Biological Opinion (B.O.) during of Section 7 consultation.

Comment #16 The HNF must incorporate terms and conditions from a programmatic B.O. into a Forest Plan amendment or revision before projects affecting lynx habitat, such as this one, can be authorized.

The Programmatic Lynx BA's "likely to adversely affect" conclusion was based upon the following rationale. Plans within the Northern Rockies:

- generally direct an aggressive fire suppression strategy within developmental land allocations. …this strategy may be contributing to a risk of adversely affecting the lynx by limiting the availability of foraging habitat within these areas.
- allow levels of human access via forest roads that may present a risk of incidental trapping or shooting of lynx or access by other competing carnivores. The risk of road-related adverse effects is primarily a winter season issue.
- are weak in providing guidance for new or existing recreation developments. Therefore, these activities may contribute to a risk of adverse effects to lynx.
- allow both mechanized and non-mechanized recreation that may contribute to a risk of adverse effects to lynx. The potential effects occur by allowing compacted snow trails and plowed roads which may facilitate the movements of lynx competitors and predators.
- provide weak direction for maintaining habitat connectivity within naturally or artificially fragmented landscapes. Plans within all geographic areas lack direction for coordinating construction of highways and other movement barriers with other responsible agencies. These factors may be contributing to a risk of adverse effects to lynx.
- are weak in providing direction for coordinating management activities with adjacent landowners and other agencies to assure consistent management of lynx habitat across the landscape. This may contribute to a risk of adverse effects to lynx.
- fail to provide direction for monitoring of lynx, snowshoe hares, and their habitats. While failure to monitor does not directly result in adverse effects, it makes the detection and assessment of adverse effects from other management activities difficult or impossible to attain.

- forest management has resulted in a reduction of the area in which natural ecological processes were historically allowed to operate, thereby increasing the area potentially affected by known risk factors to lynx. The Plans have continued this trend. The Plans have also continued the process of fragmenting habitat and reducing its quality and quantity. Consequently, plans may risk adversely affecting lynx by potentially contributing to a reduction in the geographic range of the species.
- The BA team recommends amending or revising the Plans to incorporate conservation measures that would reduce or eliminate the identified adverse effects to lynx. The programmatic conservation measures listed in the Canada Lynx Conservation Assessment and Strategy (LCAS) should be considered in this regard, once finalized.

(Programmatic Lynx BA, at 4.)

The Programmatic Lynx BA notes that the LCAS identifies the following risk factors to lynx in this geographic area:

- Timber harvest and precommercial thinning that reduce denning or foraging habitat or converts habitat to less desirable tree species
- Fire exclusion that changes the vegetation mosaic maintained by natural disturbance processes
- Grazing by domestic livestock that reduces forage for lynx prey
- Roads and winter recreation trails that facilitate access to historical lynx habitat by competitors
- Legal (in Montana) and incidental trapping and shooting
- Predation
- Being hit by vehicles
- Obstructions to lynx movements such as highways and private land development

Comment #17 As evidenced by the fact that the Canada lynx is now listed under the Endangered Species Act and has potential critical habitat in the project area, it is clear that the HNF must do more that follow its Forest Plan's weak protections provided for lynx. The NEPA analysis does not demonstrate that the project and its analysis are consistent with all Standards contained in the Lynx Conservation and Assessment Strategy (LCAS) for lynx critical habitat. This is a violation of NFMA and the ESA.

Comment #18

The NEPA analysis does not adequately address the effects of logging on landscape pattern, which is essential for protection 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.

The LCAS sets mandatory Standards that would modify or amend the Forest Plan—steps the HNF has thus far not accomplished. Important Programmatic Standards include:

Identify key linkage areas that may be important in providing landscape connectivity within and between geographic areas, across all ownerships. (LCAS at 89.)

Develop and implement a plan to protect key linkage areas on federal lands from activities that would create barriers to movement. Barriers could result from an accumulation of incremental projects, as opposed to any one project. (Id.)

Map and monitor the location and intensity of snow compacting activities that coincide with lynx habitat, to facilitate future evaluation of effects on lynx as information becomes available. (LCAS at 83.)

On federal lands in lynx habitat, allow no net increase in groomed or designated over-the-snow routes and snowmobile play areas by LAU.

Comment #19 Among the standards set out in the LCAS are provisions to maintain denning habitat as discussed in the programmatic lynx BO:

Denning Habitat - Within developmental land allocations, existing Plan direction to maintain old growth habitat was judged to be adequate to provide for lynx denning habitat for all geographic areas except the Great Lakes. (BO at 31.)

However, the HNF cannot meet lynx denning requirements unless it is meeting Forest Plan old-growth requirements. The Programmatic BA's analysis of the ability of the Forest Plans, as "amended" by the LCAS, to prevent a "taking" of the lynx is based upon the Forests' meeting such management standards. As the HNF has not yet proved it is in compliance with old-growth species' viability standards or adequately dealing with forest wide old-growth declines, the project may not be in compliance with the LCAS.

Comment #20 The impacts of both winter and non-winter motorized route densities must be adequately considered.

This is in terms of the LCAS statement p.95

The LCAS states, "the effects of open road densities on lynx are poorly understood" (LCAS at 95).

It is not clear that the HNF has a complete understanding of the current level of use of the project area for snowmobiles and other motorized recreational users.

Comment #21 Please analyze the cumulative impacts on lynx from the additional new roads, additional skid trails, and other logging access routes to be constructed in the project area—roads/access routes that could be used by snowmobilers snowmobiles and other motorized recreational users, snowshoers, and cross country skiers long after the logging activities have stopped. These roads/access routes can also impact lynx habitat during all seasons because of increased access for humans.

From Ruggiero, et al. (1999: "Lynx metapopulation dynamics operate at regional scales" (p. 24). There must be maps and adequate discussion of the connectivity issue in the DN, making it possible 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 very existence of roads and compacted travel routes from motorized vehicles in snow adversely affect lynx because of the advantage provided for other predators that normally wouldn't be in portions of the project area in winter.

Any assumption that a project will not adversely impact the lynx simply because LCAS standards and guidelines are met has never been verified. These management guidelines are merely a guess for lynx management, developed by the FS and other government agencies. There has never been an independent scientific peer review of these guidelines, including by lynx experts such as those who prepared the Ruggiero, et al. (1999) research paper upon which the LCAS is largely based.
Ruggiero, et al. (1999: "Lynx metapopulation dynamics operate at regional scales" shows that the project area is occupied lynx habitat.

Our goals for the area include fully functioning stream ecosystems that include healthy, resilient populations of native trout. The highest priority management actions in the project area are those that remove impediments to natural recovery.

Comment #22 We request the FS design a restoration/access management plan for project area streams that will achieve recovery goals.

The task of management should be the reversal of artificial legacies to allow restoration of natural, self-sustaining ecosystem processes. If natural disturbance patterns are the best way to maintain or restore desired ecosystem values, then nature should be able to accomplish this task very well without human intervention (Frissell and Bayles, 1996).

Comment #23 Please utilize the NEPA process to clarify any roadless boundary issues. It is not adequate to merely accept previous, often arbitrary roadless inventories—unroaded areas adjacent to inventoried areas were often left out.

We don't believe the DEIS adequately examined if these unroaded areas adjacent to roadless areas have wilderness qualities.

Additionally, there is a lot of public support for adding unroaded areas as small as 1,000 acres in size to the roadless inventory.

Comment #24 We requested in our scoping comments a careful analysis of 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 temperature. This has not been done. Please disclose the locations of seeps, springs, bogs and other sensitive wet areas, and the effects on these areas of the project activities.

Comment #25 Where livestock are permitted to graze, we asked that you assess the present condition and continue to monitor the impacts of grazing activities upon vegetation diversity, soil compaction, stream bank stability and subsequent sedimentation. The DEIS does not adequately analyze this.

Comment #26 This watershed has been proposed as bull trout critical habitat. The project is not meeting the requirements of bull trout critical habitat.

Comment #27 Please disclose in the NEPA document the results of up-to-date monitoring of fish habitat and watershed conditions and how this project will affect the fish in the project area.

Comment #28 It is extremely important the FS disclose the environmental baseline for watersheds. Generally, this means their condition before development or resource exploitation was initiated.

…proper disclosure of baseline conditions would mean estimates of stream stability, pool frequency conditions, and water temperature range—essentially the values of Riparian Management Objectives along with such parameters as sediment levels. When such information is provided, comparison with the current conditions (after impacts of development) will aid in the assessment of cumulative effects of all alternatives.

For example, the baseline condition of a stream means the habitat conditions for fish and other aquatic species prior to the impacts of road building, logging, livestock grazing, etc.

Prescribed fires and mechanical treatments may adversely affect soil productivity. NFMA requires the FS to "not allow significant or permanent impairment of the productivity of the land." [36 C.F.R. § 219.27(a)(1).] NFMA requires the Forest Service to "ensure that timber will be harvested from National Forest System lands only where—soil, slope, or other watershed conditions will not be irreversibly damaged." [16 U.S.C. 1604 (g)(3)(E).]

The Sheep Creek Salvage FEIS (USDA Forest Service, 2005a) states at p. 173:

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

Comment #29 Please disclose how the productivity of the land been affected in the project area and forestwide due to noxious weed infestations, and how that situation is expected to change in the coming years and decades.

Harvey et al., 1994 state:

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

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

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

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

The article goes on:

> Countless activities, including livestock grazing, recreation, road building, logging, mining, and irrigation degrade soils on public lands. Because there are no laws that directly address and protect soils on the public lands, consideration of soils in land use planning is usually only in the form of vaguely conceived or discretionary guidelines and monitoring requirements. This is a major gap in the effort to provide ecosystem-level protection for natural resources.

> The rise of an "ecosystem approach" in environmental and natural resources law is one of the most significant aspects of the continuing evolution of this area of law and policy. One writer has observed that there is a
>
> > fundamental change occurring in the field of environmental protection, from a narrow focus on individual sources of harm to a more holistic focus on entire ecosystems, including the multiple human sources of harm within ecosystems, and the complex social context of laws, political boundaries, and economic institutions in which those sources exist.
>
> As federal agencies focus increasingly on addressing environmental protection from an holistic perspective under the current regime of environmental laws, a significant gap remains in the federal statutory scheme: protection of soils as a discrete and important natural resource. Because soils are essential building blocks at the core of nearly every ecosystem on earth, and because soils are critical to the health of so many other natural resources—including, at the broadest level, water, air, and vegetation—they should be protected at a level at least as significant as other natural resources. Federal soil law (such as it is) is woefully inadequate as it currently stands. It is a missing link in the effort to protect the natural world at a meaningful and effective ecosystem level.

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

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

Comment #30 Please provide estimates of current detrimental disturbance in all previously established activity areas in the watersheds affected by the proposal.

Comment #31 Please disclose the link between current and cumulative soil disturbance in project area watersheds to the current and cumulative impacts on water quantity and quality.

Comment #32 Please disclose if there are any WQLS streams or TMDL streams in the project area.

Comment #33 Please disclose measures of, or provide scientifically sound estimates of, detrimental soil disturbance or soil productivity losses (erosion, compaction, displacement, noxious weed spread) attributable to off-road vehicle use.

Comment #34 Please disclose the results monitoring of weed treatments on the HNF that have been projected to significantly reduce noxious weed populations over time, or prevent spread. This is an ongoing issue of land productivity.

Comment #35 Please disclose how the proposed "treatments" would be consistent with Graham, et al., 1994 recommendations for fine and coarse woody debris, a necessary consideration for sustaining long-term soil productivity.

It has been well-established that site-specific Biological Evaluations (BEs) or Biological Assessments (BAs) must be prepared for all actions such as this. Further, the Forest Service Manual requires that BEs/BAs consider cumulative effects. The Forest Service Manual states that project BEs/BAs must contain "a

discussion of cumulative effects resulting from the planned project in relationship to existing conditions and other related projects" [FSM 2672.42(4)]. "Existing conditions" obviously are the current conditions of the resources as a result of past actions.

Comment #36

Published scientific reports indicate that climate change will be exacerbated by logging due to the loss of carbon storage. Additionally, published scientific reports indicate that climate change will lead to increased wildfire severity (including drier and warmer conditions that may render obsolete the proposed effects of the Project). The former indicates that the Stonewall Vegetation Project may have a significant adverse effect on the environment, and the latter undermines the central underlying purpose of the Project. Therefore, the Forest Service must candidly disclose, consider, and fully discuss the published scientific papers discussing climate change in these two contexts. At least the Forest Service should discuss the attached following studies:

- Depro, Brooks M., Brian C. Murray, Ralph J. Alig, and Alyssa Shanks. 2008. Public land, timber harvests, and climate mitigation: quantifying carbon sequestration potential on U.S. public timberlands. Forest Ecology and Management 255: 1122-1134.

- Harmon, Mark E. 2001. Carbon sequestration in forests: addressing the scale question. Journal of Forestry 99:4: 24-29.

- Harmon, Mark E, William K. Ferrell, and Jerry F. Franklin. 1990. Effects of carbon storage of conversion of old-growth forest to young forests. Science 247: 4943: 699-702

- Harmon, Mark E, and Barbara Marks. 2002. Effects of silvicultural practices on carbon stores in Douglas-fir – western hemlock forests in the Pacific Northwest, USA: results from a simulation model. Canadian Journal of Forest Research 32: 863-877.

- Homann, Peter S., Mark Harmon, Suzanne Remillard, and Erica A.H. Smithwick. 2005. What the soil reveals: potential total ecosystem C stores of the Pacific Northwest region, USA. Forest Ecology and Management 220: 270-283.

- McKenzie, Donald, Ze'ev Gedalof, David L. Peterson, and Philip Mote. 2004. Climatic change, wildfire, and conservation. Conservation Biology 18:4: 890 -902.

Comment #37

Please evaluate all of the costs and benefits of this project. Please include a detailed list of all the costs to the agency and the public.

Comment #38 It is our intention that you include in the record and review all of the literature and other incorporated documents we've cited herein. Please contact us if you have problems locating copies of any of them.

Comment #39 Thank you for your attention to these concerns. Please keep us on your list to receive further mailings on the proposal.

Sincerely,

	And on behalf of:
Michael Garrity	Sara Johnson
Alliance for the Wild Rockies	Native Ecosystems Council
P.O. Box 505 Helena, Montana 59624 406-459-5936	P.O. Box 125 Willow Creek, MT 59760

LITERATURE

Ament, Robert 1997. Fire Policy for the Northern Rocky Mountains (U.S.A.) American Wildlands, 40 E. Main, Suite 2, Bozeman, MT 59715. September 1, 1997

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Oregon and Washington. Northwest Science. Vol 75, Special Issue, 2001.

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6/1/13 Garrity, Johnson Letter and literature items emailed as attachments

Comment #	Response	Topic
1	The requirements of Section 7 of the Endangered Species Act will be met prior to signing of a Record of Decision (ROD). Should the biological assessment (BA) document adverse effect on listed species, formal consultation would be initiated. The BA and concurrence letter from the US Fish and Wildlife Service will be included in the project record. Regarding whitebark pine: On July 19, 2011, the U.S. Fish and Wildlife Service (FWS) published in the Federal Register its 12-month status review finding on a petition to list whitebark pine under the Endangered Species Act. After a review of all available scientific and commercial information, the FWS concluded that listing the species as threatened or endangered is warranted, but precluded by higher priority actions. This finding results in whitebark pine being a FWS candidate for listing. Candidate species receive no statutory protection under the ESA. Therefore, the Forest Service is not required to formally consult with the FWS concerning whitebark pine. Whitebark pine is designated a R1 sensitive species by the Regional Forester, and the biological evaluation completed for this project reflects that designation. The effects to whitebark pine are included in the analysis with anticipation of the possible federal listing. The analysis disclosed the logging/burning proposed is expected to enhance habitat for Clark's nutcrackers due to the removal of shade-tolerant species and creation of caching sites. In addition, there is a resource protection measure designed to enhance the establishment of caching sites. At this time consultation with the FWS is not required. If it is required in the future it will occur then.	Wildlife - FWS consult Botany/Silviculture –WBP
2	See response to comments 1 and 3 pertaining to whitebark pine and determination.	Wildlife – determinations Botany/Silvicuture – WBP
3	Designating whitebark pine as a sensitive species in the Northern Region ensures that the species will be considered during project planning, and will ultimately accelerate restoration activities. A regional interdisciplinary working group is being formed to help achieve these objectives, in collaboration with Forest personnel. Management of whitebark pine continues to be a priority for Region 1. Please see the Region 1 Whitebark Pine Home page (http://www.fs.usda.gov/detail/r1/plants-animals/?cid=stelprdb5341458) for information about Forest Service activities and programs related to whitebark pine in the Northern Region.	Plants – whitebark pine
4	See response to comment 1 pertaining to whitebark pine and consultation with the FWS.	Plants – whitebark pine
5	See response to comment 1 pertaining to whitebark pine and	Plants – whitebark

Comment #	Response	Topic
	consultation with the FWS.	pine
6	At the release of the Stonewall Vegetation Project draft environmental impact statement the ROD and FEIS were not completed. Available stand exam information was considered for the presence of whitebark pine. Whitebark pine was noted in the inventoried roadless area where restoration activities to increase whitebark pine regeneration are proposed. The DEIS included project design features to protect whitebark pine. The project design features were reviewed and updated to include opportunities for planting. SILV-2 and SILV-5 specifically address whitebark pine treatments and opportunities for planting. SILV-2: To protect whitebark pine to the extent possible, assess low- and mixed-severity prescribed burning units containing groups or stands of whitebark pine to determine if areas need pre-burn treatments to protect whitebark pine from damage during burning. If needed, pre-burn treatments should take place a year prior to the proposed landscape burning. The pre-burn treatments could include cutting and directional felling of conifer trees to increase fuel loadings, improve continuity of the fuelbed, and reduce fuel loads around whitebark pine trees. Create openings designed to serve as nutcracker caching sites should be cut near-circular areas of 1 to 5 acres around mature whitebark pine trees. SILV-5: The Forest Service will conduct silvicultural reconnaissance of whitebark pine habitat post burn treatments to assess impacts and natural regeneration success. To the extent that funding and rust-resistant stock is available, the Forest Service will seek opportunities to plant whitebark pine in suitable habitat areas.	NEPA
7	See response to comment 6 regarding project design features proposed for whitebark pine restoration treatments. Information in Kean and Parsons 2010 was considered for this analysis along with other research items including the *Management guide to ecosystem restoration treatments: Whitebark pine forests of the Northern Rocky Mountains* (USDA Forest Service 2010).	Plants – whitebark pine
8	As described in chapter 3 of the EIS, all National Forest System (NFS) lands within the project area are designated lynx critical habitat and the project area is considered occupied by lynx. While the commenter suggests that the effect analysis conclusion for lynx was “No Effect” as described on pages 392, 393 and 396 of the EIS, implementation of the action alternatives “May Affect, but are Not Likely to Adversely Affect Canada lynx and lynx critical habitat. See response to comment 1.	Wildlife - lynx
9	Rationale, or the purpose and need for treatment is described in chapter 1 of the EIS, including promoting habitat conditions that more closely represent historic conditions, reducing fire risk, and promoting species diversity. See response to comments 1	Wildlife - lynx
10	Effects to lynx from proposed treatments are discussed in chapter 3 of the FEIS and we recognize that proposed activities would disturb and displace lynx during and after treatment. While the commenter suggests that this displacement would result in take and is in violation of ESA, based on the analysis provided in the FEIS, proposed activities	Wildlife - lynx

Comment #	Response	Topic
	are consistent with the Biological Opinion for the Northern Rocky Mountains Lynx Amendment and are not in violation of ESA. See response to comment 1.	
11	See response to comment 1. Effects to lynx critical habitat were evaluated by looking at changes to primary constituent elements, which are discussed in the wildlife section of chapter 3; the lynx information in the FEIS is updated to incorporate new information obtained after the release of the DEIS. Based on the analysis provided and due to the maintenance of winter foraging, den and matrix habitat, implementation of the action alternatives May Affect, but are Not Likely to Adversely Affect lynx critical habitat.	Wildlife - lynx
12	Project specific consultation with the United States Fish and Wildlife Service is ongoing and will be completed prior to issuance of a decision on the Stonewall Vegetation Project. Upon further consideration since release of the DEIS the project analysis for lynx has been updated to a May effect – likely to adversely affect determination for lynx. The FS is conducting formal consultation with the USFWS and the Biological Opinion will address lynx and lynx critical habitat.	Wildlife - lynx
13	The six percent Forest-wide cap was established in the Northern Rocky Mountain Lynx Management Direction. We agree that a site specific analysis is required to adequately assess potential impacts to lynx and the analysis presented in the FEIS includes a site specific evaluation of affected LAU's. Also over 90 percent of the winter hare habitat and 80 percent of the suitable den habitat within both LAU's would be maintained and treatment would provide a mosaic of habitat conditions that would contribute to the recovery and conservation of lynx. See also response to comment 12 regarding consultation with the USFWS.	Wildlife - lynx
14	See response to comment 12 regarding consultation with the USFWS.	Wildlife - lynx
15	See response to comment 12 regarding consultation with the USFWS.	Wildlife - lynx
16	See response to comment 12 regarding consultation with the USFWS.	Wildlife - lynx
17	See response to comment 12 regarding consultation with the USFWS.	Wildlife - lynx
18	Connectivity and Landscape patterns were discussed in chapter 3 of the FEIS. In response to comments received to the EIS, additional discussion/analysis of the effects of treatment on landscape conditions has been added to the FEIS, including information on lynx use and travel corridors provided in Squires et al 2013. As described in the FEIS, while the effects to connectivity and movement by lynx would vary by alternative, both action alternatives would maintain landscape conditions that permit movement within and between LAU's. Also effects of past activities were considered and are reflected in the existing lynx habitat conditions. Finally, historical conditions were considered and are discussed under biophysical settings in the	Wildlife - lynx

Comment #	Response	Topic
	vegetation and wildlife sections of the FEIS. As described the action alternatives would restore fire to a landscape, better mimic ecological processes and reference conditions, improve species composition and promote the long-term sustainability of lynx habitat.	
19	While forest-wide compliance with old growth standards is beyond the scope of this analysis, as discussed in chapter 3 of the FEIS and in the project old growth report, the Stonewall project is consistent with Forest Plan old growth direction. Also in drainages that had less than the five percent old growth identified in the plan, additional old growth stands were identified. Finally stand conditions were assessed on the ground, to ensure that stands selected for old growth would provide the necessary structural conditions into the future. Effects to lynx, including the availability of den habitat in the wildlife section of the FEIS. While the action alternatives would reduce available den habitat, over 80 percent of the existing den habitat would be maintained in both LAU's and adequate lynx denning habitat would be maintained in the short and long-term. Also see response to comments 1.	Wildlife - lynx
20	Effects of winter and non-winter motorized use are evaluated in chapter 3 of the FEIS. As described, while there would be short-term effects to lynx from motorized use, considering that no new permanent roads would be constructed, that large unroaded areas would be maintained, that no new roads would be open to the public, that any increases in snowmobile use would be largely restricted to areas that don't provide winter hare habitat, and that research suggests that compacted snow routes did not appear to enhance access from other predators (Kolbe et al 2007), there are no long-term effects from winter or non-winter motorized use on lynx anticipated.	Wildlife – lynx rds
21	See response to comment 20. Cumulative effects to lynx, including effects from new roads and motorized and non-motorized use are discussed in the FEIS. Because public access would be unchanged and considering that development and/or retention of understory vegetation would reduce the length of time that treatment units would have increased access to Forest users, there are no long-term effects to lynx or lynx habitat from non-motorized use anticipated. As a result and considering that over 80 percent of the suitable lynx habitat would be unaffected by treatment, proposed activities would not result in significant cumulative effects to lynx.	Wildlife – lynx rds
22	Access management was addressed in the Blackfoot Travel Plan analysis. Roads identified for decommissioning in the Blackfoot Travel Plan have been incorporated into the Stonewall analysis.	Hydrology
23	Inventory and evaluation of roadless areas takes place at the forest plan level. Unroaded areas adjacent to IRAs that overlap with proposed treatment areas were evaluated for potential impacts to their roadless and wilderness characteristics. See DEIS page 595-603 and Table 154 and 155.	Inventoried Roadless Areas

Comment #	Response	Topic
24	An analysis of effects to fisheries and habitat is included in the Fisheries section of the Stonewall project DEIS. No wetlands, seeps, or springs have been found during surveys within the project area. If any are located during implementation they will be given the appropriate RHCA buffer and excluded from project activities.	Fisheries
25	Impacts from livestock were taken into account when formulated the current conditions. These impacts will also be taken into account in all future planned activities. Grazing effects are analyzed, managed and monitored under separate NEPA documents and decisions for each allotment on the district. The affected Allotment Management Plans are the Stonewall, Keep Cool and Arrastra allotments. The project would not alter any provisions of these plans or their implementation. The DEIS analyses resource management concerns most directly involved with forest understory vegetation conditions—wildlife, sensitive plants, stream sediment, and silviculture—did not identify any current conditions to which proposed activities and continuance of current permitted grazing would cause changes approaching a threshold of significance. This is the combined result of several factors, including: 1) generally good current vegetation conditions or necessary improvements already underway via other actions (fencing); 2) the lack of intense adverse effects from proposed activities with mitigation, including soils, watershed and fisheries design features (S/WS/F-1 through -26) shown at DEIS pp. 49-53; and 3) contingency mitigation measures in place through grazing-related project design features (RNG-1, -2, and -3) shown at DEIS p. 47.	Grazing
26	Bull trout critical habitat is located downstream of the project area in the Blackfoot River. Effects to bull trout and critical habitat are analyzed in the Stonewall project Biological Analysis for Section 7 consultation with the US Fish and Wildlife Service.	Fisheries - bull trout
27	Monitoring results and current watershed conditions are included in the Current Conditions section of both the Aquatic Species and the Hydrology sections of the Stonewall DEIS.	Fisheries
28	Baseline watershed conditions, including sedimentation, are discussed in the soils, hydrology and fisheries sections of chapter 3.	Hydrology
29	The Forest Service recognizes that land productivity is reduced by noxious weed infestations. That issue is addressed Forest-wide under the Final Environmental Impact Statement: Helena National Forest Noxious Weed Treatment Project and accompanying Record of Decision (USDA Forest Service 2006d). The analysis completed for this project discloses how noxious weeds are expected to respond under the different alternatives, what the environmental consequences are and incorporated practices designed to minimize or avoid potential adverse effects particular to this project.	Noxious weeds
30	Estimates of detrimental soil disturbance on a watershed scale is outside of the scope of this project. All estimates were provided on a	Soils

Comment #	Response	Topic
	site-specific unit-by-unit basis, which is the appropriate scale of analysis for this project.	
31	Current and cumulative soil disturbance is disclosed in the EIS for each individual treatment unit. Sediment modeling was also completed to assess the possibility of sediment delivery to streams. Methodology and assessments of water quantity affects from disturbances are discussed under water quality in the Hydrology section of the EIS.	Soils/Hydrology
32	The Hydrology section of the EIS disclosed the Blackfoot River has a total maximum daily load (TMDL) developed for sediment (for the section downstream of the forest boundary, and noted no WQLS streams in the Beaver Creek an Keep Cool Creek watersheds.	Hydrology
33	Soil disturbance from off-road vehicle use was taken into account when formulating the current conditions and estimating current detrimental soil disturbance.	Soils
34	Please see comment 29. This project includes monitoring for and treatment of noxious weed infestations that may occur as a result of the proposed activities.	Noxious weeds
35	After vegetative treatments, forest standards for coarse woody debris will be retained.	Soils
36	The DEIS at pp. 176-177 discusses non-significant effects of the proposed action and alternatives to carbon storage or release, in a manner consistent with current national environmental policy. Climate change was discussed in the following chapter 3 sections: vegetation (includes ramifications of a changing climate), fire and fuels, habitats of special concern, wildlife, noxious weeds and plants. The studies listed in the comment were considered in the literature review completed for the Stonewall analysis. *The following excerpt is from the Atmospheric Carbon Report for this analysis found in the project file (Amell and Klug 2013):* The Forest Service has reviewed scientific papers attached to this comment and other pertinent literature concerning forest carbon stocks, and the general, broad-scale relationships between forestry operations, atmospheric carbon exchange and global climate concerns. All literature submitted or cited by commenters is listed in a report titled, "Literature and Citations Received from Scoping for the Stonewall Vegetation Project," located in the project record. That report includes interdisciplinary-team determinations of relevance or applicability to the project of each literature item listed. With regard to the [comment], we recognize, as [asserted in the] second point, [that] variance or actual change in climate—past, present and future—potentially affects current and future conditions of the Helena National Forest. These facts are considered and addressed in the formulation of project objectives and the design of proposed and alternative actions. Through these, we seek to culture forest conditions in the Stonewall area that are resilient as possible to disturbance-events, processes, or trends that can—when sufficiently large, intense, or long term—detract from national forest conservation and the delivery of public benefits specified in law and policy. …	Silviculture – climate change

Comment #	Response	Topic
	In [the Atmospheric Carbon Report] we discuss further the first topic raised by [the comment]: the effects of proposed treatments on carbon storage versus no action. The topic is relevant to effects analysis because it identifies an environmental condition the Stonewall Project could change. The Forest Service recognizes that by manipulating forest vegetation through [various means including] silviculture, management of hazardous fuels, and fire, carbon is added to or removed from the earth's atmosphere; the manner and degree to which this happens as a result of the actions proposed can be at least qualitatively analyzed and described in comparison to no action. [These qualitative effects are discussed in DEIS Chapter 3 under Carbon Storage, pp. 176-177.] Concerning possible indirect *climate* effects from project-caused carbon release or storage, the Stonewall Project NEPA process will not attempt to make such an analysis. This position is based upon the fact that questions about whether or how to analyze effects to climate resulting from federal land and resource management are still under consideration by the White House Council on Environmental Quality (CEQ). Currently, CEQ has issued no operative guidance on this, as explained more thoroughly [in the Atmospheric Carbon Report (Amell and Klug 2013)] in the … section, "Regulatory Direction and Guidance on Consideration of Climate Change in Project Related NEPA Analysis."	
37	Pages 632-644 of the EIS disclosed the economic analysis for this project. The economic analysis will be updated for the FEIS based on current market and stand conditions, and also to reflect any changes in the alternatives. Financial efficiency is just one tool that is used to evaluate the costs and benefits of a project. Many non-market values associated with natural resource management are best handled apart from, but in conjunction with a more limited financial efficiency framework. These nonmarket benefits and costs associated with the project are discussed throughout the various resource sections of the EIS.	Economic
38	Available cited literature was reviewed along with other information considered for this analysis. The literature review is available in the project record.	NEPA
39	Commenters will remain on the mailing list for future project information.	NEPA

Reviews of the following Garrity Johnson 6/1/2013 email attachments are included with the literature review document:

Salix Opinion (May 16 2013).pdf; Squires et al_2013_Bio Con_Combining resource selection and movement to predict corridors Canada lynx.pdf; lynx appeal Sara's.doc; Lynx Mgmt Direction Appeal 7_07.doc; Lynx.Ecology.Intermountain.West.2006.Study.Part.I.pdf; lynxmapfinal_color.pdf; Lynx.Ecology.Intermountain.West.2006.Study.Part.II.pdf; Lynx.locations.Seeley.Colt.Summit..pdf; lynxmapfinal_color.pdf; T1_19.pdf; lynxmapfinal_color.pdf; CDOW.Lynx.Report.2007.2008.pdf;; Natl Lynx Survey.pdf; CDOW2008LynxReportJul2007Jun2008; Squires.June.29.2009.Letter.Missoula.County.Rural.Int.Lynx.Seeley..pdf

June 11, 2013

Amber Kamps
District Ranger
Lincoln Ranger District
Helena National Forest
1569 Hwy 200
Lincoln, MT 59639

Transmitted via email--please acknowledge receipt!

RE: Stonewall DEIS

Dear Ranger Kamps:

Thank you for the opportunity to comment. Please accept these additional comments on the Stonewall Restoration Project Draft Environmental Impact Statement (DEIS) on behalf of the Alliance for the Wild Rockies, Montana Ecosystems Defense, Council and Native Ecosystems Council. The U.S. Forest Service has proposed to implement various logging and burning prescriptions on 8640 acres in the Lincoln Ranger District of the Helena National Forest, near Lincoln, Montana. These activities will require the construction of 5 miles of new roads.

The Alliance for the Wild Rockies and Native Ecosystems Council (collectively "Alliance") submit the following comments on the DEIS for the proposal.
The Alliance for the Wild Rockies, Montana Ecosystem Defense Council, Tom Bovington and Native Ecosystems Council (collectively "Alliance") submit the following comments on the environmental analysis for the proposal.

Comment #1 The Forest Service must complete a full environmental impact statement (EIS) for this Project because the scope of the Project will likely have a significant individual and cumulative impact on the environment.

This watershed is functioning at risk or unacceptable risk for habitat parameters important to bull trout and westslope cutthroat trout and will remain so post project.

Maintaining degraded fish habitat conditions does not support narrowing the RHCAs.

The Forest Service and the Fish and Wildlife Service are required by the ESA to recover populations not maintain them at extreme risk of extinction.

Comment #2 This project attempts to sidestep NFMA requirements that a viable population be maintained, with habitat and populations well-distributed throughout the planning area. Managing for extinction in the Stonewall watershed is not a legal option. The Forest Service and the Fish and Wildlife Service are required by the ESA to recover populations not maintain them at extreme risk of extinction. The Forest Service should formally consult with the Fish and Wildlife Service and initiate a project that will recover bull trout instead of maintaining them at risk for extinction in violation of the Endangered Species Act.

Comment #3 Please also examine the planned SW Crown of the Continent Projects impacts in grizzly bears.

Comment #4 Please formally consult with the U.S. FWS to determine the impacts of this project on grizzly bears.

Comment #5 It looks like the open road density will increase during the timber sale. Will this violate the open road density requirements of the Forest Plan? How will construction temporary roads not increase the total road density? These are new roads.

Comment #6 Please formally consult with the USFWS and get a take permit for grizzly bears.

Comment #7-1 1. Did the Forest Service conduct NEPA analysis (i.e. an EA or EIS) for the Fire Plan?

Comment #7-2 2. If the Forest Service did not conduct NEPA for the Fire Plan, please immediately start that NEPA process.

Comment #7-3 3. Please provide a map showing the WUI and the locations of all homes in comparison to the project area.

Comment #7-4 4. If the Forest Service did not conduct NEPA for the Fire Plan, please disclose the cumulative effects of Forest-wide implementation of the Fire Plan in the DEIS to avoid illegally tiering to a non-NEPA document. Specifically analyze the decision to prioritize mechanical, human-designed, somewhat arbitrary treatments as a replacement for naturally-occurring fire.

Comment #7-5 5. Did the Forest Service conduct ESA consultation for the FirePlan?

Comment #7-6 6. Did the Forest Service formallu consult on the NRLMD in lynx critical habitat?

Comment #7-7 7. Will the Forest Service be considering binding legal standards for noxious weeds in its revision of the Helean Forest Plan?

Comment #7-8 8. How effective have BMPs been at stopping (i.e. preventing) new weed infestations from starting during logging and related road operations?

Comment #7-9 9. Is it true that new roads are the number one cause of new noxious weed infestations?

Comment #7-10 10. Why isn't the Forest Service considering a Forest Plan amendment in this Project to amend the Forest Plan to include binding legal standards that address noxious weeds?

Comment #7-11 11. Is it true that noxious weeds are one of the top threats to biodiversity on our National Forests?

Comment #7-12 12. How can the Forest Service be complying with NFMA's requirement to maintain biodiversity if it has no legal standards that address noxious weeds?

Comment #7-13 13. Will this Project address all Project area BMP needs, i.e. will the BMP road maintenance backlog and needs from this Project all be met by this Project?

Comment #7-14 14. The DEIS is not clear if any MIS were found. What MIS did you find, how many and how did you look for these MIS?

Comment #7-15 15. How will the decreased elk security and thermal cover affect wolverines? Please formally consult with the US FWS on the impact of this project on wolverines.

Comment #7-16 16. Which wildlife species and ecosystem processes, if any, does fire-proofing benefit?

Comment #7-17 17. Which species and processes do fire-proofing harm?

Comment #7-18 18. What evidence do you have that this logging will make the forest healthier for fish and wildlife?

Comment #7-19 19. What about the role of mixed severity and high severity fire – what are the benefits of those natural processes?

Comment #7-20 20. How have those processes (mixed and high severity fire) created the ecosystems we have today?

Comment #7-21 21. Over how many millennia have mixed and high severity fire have been occurring without human intervention?

Comment #7-22 22. What beneficial ecological roles do beetles play?

Comment #7-23 23. Can the forest survive without beetles?

Comment #7-24 24. Will all WQLS streams in the project area have completed TMDLs before a decision is signed?

Comment #7-25 25. Why is logging that removes trees considered regeneration (and not loss of existing forest), when a stand-replacing fire is considered loss of the forest (and not regeneration)?

Comment #7-26 26. How will the project improve watershed health?

Comment #7-27 27. Will this project leave enough snags to follow the Forest Plan requirements and the requirements of sensitive old growth species such as flammulated owls and goshawks?

Comment #7-28 28. After snags are cut down for safety for OSHA requirements will there still be enough snags left for old growth sensitive species?

Comment #7-29 29. Will this Project exacerbate existing noxious weed infestations and start new infestations?

Comment #7-30 30. Do unlogged old growth forests store more carbon than the wood products that would be removed from the same forest in a logging operation?

Comment #7-31 31. What is the cumulative effect of National Forest logging on U.S. carbon stores? How many acres of National Forest lands are logged every year? How much carbon is lost by that logging?

Comment #7-32 32. Is this Project consistent with "research recommendations (Krankina and Harmon 2006) for protecting carbon gains against the potential impacts of future climate change? That study recommends "[i]ncreasing or maintaining the forest area by avoiding deforestation," and states that "protecting forest from logging or clearing offer immediate benefits via prevented emissions."

Comment #7-33 33. Please list each visual quality standard that applies to each unit and disclose whether each unit meets its respective visual quality standard. A failure to comply with visual quality Forest Plan standards violates NFMA.

Comment #7-34 34. For the visual quality standard analysis please define "ground vegetation," i.e. what age are the trees, "restablishes," "short-term," "longer term," and "revegetate."

Comment #7-35 35. Please disclose whether you have conducted surveys in the Project area for this Project for wolverines, pine martins, northern goshawk and lynx, grizzly bears as required by the Forest Plan.

Comment #7-36 36. Please disclose the last time the Project area was surveyed for Whitebark pine, wolverines, pine martins, northern goshawk, grizzly bears and lynx.

Comment #7-37 37. Please disclose how often the Project area has been surveyed for wolverines, whitebark pine, pine martins, northern goshawks, grizzly bears and lynx. Is it impossible for a wolverines, pine martins, northern goshawks, grizzly bears and lynx to inhabit the Project area?

Comment #7-38 38. Would the habitat be better for whitebark pine, wolverines, pine martins, northern goshawks, grizzly bears and lynx if roads were removed in the Project area?

Comment #7-39 39. What is the U.S. FWS position on the impacts of this Project on whitebark pine, wolverines, pine martins, northern goshawks, grizzly bears and lynx? Have you conducted ESA consultation?

Comment #7-40 40. Please provide us with the full BA for the whitebark pine, wolverines, pine martins, northern goshawks, grizzly bears and lynx.

POPULATION VIABILITY AND HABITAT MANAGEMENT OF MANAGEMENT INDICATOR AND SENSITIVE SPECIES

Comment #8 The HNF continues to rely on wildlife habitat models for TES and MIS, utilizing the TSMRS or a similar database, of unproven reliability. The HNF cites no on-the-ground studies verifying the assumptions made with the use of these models.[1]

Comment #9 The HNF has consistently ignored the Region's guidance document for old-growth species' habitat management (USDA Forest Service, 1990).

From USDA Forest Service, 1990:

> *The greater vertical and horizontal diversity found within an old-growth stand allows for niche specialization by wildlife. Although the individual wildlife species occurring may not be unique to old-growth stands, the assemblage of wildlife species and the complexity of interactions between them are different than in earlier successional stages. P. 2*

> *Forest-wide estimates are needed of the relative abundance, patch sizes, and spatial distribution of old-growth habitat by forest type. P. 3*

> In northwestern Montana, McClelland (1977) described a general trend of increased species richness in cavity-nesting birds from young to old-growth stands of larch and Douglas-fir. Old growth was particularly important in providing an adequate number of suitable nesting trees for cavity-nesters. P. 6

> Patch size correlates strongly with the numbers of species and individuals that can be supported and with rates of extinction and recolonization." …Of 48 old-growth-associated

[1] In his 1991 book, In the Absence of the Sacred, Jerry Mander notes criticisms of the use of computers by the Forest Service biologists, and discusses the loss of relationship between humans and their wildlife neighbors as computers are utilized more widely by biologists (see Mander, 1991).

species occurring in the Northern Region, about 60 percent are thought to require stands larger than 80 acres. P. 8

Roads are generally undesirable within an old-growth habitat patch. P. 9

Providing for well-distributed habitat patches with interconnections between patches thus is necessary to maintain species diversity over the long term. P. 9.

McClelland (1979a) noted that pileated woodpeckers usually avoid open areas for feeding, preferring forests with a significant old-growth component and high basal area. …Bull and Meslow (1977) classified preferred feeding habitats as having high densities of snags and logs, dense canopies, and tall ground cover, with more than 10% of the ground area covered by logs. Pp. 11-12.

In the northern Rockies, the density of snags and stumps at pileated feeding sites (not throughout the feeding range) averaged 7 per acre (Aney and McClelland 1985). At least 500 acres of suitable feeding habitat is needed within the home range of a pair (McClelland 1979a). P. 12.

Monitoring Old-growth Habitats and MIS

Landres et al. (1988) pointed out that identifying old-growth stands based on habitat requirements of the MIS, and then monitoring habitat conditions for those MIS to assess old-growth conditions, is circular reasoning.

Comment #10

Because old-growth associated MIS are intended to represent a community of wildlife species, stand selection, management and monitoring should not be directed only towards the minimum requirements of MIS. Both general habitat conditions in relation to an ecological classification and suitability of the stands or patches to MIS need to be monitored. P. 38, emphasis added.

Three levels of monitoring intensity have been identified for Forest Plan implementation: implementation, effectiveness, and validation monitoring. Monitoring of habitats should be emphasized at all levels, with additional monitoring of habitat occupancy and population trends of MIS as appropriate. P. 38.

Monitoring Intensity

Model predictions can be tested by sampling a portion of the designated old-growth stands to determine the actual rate of occupancy by management indicator species. P. 38.

Validation Monitoring

Comment #11

Model validation should include tests to determine whether model output correctly predicts habitat quality. Reproductive performance over time is a good indicator of site productivity. P. 39.

Validation of Effects of Management Practices on Population Viability

Comment #12

Monitoring data should enable comparison of 'control' and 'treatment' territories. Otherwise, it will be unclear whether observed population changes were due to habitat change, weather, prey population cycles, or other factors. P. 39.

Comment #13

Methods For Habitat Monitoring

Aerial photo interpretation or other remotely-sensed data are suitable to determine cover type, overstory tree size, percent canopy cover, and stand acreage. Additional sampling effort will be needed to obtain reasonably accurate estimates of size and density of dead trees, standing and down. P. 40.

Comment #14

Methods For Monitoring Pileated Woodpecker

(field methodologies given, p. 40)

Comment #15

Methods For Monitoring Goshawk

(field methodologies given, pp. 40-41)

Comment #16

Methods For Monitoring Marten

(field methodologies given, p. 41)

Comment #17

Logging and other disturbance associated with the project and Seeley-Swan Fire F could affect northern goshawk nesting, post-fledging family habitat, alternative nesting, foraging, competitors, prey and potential habitat, including areas far fror cutting units. Research in the Kaibab National Forest found that goshawk populat decreased dramatically even after partial logging and even when large buffers arc nests were provided (Crocker-Bedford, 1990).

Comment #18

The HNF ignores important scientific information on goshawk habitat requirements. Rey et al. 1992 provide a basis for a northern goshawk conservation strategy that could be implemented if forestwide habitat considerations were to be truly taken into account. T suggest that it is essential to viability of goshawks that 20-50% of old growth within thei nesting areas be maintained, yet the HNF fails to recognize that *(see also Suring et al. 1993). Graham, et al. 1999, USDA Forest Service 2000b, Iverson et al. 1996, and Suring et al. 1993 are more examples of northern goshawk conservation strategie FS might adopt for this Forest or Region, if emphasis was more appropriately pla on species conservation and insuring viability rather than justification for resour extraction.*

USDA Forest Service 2000b recommends that forest opening greater than 50-60 a be avoided in the vicinity of goshawks. At least five years of monitoring is necessa allow for effective estimates of habitat quality (Id.). Research suggests that a loca distribution of 50% old growth should be maintained to allow for viability of gosh (Suring et al. 1993).

The scientific information provided in Center for Biological Diversity, 2004, also conflicts with the HNF's analyses and conclusions regarding goshawk viability, an includes vital information on goshawks not considered by the HNF.

Goshawks are often associated with a thick overstory cover and areas with a larg number of large trees. For example, Hayward and Escano (1989) recommend an overstory canopy between 75 and 80%. According to the BE/BA for the Keystone Quartz EIS in the Beaverhead NF, "Goshawks prefer vegetation structure that pe them to approach prey unseen and to use their flight maneuverability to advanta (Widen, 1989, Beier and Drennan 1997)…"

Lit Reviews

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

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

Greenwald et al., 2005 reviewed the current literature on goshawk habitat relationships applicable to the Northern Rockies. Nine of 12 studies demonstrated selection for stands with higher canopy closure, larger tree size, and greater numbers of large trees than found in random stands. Some notable statements and conclusions include:

> …Most studies found that goshawks avoided open areas and logged early-seral stands; none of the studies cited in this paper found selection for such features.
>
> …While some studies suffered from small sample sizes or relatively short sampling periods, the consistency of results demonstrates goshawk selection for late-successional forest structures (e.g., high canopy closure, large trees for forest type, canopy layering, abundant coarse woody debris) when using areas within their studied home ranges. … This is not to say that goshawks only forage or roost in mature stands, but rather that such stands are disproportionately selected.
>
> … (R)eviewed studies found goshawks avoided open areas, particularly logged open areas, and none found selection for openings.
>
> *… The 5 studies correlating nest occupancy and productivity with habitat features consistently demonstrated a relationship between closed-canopied forests with large trees and goshawk occupancy. Occupancy rates were reduced by removing forest cover in the home range, which thereby resulted in reduced productivity because there were fewer active breeding territories. (Internal citations omitted.)*
>
> *Seeking to promote abundant populations of 14 prey species, Reynolds et al. (1992) recommend maintaining 20% of the landscape in grass–forb or seedling–sapling stage*

forest, 20% in young forest, 20% in mid-aged forest, and 40% in mature and old forests. … Given the above findings that goshawks generally avoid open areas and early-seral forest, that logging reduces goshawk occupancy and productivity, and a lack of evidence that creating openings or young forest through logging benefits goshawks, these recommendations appear to lack support in research produced since 1992.

Across most of the western United States, mature and old-forests have declined to much less than 40% of the landscape. Given these declines and the lack of information on the amounts of mature and old-forest goshawks require, we recommend protecting existing mature and old-forest characteristics and ensuring that such forests are allowed to develop in proportions similar to presettlement conditions. This can be accomplished by restricting cutting to small trees, and prohibiting large reductions in canopy closure. A similar proposal was recently adopted by Region 5 of the United States Forest Service for the Sierra Nevada. In sum, based on apparent inconsistencies between subsequent research and Reynolds et al. (1992), we recommend adaptation of the management guidelines to incorporate results of numerous studies conducted since 1992. (Internal citations omitted.)

Comment #19

The issue of fragmentation should have been more thoroughly considered with respec goshawks. Other edge-adapted species may compete with the goshawk and displace th goshawk if inadequate amounts of interior forest habitat are available. Crocker-Bedfc (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 of more marginal habitat designated beyond this 5,000 acre foraging area.

Comment #20

The HNF fails to take seriously the uncertain and precarious population status of the 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).

The proposed logging could adversely impact fishers and their habitat. Habitat elements for natal and maternal dens are found in large diameter logs or snags, slated to be reduced by the logging. "Though the post-treatment stand condition would not be 'clear cuts', they would be fairly open and Jones (1991) did not expect to find substantial fisher hunting use of plantations by fishers until canopy approached 80% and 10-15 feet respectively (depending on snow depths)" (Helena NF's

Spotted Beetle EA, p. 3-62). The logging, snag removal and other activities associated with the Hidden Lake Fuel Reduction project would negatively affect fisher habitat. Movement, denning, resting areas, genetic diversity, and other aspects of fisher life cycles and fisher survival could be impacted by the project; the FS does not fully consider these elements of the project or adequately mitigate their impacts.

Lit Reviews *Jones (undated) and the LNF's Johnsen (1996) provide examples of possible conser strategies for the fisher, something the FS has so far neglected to implement for this Sensitive species.*

Comment #20 continued

THE AGENCIES SHOULD CONDUCT ESA CONSULTATION FOR THE NORTHERN ROCKIES FISHER…

This year, USFWS found "substantial scientific or commercial information indicating that listing a [Distinct Population Segment] of fisher in the [Northern Rocky Mountains] of the United States [under the ESA] may be warranted." 75 Fed. Reg. 19925 – 19935 (April 16, 2010). In particular, USFWS found that listing the Northern Rockies fisher under the ESA may be warranted in primary part "due to the present and potential future modification and destruction of habitat from commercial timber harvest and commercial wood production by methods that may prevent succession to the mature forest stages preferred by fishers." The Forest Service admits that the fisher and/or its habitat are present within the project area and would be impacted by the project. The Forest Service did no ESA consultation for the fisher for this project.

Comment #21

THE AGENCIES SHOULD CONDUCT ESA CONSULTATION FOR THEWOLVERINE. The wolverine, which was chosen by the Forest Service as a management indicator species forth project area, was recently determined to be warranted for listing under the ESA. 75 Fed. Reg.78030 (Dec. 14, 2010). It is currently a candidate species, waiting for work to be completed on other species before it is officially listed. The USFWS found that "[s]ources of human disturbance to wolverines include . . . road corridors, and extractive industry such as logging . . .." . The Forest Service admits that the wolverine and/or its habitat are present within the project area and would be impacted by the project. The Forest Service must go through ESA consultation for the wolverine for this project.

Lit Reviews

Regarding another Sensitive species, the black-backed woodpecker, 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 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, Weinhagen 1998, Steeger and Dulisse in press, Taylor unpublished data). Taylor's observations of black-backed woodpeckers in unburned forests in northern Idaho suggest that they may occur at substantially lower densities in unburned forests, but no rigorous comparisons between black-backed woodpecker densities in burned and unburned forests have been done. Hutto (1995) hypothesized that black-backed woodpeckers reproduce at *source* reproductive levels in burns, but may drop to *sink* reproductive levels in the intervening periods between large burns.

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

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

Comment #22

The comments by other biologists attached to Dolan, 1998a,b reveal that the FS has y design a consistent, workable, scientifically defensible strategy to ensure viable popul of the black-backed woodpeckers. The fire suppression and "salvage" logging policies HNF are the biggest threat to black-backed woodpecker population viability on the Fo unfortunately in failing to create a conservation strategy the cumulative impacts of th HNF's ongoing fire suppression policy will remain unexamined. The Hidden Lake Fuel Reduction project continues an unspoken management for extinction policy.

Comment #23

Lofroth (1997) in a British Columbia study, found that wolverines use habitats as dive tundra and old-growth forest. Wolverines are also known to use mid- to low-elevation Douglas-fir forests in the winter (USDA Forest Service, 1993). The cumulative impact logging and road building on a species that depends upon remote, wild areas remain unexplored.

Comment #24

The flammulated, boreal owl and the great gray owl are species of concern that are sensitive to logging and other management activities. The HNF provides inadequate management strategies to insure their viability.

See, for example, Hayward and Verner, 1994.

Wright, et al. (1997) point out that habitat restoration for the flammulated owl must be carefully targeted to the correct habitat types. The FS can't simply cut and/or burn forest area and expect flammulated owls to start using it as habitat. Wright, et al. (1997) state:

> (W)e never detected Flammulated Owls in mesic old-growth ponderosa pine stands with a Vaccinium understory. Thus, within suitable landscapes, it may be most effective to conserve and restore stand structural characteristics within suitable habitat types (e.g.,

xeric ponderosa pine/ Douglas-fir stands in our study area), rather than within any stand containing ponderosa pine trees.

Comment #25 The EA [EIS] does not adequately consider cumulative effects on upland habitat for boreal toads. This does not make sense, since such small populations that are likely to persist are especially susceptible to fragmentation and extirpation due to isolation of smaller populations. See Maxell, 2000. In fact, the HNF has never performed a genuine analysis of cumulative impacts of logging activities on boreal toads.

From Ch. 3 p. 173 of the Bristow Area Restoration Project EA, Kootenai National Forest, (USDA Forest Service, 2003a:

> Little quantitative data are available regarding the boreal toad's use of upland and forested habitats. However, boreal toads are know to migrate between the aquatic breeding and terrestrial nonbreeding habitats (TNC Database 1999), and that juvenile and adult toads are capable of moving over 5 km between breeding sites (Corn et al. 1998[2]). It is thought than juveniles and female boreal toads travel farther than the males (Ibid). A study on the Targhee National Forest (Bartelt and Peterson 1994) found female toads traveled up to 2.5 kilometers away from water after breeding, and in foraging areas, the movements of toads were significantly influenced by the distribution of shrub cover. Their data suggests that toads may have avoided macro-habitats with little or no canopy and shrub cover (such as clearcuts). Underground burrows in winter and debris were important components of toad selected micro-sites in a variety of macro-habitats. The boreal toad digs its own burrow in loose soil or uses those of small mammals, or shelters under logs or rocks, suggesting the importance of coarse woody debris on the forest floor. …(T)imber harvest and prescribed burning activities could impact upland habitat by removing shrub cover, down woody material, and/or through compaction of soil.

Montana Fish, Wildlife & Parks, 2005 (a more recent version of the above cite "TNC Database, 1999") also discuss boreal toad habitat:

> Habitats used by boreal toads in Montana are similar to those reported for other regions, and include low elevation beaver ponds, reservoirs, streams, marshes, lake shores, potholes, wet meadows, and marshes, to high elevation ponds, fens, and tarns at or near treeline (Rodgers and Jellison 1942, Brunson and Demaree 1951, Miller 1978, Marnell 1997, Werner et al. 1998, Boundy 2001). Forest cover in or near encounter sites is often unreported, but toads have been noted in open-canopy ponderosa pine woodlands and

[2] Cited and included as Maxell et al., 1998 herein.

closed-canopy dry conifer forest in Sanders County (Boundy 2001), willow wetland thickets and aspen stands bordering Engelmann spruce stands in Beaverhead County (Jean et al. 2002), and mixed ponderosa pine/cottonwood/willow sites or Douglas-fir/ponderosa pine forest in Ravalli and Missoula counties (P. Hendricks personal observation).

Elsewhere the boreal toad is known to utilize a wide variety of habitats, including desert springs and streams, meadows and woodlands, mountain wetlands, beaver ponds, marshes, ditches, and backwater channels of rivers where they prefer shallow areas with mud bottoms (Nussbaum et al. 1983, Baxter and Stone 1985, Russell and Bauer 1993, Koch and Peterson 1995, Hammerson 1999). Forest cover around occupied montane wetlands may include aspen, Douglas-fir, lodgepole pine, Engelmann spruce, and subalpine fir; in local situations it may also be found in ponderosa pine forest. They also occur in urban settings, sometimes congregating under streetlights at night to feed on insects (Hammerson 1999, P. Hendricks personal observation). Normally they remain fairly close to ponds, lakes, reservoirs, and slow-moving rivers and streams during the day, but may range widely at night. Eggs and larvae develop in still, shallow areas of ponds, lakes, or reservoirs or in pools of slow-moving streams, often where there is sparse emergent vegetation. Adult and juvenile boreal toads dig burrows in loose soil or use burrows of small mammals, or occupy shallow shelters under logs or rocks. At least some toads hibernate in terrestrial burrows or cavities, apparently where conditions prevent freezing (Nussbaum et al. 1983, Koch and Peterson 1995, Hammerson 1999).

Maxell et al., 1998 state:

We believe that the status of the Boreal toad is largely uncertain in all Region 1 Forests. …Briefly, factors which are a cause for concern over the viability of the species throughout Region 1 include: (1) a higher degree of genetic similarity within the range of Region 1 Forests relative to southern or coastal populations; (2) a general lack of both historical and current knowledge of status in the region; (3) indications of declines in areas which do have historical information; (4) low (5-10%) occupancy of seemingly suitable habitat as detected in recent surveys; (5) some evidence for recent restriction of breeding to low elevation sites and; (6) recent crashes in boreal toad populations in the southern part of its range which may indicate the species' sensitivity to a variety of anthropogenic impacts.

LYNX

Comment #26

Please formally consult with US FWS on the impact of this project on lynx and conference this project adversely modifies lynx critical habitat since page 3-248 of the EA states that Alternative B will take 517 acres of lynx foraging habitat and 327 acres of denning habitat. The EA goes on to say that the reduction of lynx foraging habitat will not be permanent goes on to say that Squires 2010 found lynx are not using regenerated stands are originally thought. Therefore NEPA must be done on the exception in the NRMLD for lynx forage reduction within the WUI.

Comment #27

In December 1999, the Forest Service and Bureau of Land Management completed their "Biological Assessment Of The Effects Of National Forest Land And Resource Manageme Plans And Bureau Of Land Management Land Use Plans On Canada Lynx" ("Programmat BA"). The Programmatic BA concluded that the current programmatic land managemen plans "may affect, and are likely to adversely affect, the subject population of Canada ly The BA team recommended amending or revising Forest Plans to incorporate conservat measures that would reduce or eliminate the identified adverse effects to lynx. The Programmatic BA's determination means that Helena Forest Plan implementation is a "taking" of lynx.

The fact that continued implementation of the Forest Plans constitutes a "taking" of the lynx is not disclosed in the EA or in the EA's Biological Assessment. Such taking can only be authorized with an incidental take statement, issued as part of a Biological Opinion (B.O.) during a Section 7 consultation. The FS must incorporate terms and conditions from a programmatic B.O. into a Forest Plan amendment or revision before projects affecting lynx habitat, such as the North Butte Salvage Project, can be authorized.

The Programmatic BA's "likely to adversely affect" conclusion was based upon the following rationale (p. 4), all of which apply here. Forest Plans within the Northern Rockies:

- generally direct an aggressive fire suppression strategy within developmental land allocations. …this strategy may be contributing to a risk of adversely affecting the Lynx by limiting the availability of foraging habitat within these areas.

- allow levels of human access via forest roads that may present a risk of incidental trapping or shooting of Lynx or access by other competing carnivores. The risk of road-related adverse effects is primarily a winter season issue.

- are weak in providing guidance for new or existing recreation developments. Therefore, these activities may contribute to a risk of adverse effects to lynx.

- allow both mechanized and non-mechanized recreation that may contribute to a risk of adverse effects to lynx. The potential effects occur by allowing compacted snow trails and plowed roads which may facilitate the movements of lynx competitors and predators.

- provide weak direction for maintaining habitat connectivity within naturally or artificially fragmented landscapes. Plans within all geographic areas lack direction for coordinating construction of highways and other movement barriers with other responsible agencies. These factors may be contributing to a risk of adverse effects to lynx.

- fail to provide direction for monitoring of lynx, snowshoe hares, and their habitats. While failure to monitor does not directly result in adverse effects, it makes the detection and assessment of adverse effects from other management activities difficult or impossible to attain.

- forest management has resulted in a reduction of the area in which natural ecological processes were historically allowed to operate, thereby increasing the area potentially affected by known risk factors to lynx. The Plans have continued this trend. The Plans have also continued the process of fragmenting habitat and reducing its quality and quantity. Consequently, plans may risk adversely affecting lynx by potentially contributing to a reduction in the geographic range of the species.

- The BA team recommends amending or revising the Plans to incorporate conservation measures that would reduce or eliminate the identified adverse effects to lynx. The programmatic conservation measures listed in the Canada Lynx Conservation Assessment and Strategy (LCAS) should be considered in this regard, once finalized.

The BA notes that the LCAS identifies the following risk factors to lynx in this geographic area:

- Timber harvest and precommercial thinning that reduce denning or foraging habitat or converts habitat to less desirable tree species*;*

- Fire exclusion that changes the vegetation mosaic maintained by natural disturbance processes;
- Grazing by domestic livestock that reduces forage for lynx prey;
- Roads and winter recreation trails that facilitate access to historical lynx habitat by competitors;
- Legal and incidental trapping and shooting;
- Being hit by vehicles;
- Obstructions to lynx movements such as highways and private land development;

It is clear, then, that the FS must do more than follow its Forest Plans to protect lynx. Nonetheless, and in spite of the inadequate analysis population viability following adverse modification of habitat perpetuated by the Project, the North Butte Salvage Project BA concludes that the implementation of the proposed action would result in a determination of "may affect but not likely to adversely affect."

The [EA] and BA fail to fully demonstrate Project consistency with all LCAS Standards and guidelines. For example, the LCAS sets mandatory Standards that would modify or amend the Forest Plans—steps the LNF has thus far not accomplished. Important Programmatic Standards include:

Identify key linkage areas that may be important in providing landscape connectivity within and between geographic areas, across all ownerships. (p. 87)

Develop and implement a plan to protect key linkage areas on federal lands from activities that would create barriers to movement. Barriers could result from an accumulation of incremental projects, as opposed to any one project. (Id.)

Map and monitor the location and intensity of snow compacting activities that coincide with Lynx habitat, to facilitate future evaluation of effects on Lynx as information becomes available. (p. 82)

On federal lands in Lynx habitat, allow no net increase in groomed or designated over-the-snow routes and snowmobile play areas by LAU.

The EA 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. The BA lacks a genuine analysis of the full range of cumulative impacts of other activities. The EA and BA also fail to disclose the cumulative effects of livestock grazing on the grazing allotments in the project area.

The Programmatic BA's analysis of the ability of the Forest Plans, as 'amended' by the LCAS, to prevent a "taking" of the lynx is based upon the Forests' meeting management standards. As the Helena NF has not adequately shown that it is in compliance with its old growth standards, or that it even has

valid old growth standards, as detailed elsewhere in this appeal, the project BA and EA are not in compliance with the LCAS.

We also have to question the validity of the percentage habitat standards set by the LCAS itself. The Forest Service would be hard-pressed to find many Lynx Analysis Unit in the Northern Region—heavily logged or otherwise—that already don't meet these percentages. Basically, what these Standards accomplish is to validate the management status quo—the very situation that led to the listing of the lynx under the ESA.

Alliance has reviewed the statutory and regulatory requirements governing National Forest Management projects, as well as the relevant case law, and compiled a check-list of issues that must be included in the EIS for the Project in order for the Forest Service's analysis to comply with the law. Following the list of necessary elements, Alliance has also included a general narrative discussion on possible impacts of the Project, with accompanying citations to the relevant scientific literature. These references should be disclosed and discussed in the EIS for the Project.

I. NECESSARY ELEMENTS FOR PROJECT EIS:

Comment #28-A A. Disclose all Helena National Forest Plan requirements for logging/burning projects and explain how the Project complies with them;

Comment #28-B B. Disclose the acreages of past, current, and reasonably foreseeable logging, grazing, and road-building activities within the Project area;

Comment #28-C C. Solicit and disclose comments from the Montana Department of Fish, Wildlife, and Parks regarding the impact of the Project on wildlife habitat;

Comment #28-D D. Solicit and disclose comments from the Montana Department of Environmental Quality regarding the impact of the Project on water quality;

Comment #28-E E. Disclose if there are any WQLS streams in the project area and if TMDLs are completed;

Comment #28-F F. Disclose the biological assessment for the candidate, threatened, or endangered species with potential and/or actual habitat in the Project area;

Comment #28-G G. Disclose the biological evaluation for the sensitive and management indicator species with potential and/or actual habitat in the Project area;

Comment #28-H H. Disclose the snag densities in the Project area, and the method used to determine those densities;

Comment #28-I I. Disclose the current, during-project, and post-project road densities in the Project area;

Comment #28-J J. Disclose the Helena National Forest's record of compliance with state best management practices regarding stream sedimentation from ground-disturbing management activities;

Comment #28-K K. Disclose the Helena National Forest's record of compliance with its monitoring requirements as set forth in its Forest Plan;

Comment #28-L L. Disclose the Helena National Forest's record of compliance with the additional monitoring requirements set forth in previous DN/FONSIs and RODs on the Helena National Forest;

Comment M. Disclose the results of the field surveys for threatened, endangered, sensitive, and rare

Comment #28-A A. Disclose all Helena National Forest Plan requirements for logging/burning projects and explain how the Project complies with them;

#28-M plants in each of the proposed units;

Comment #28-N N. Disclose the level of current noxious weed infestations in the Project area and the cause of those infestations;

Comment #28-O O. Disclose the impact of the Project on noxious weed infestations and native plant communities;

Comment #28-P P. Disclose the amount of detrimental soil disturbance that currently exists in each proposed unit from previous logging and grazing activities;

Comment #28-Q Q. Disclose the expected amount of detrimental soil disturbance in each unit after ground disturbance and prior to any proposed mitigation/remediation;

Comment #28-R R. Disclose the expected amount of detrimental soil disturbance in each unit after proposed mitigation/remediation;

Comment #28-S S. Disclose the analytical data that supports proposed soil mitigation/remediation measures;

Comment #28-T T. Disclose the timeline for implementation;

Comment #28-U U. Disclose the funding source for non-commercial activities proposed;

Comment #28-V V. Disclose the current level of old growth forest in each third order drainage in the Project area;

Comment #28-W W. Disclose the method used to quantify old growth forest acreages and its rate of error based upon field review of its predictions;

Comment #28-X X. Disclose the historic levels of mature and old growth forest in the Project area;

Comment #28-Y Y. Disclose the level of mature and old growth forest necessary to sustain viable populations of dependent wildlife species in the area;

Comment #28-Z Z. Disclose the amount of mature and old growth forest that will remain after implementation;

Comment #28-AA AA. Disclose the amount of current habitat for old growth and mature forest dependent species in the Project area;

Comment #28-BB BB. Disclose the amount of habitat for old growth and mature forest dependent species that will remain after Project implementation;

Comment #28-CC CC. Disclose the method used to model old growth and mature forest dependent wildlife habitat acreages and its rate of error based upon field review of its predictions;

Comment #28-DD DD. Disclose the amount of big game (moose and elk) hiding cover, winter range, and security currently available in the area;

Comment #28-EE EE. Disclose the amount of big game (moose and elk) hiding cover, winter range, and security during Project implementation;

Comment #28-FF FF. Disclose the amount of big game (moose and elk) hiding cover, winter range, and security after implementation;

Comment #28-GG GG. Disclose the method used to determine big game hiding cover, winter range, and security, and its rate of error as determined by field review;

Comment #28-HH HH. Disclose and address the concerns expressed by the ID Team in the draft Five-Year Review of the Forest Plan regarding the failure to monitor population trends of MIS, the inadequacy of the Forest Plan old growth standard, and the failure to compile data to establish a reliable inventory of sensitive species on the Forest;

Comment II. Disclose the actions being taken to reduce fuels on private lands adjacent to the Project

Comment #28-A A. Disclose all Helena National Forest Plan requirements for logging/burning projects and explain how the Project complies with them;

#28-II area and how those activities/or lack thereof will impact the efficacy of the activities proposed for this Project;

Comment #28-JJ JJ. Disclose the efficacy of the proposed activities at reducing wildfire risk and severity in the Project area in the future, including a two-year, five-year, ten-year, and 20-year projection;

Comment #28-KK KK. Disclose when and how the Helena National Forest made the decision to suppress natural wildfire in the Project area and replace natural fire with logging and prescribed burning;

Comment #28-LL LL. Disclose the cumulative impacts on the Forest-wide level of the Helena National Forest's policy decision to replace natural fire with logging and prescribed burning;

Comment #28-MM MM. Disclose how Project complies with the Roadless Rule;

Comment #28-NN NN. Disclose the impact of climate change on the efficacy of the proposed treatments;

Comment #28-OO OO. Disclose the impact of the proposed project on the carbon storage potential of the area;

Comment #28-PP PP. Disclose the baseline condition, and expected sedimentation during and after activities, for all streams in the area;

Comment #28-QQ 1-10 QQ. Disclose maps of the area that show the following elements:

1. Past, current, and reasonably foreseeable logging units in the Project area;
2. The cumulative effects of past, current, and reasonably foreseeable logging units;
3. Past, current, and reasonably foreseeable logging units in the Project area;
4. The cumulative effects of past, current, and reasonably foreseeable grazing;
5. Past, current, and reasonably foreseeable grazing allotments in the Project area;
6. Density of human residences within 1.5 miles from the Project unit boundaries;
7. Hiding cover in the Project area according to the Forest Plan definition;
8. Old growth forest in the Project area;
9. Big game security areas;
10. Moose winter range;

Comment #29 Does this project have a 404 permit from the Army Corp of Engineers to dredge and fill or harm a wetland? Please provide a map of all of the wetlands or wetland complexes. If they are not mapped nothing in the [EA] EIS ensures that wetlands won't be permanently converted to uplands and result in a net decrease in wetlands by dredging and filling when building temporary roads, skid trails or landing sites in wetlands. It is also a violation of NEPA, NFMA and the APA to not notify the public that the Forest Service does not have a 404 permit and is not following the Clean Water Act.

Weeds

Native plants are the foundation upon which the ecosystems of the Forest are built, providing forage and shelter for all native wildlife, bird and insect species, supporting the natural processes of the landscape, and providing the context within which the public find recreational and spiritual opportunities. All these uses or values of land are hindered or lost by conversion of native vegetation to invasive and noxious plants. The ecological threats posed by noxious weed infestations are so great that a former chief of the Forest Service called the invasion of noxious weeds "devastating" and a "biological disaster." Despite implementation of Forest Service "best management practices" (BMPs), noxious weed infestation on the Forest is getting worse and noxious weeds will likely overtake native plant populations if introduced into areas that are not yet infested. The Forest Service has recognized that the effects of noxious weed invasions may be irreversible. Even if weeds are eliminated with herbicide treatment, they may be replaced by other weeds, not by native plant species.

Comment #30

Invasive plant species, also called noxious weeds, are one of the greatest modern threats to biodiversity on earth. Noxious weeds cause harm because they displace native plants, resulting in a loss of diversity and a change in the structure of a plant community. By removing native vegetative cover, invasive plants like knapweed may increase sediment yield and surface runoff in an ecosystem. As well knapweed may alter organic matter distribution and nutrient through a greater ability to uptake phosphorus over some native species in grasslands. Weed colonization can alter fire behavior by increasing flammability: for example, cheatgrass, a widespread noxious weed on the Forest, cures early and leads to more frequent burning. Weed colonization can also deplete soil nutrients and change the physical structure of soils.

The Forest Service's own management activities are largely responsible for noxious weed infestations; in particular, logging, prescribed burns, and road construction and use create a risk of weed infestations. The introduction of logging equipment into the Forest creates and exacerbates noxious weed infestations. The removal of trees through logging can also facilitate the establishment of noxious weed infestations because of soil disturbance and the reduction of canopy closure In general, noxious weeds occur in old clearcuts and forest openings, but are rare in mature and old growth forests. Roads are often the first place new invader weeds are introduced. Vehicle traffic and soil disturbances from road construction and maintenance create ideal establishment conditions for weeds. Roads also provide obvious dispersal corridors. Roadsides throughout the project area are infested with noxious weeds. Once established along roadsides, invasive plants will likely spread into adjacent grasslands and forest openings.

Prescribed burning activities within the analysis area would likely cumulatively contribute to increases to noxious weed distribution and populations. As a disturbance process, fire has the potential to greatly exacerbate infestations of certain noxious weed species, depending on burn severity and habitat type (Fire Effects Information System 2004). Soil disturbance, such as that resulting from low and moderate burn severities from prescribed fire and fire suppression related disturbances (dozer lines, drop spots, etc.), provide optimum conditions for noxious weed invasion. Dry site vegetation types and road corridors are extremely vulnerable, especially where recent ground disturbance (timber management, road construction) has occurred. Units proposed for burning within project area may have closed forest service access roads (jammers) located within units. These units have the highest potential for noxious weed infestation and exacerbation through fire activities.

Comment #31 *Please provide an alternative that eliminates units that have noxious weeds present on roads within units from fire management proposals.*

Comment #32 *Please address the ecological, social and ascetic impact of current noxious weed infestations within the project area. Include an analysis of the impact of the actions proposed by this project on the long and short term spread of current and new noxious weed infestations. What treatment methods will be used to address growing noxious weed problems? What noxious weeds are currently and historically found within the project area? Please include a map of current noxious weed infestations which includes knapweed, Saint Johnswort, cheat grass, bull thistle, Canada thistle, hawkweed, hound's-tongue, oxeye daisy and all other Category 1, Category 2 and Category 3 weeds classified as noxious in the MONTANA COUNTY NOXIOUS WEED LIST. State-listed Category 2 noxious weed species yellow and orange hawkweeds are recently established (within the last 5 to 10 years) in Montana and are rapidly expanding in established areas. They can invade undisturbed areas where native plant communities are intact. These species can persist in shaded conditions and often grow underneath shrubs making eradication very difficult. Their stoloniferous (growing at the surface or below ground) habit can create dense mats that can persist and spread to densities of 3500 plants per square mile (Thomas and Dale 1975). Are yellow and orange hawkweeds present within the project area?*

Comment #33

Comment #34 *Please address the cumulative, direct and indirect effects of the proposed project on weed introduction, spread and persistence that includes how weed infestations have been and will be influenced by the following management actions: road construction including new permanent and temporary roads, and skid trails proposed within this project; opening and decommissioning of roads represented on forest service maps; ground disturbance and traffic on forest service template roads, mining access routes, and private roads; removal of trees through commercial and pre-commercial logging and understory thinning; and prescribed burns. What open, gated, and decommissioned Forest Service roads within the project area proposed as haul routes have existent noxious weed populations and what methods will be used to assure that noxious weeds are not spread into the proposed action units?*

Noxious weeds are not eradicated with single herbicide treatments. A onetime application may kill an individual plant but dormant seeds in the ground can still sprout after herbicide treatment. Thus, herbicides must be used on consistent, repetitive schedules to be effective.

Comment #35 *What commitment to a long-term, consistent strategy of application is being proposed for each weed infested area within the proposed action area? What long term monitoring of weed populations is proposed?*

Comment #36 When areas treated with herbicides are reseeded on national forest land, they are usually reseeded with exotic grasses, not native plant species.
What native plant restoration activities will be implemented in areas disturbed by the actions proposed in this project? Will disturbed areas including road corridors, skid trails, and burn units be planted or reseeded with native plant species?

Comment #37 The scientific and managerial consensus is that prevention is the most effective way to manage noxious weeds. The Forest Service concedes that preventing the introduction of weeds into uninfested areas is "the most critical component of a weed management program." The Forest Service's national management strategy for noxious weeds also recommends "develop[ing] and implement[ing] forest plan standards . . . ." and recognizes that the cheapest and most effective solution is prevention. *Which units within the project area currently have no noxious weed populations within their boundaries?*

Comment #38 *What minimum standards are in the Helena National Forest Plan to address noxious weed infestations?*

Comment #39 *Please include an alternative in the DEIS that includes land management standards that will prevent new weed infestations by addressing the causes of weed infestation. The failure to include preventive standards violates NFMA because the Forest Service is not ensuring the protection of soils and native plant communities. Additionally, the omission of an EIS alternative that includes preventive measures would violate NEPA because the Forest Service would fail to consider a reasonable alternative.*

Rare Plants

The ESA requires that the Forest Service conserve endangered and threatened species of plants as well as animals. In addition to plants protected under the ESA, the Forest Service identifies species for which population viability is a concern as "sensitive species" designated by the Regional Forester (FSM 2670.44). The response of each of the sensitive plant species to management activity varies by species, and in some cases, is not fully known. Local native vegetation has evolved with and is adapted to the climate, soils, and natural processes such as fire, insect and disease infestations, and windthrow. Any management or lack of management that causes these natural processes to be altered may have impacts on native vegetation, including threatened and sensitive plants. Herbicide application – intended to eradicate invasive plants – also results in a loss of native plant diversity because herbicides kill native plants as well as invasive plants. Although native species have evolved and adapted to natural disturbance such as fire on the landscape, fires primarily occur in mid to late summer season, when annual plants have flowered and set seed. Following fall fires, perennial root-stocks remain underground and plants emerge in the spring. Spring and early summer burns could negatively impact emerging vegetation and destroy annual plant seed.

Comment #40 *What threatened, endangered, rare and sensitive plant species and habitat are located within the proposed project area?*

Comment #41 *What standards will be used to protect threatened, rare, sensitive and culturally important plant species and their habitats from the management actions proposed in this project?*

Comment #42 *Describe the potential direct and indirect effect of the proposed management actions on rare plants and their habitat.*

Comment #43 Will prescribed burning occur in the spring and early summer; please give justifications for this decision using current scientific studies as reference.

Whitebark Pine

Lit Reviews

Not all ecosystems or all Rocky Mountain landscapes have experienced the impacts of fire exclusion. In some wilderness areas, where in recent decades natural fires have been allowed to burn, there have not been major shifts in vegetation composition and structure (Keane et al. 2002). In some alpine ecosystems, fire was never an important ecological factor. In some upper subalpine ecosystems, fires were important, but their rate of occurrence was too low to have been significantly altered by the relatively short period of fire suppression (Keane et al. 2002). For example, the last 70 to 80 years of fire suppression have not had much influence on subalpine landscapes with fire intervals of 200 to several hundred years (Romme and Despain). Consequently, it is unlikely that fire exclusion has yet to significantly alter stand conditions or forest health within Rocky Mountain subalpine ecosystems.

Whitebark pine seedlings, saplings and mature trees, present in subalpine forests proposed for burning, would experience mortality from project activity. Whitebark pine is fire intolerant (thin bark). Fire favors whitebark pine regeneration (through canopy opening and reducing competing vegetation) only in the presence of **adequate seed source** and dispersal mechanisms (Clarks Nutcracker or humans planting whitebark pine seedlings).

White pine blister rust, an introduced disease, has caused rapid mortality of whitebark pine over the last 30 to 60 years. Keane and Arno (1993) reported that 42 percent of whitebark pine in western Montana had died in the previous 20 years with 89 percent of remaining trees being infected with blister rust. The ability of whitebark pine to reproduce naturally is strongly affected by blister rust infection; the rust kills branches in the upper cone bearing crown, effectively ending seed production.

Montana is currently experiencing a mountain pine beetle epidemic. Mountain pine beetle prefer large, older whitebark pine, which are the major cone producers. In some areas the few remaining whitebark

that show the potential for blister rust resistance are being attacked and killed by mountain pine beetles, thus accelerating the loss of key mature cone-bearing trees.

Whitebark pine seedlings and saplings are very likely present in the subalpine forests proposed for burning and logging. In the absence of fire, this naturally occurring whitebark pine regeneration would continue to function as an important part of the subalpine ecosystem. Since 2005, rust resistant seed sources have been identified in the Northern Rockies (Mahalovich et al 2006). Due to the severity of blister rust infection within the region, natural whitebark pine regeneration in the project area is prospective rust resistant stock.

Although prescribed burning can be useful to reduce areas of high-density subalpine fir and spruce and can create favorable ecological conditions for whitebark pine regeneration and growth, in the absence of sufficient seed source for natural regeneration maintaining the viability and function of whitebark pine would not be achieved through burning. Planting of rust-resistant seedlings would likely not be sufficient to replace whitebark pine lost to fire activities.

Comment #44 *What surveys have been conducted to determine presence and abundance of whitebark pine re-generation? If whitebark pine seedlings and saplings are present, what measures will be taken to protect them?*

Comment #45 *Please include an alternative that excludes burning in the presence of whitebark pine regeneration (consider 'Daylighting' seedlings and saplings as an alternative restoration method).*

Comment #46 *Will restoration efforts include planting whitebark pine? Will planted seedling be of rust-resistant stock? Is rust resistant stock available? Would enough seedlings be planted to replace whitebark pine lost to fire activities?*

Comment #47 *Have white pine blister rust surveys been accomplished? What is the severity of white pine blister rust in proposed action areas?*

Project Area

Comment #48 Since the project's goals are to reduce the chances that fire will destroy private structures, and harm people, the current fuel/fire hazard situation on land of all ownerships within the WUI (at least the WUI that's relevant to this area) must be displayed on a map. More importantly, the fuel/fire hazard situation post-project on land of all ownerships within the WUI must also be displayed on a map. Based on this mapping of current and projected conditions, please accurately disclose the threats to private structures and people under those scenarios, for all alternatives. It must be discernable why some areas are included for treatment and others are not.

Comment #49 The FS must have a detailed long-term program for maintaining the allegedly safer conditions, including how areas will be treated in the future following proposed treatments, or how areas not needing treatment now will be treated as the need arises. The public at large and private landowners must know what the scale of the long-term efforts must be, including the amount of funding necessary, and the likelihood based on realistic funding scenarios for such a program to be adequately and timely funded.

Comment #50 The FS must assess the fuel and fire risk situation across land ownership boundaries to understand, and disclose to the public, the likely fire scenarios across the area's landscape. Only then can the context of your proposal be adequately weighed on its merits and evaluated on its merits.

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 structure 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).

Comment #51 Please consider that thinning can result in faster fire spread than in the unthinned stand.

Graham, et al., 1999a point out that fire modeling indicates:

> For example, the 20-foot wind speed[3] must exceed 50 miles per hour for midflame wind speeds to reach 5 miles per hour within a dense Stand (0.1 adjustment factor). In contrast, in an open stand (0.3 adjustment factor), the same midflame wind speeds would occur at only a 16-mile-per-hour wind at 20 feet.

Graham, et al., 1999a also state:

> Depending on the type, intensity, and extent of thinning, or other treatment applied, fire behavior can be improved (less severe and intense) or exacerbated." … Fire intensity in thinned stands is greatly reduced if thinning is accompanied by reducing the surface fuels created by the cuttings. Fire has been successfully used to treat fuels and decrease the effects of wildfires especially in climax ponderosa pine forests (Deeming 1990; Wagel and Eakle 1979; Weaver 1955, 1957). In contrast, extensive amounts of untreated logging slash contributed to the devastating fires during the late 1800s and early 1900s in the inland and Pacific Northwest forests.

In their conclusion, Graham, et al., 1999a state:

[3] Velocity of the wind 20 feet above the vegetation, in this case tree tops.

> Depending on intensity, thinning from below and possibly free thinning can most effectively alter fire behavior by reducing crown bulk density, increasing crown base height, and changing species composition to lighter crowned and fire-adapted species. Such intermediate treatments can reduce the severity and intensity of wildfires for a given set of physical and weather variables. But crown and selection thinnings would not reduce crown fire potential.

Comment #51 continued Since the scientific literature suggests that your thinning activities will actually increase the rate of fire spread, you need to reconcile such findings with the contradictory assumptions expressed in your scoping letter.

Also, Hessburg and Lemkuhl (1999) suggest that prescribed burning alone can be utilized in many cases—possibly here—where managers typically assume mechanical fuel reductions must be used.

Comment #52 The FS must disclose its transparent, well thought-out long-term strategy for old-growth associated wildlife species viability in a properly-defined cumulative effects analysis area.

Comment #53 Even though ecological restoration is not the project's priority, the NEPA document must at least identify all the existing ecological liabilities caused by past management actions. This includes poorly located or poorly maintained roads, high-risk fuel situations caused by earlier vegetation manipulation projects, wildlife security problems by open motorized roads and trails plus those that are closed but violated—and include all those impacts in the analyses.

Any desire to keep a road in the project area WUI must be in harmony with the alleged priority goals (again, to reduce the chances that fire will destroy private structures and harm people), not driven by timber production goals. The analysis must show how all roads will in fact be in harmony with the priority goals.

Comment #54 Proposed activities could artificialize the forest ecosystem. Lodgepole pine is particularly subject to blowdown, once thinned. And any forest condition that is maintained through mechanical manipulation is not maintaining ecosystem function. The proposed management activities would not be integrated well with the processes that naturally shaped the ecosystem and resulted in a range of natural structural conditions. Thus, the need for standards guiding both the delineation of zones where artificializing fuel reduction actions may take place, and that also set snag and down woody debris retention amounts.

Veblen (2003) questions the premises the FS often puts forth to justify "uncharacteristic vegetation patterns" discussions, that being to take management activities to alter vegetation patterns in response to fire suppression:

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

Comment #55 Since disruption of fire cycles is identified, the HNF needs to take a hard look at its fire policies. The development of approved fire management plans in compliance with the Federal Wildland Fire Policy was the number one policy objective intended for immediate implementation in the Implementation Action Plan Report for the Federal Wildland Fire Management Policy and Program Review. In general, the FS lags far behind other federal land management agencies that have already invested considerable amounts of time, money, and resources to implement the Fire Policy. Continued mismanagement of national forest lands and FS refusal to fully implement the Fire Policy puts wildland firefighters at risk if and when they are dispatched to wildfires. This is a programmatic issue, one that the current Forest Plan does not adequately consider. Please see Ament (1997) as comments on this proposal, in terms of fire policy and Forest Planning.

Many adverse consequences to soil, ecological processes, wildlife, and other elements of the natural environment are associated with thinning. (Ercelawn, 1999; Ercelawn, 2000.) For example: “Salvage or thinning operations that remove dead or decayed trees or coarse woody debris on the ground will reduce the availability of forest structures used by fishers and lynx.” (Bull et al., 2001.)

Comment #56

For every project proposal, it is important that the results of past monitoring be incorporated into planning. All Interdisciplinary Team Members should be familiar with the results of all past monitoring pertinent to the project area, and any deficiencies of monitoring that have been previously committed to. For that reason, we expect that the following be included in the NEPA documents or project files:

- A list of all past projects (completed or ongoing) implemented in the proposed project area watersheds.
- The results of all monitoring done in the project area as committed to in the NEPA documents of those past projects.
- The results of all monitoring done in the proposed project area as a part of the Forest Plan monitoring and evaluation effort.
- A description of any monitoring, specified in those past project NEPA documents or the Forest Plan for proposed project area, which has yet to be gathered and/or reported.

Comment #57

Please disclose the names of all other past projects (implemented during the life of the Forest Plan) whose analysis area(s) encompass the areas to be "treated" under this proposal.

Comment #58

Please disclose if the FS has performed all of the monitoring and mitigation required or recommended in any NEPA documents, and the results of the monitoring.

Comment #59

For the proposal to be consistent with the Forest Plan, enough habitat for viable populations of old-growth dependent wildlife species is needed over the landscape. Considering potential difficulties of using population viability analysis at the project analysis area level (Ruggiero, et. al., 1994), the cumulative effects of carrying out multiple projects simultaneously across the HNF makes it imperative that population viability be assessed at least at the forestwide scale (Marcot and Murphy, 1992). Also, temporal considerations of the impacts on wildlife population viability from implementing something with such long duration as a Forest Plan must be considered (id.) but this has never been done by the HNF. It is also of paramount importance to monitor population during the implementation of the Forest Plan in order to validate assumptions used about long-term species persistence i.e., population viability (Marcot and Murphy, 1992; Lacy and Clark, 1993).

The U.S. District Court ruled in Native Ecosystems Council vs. Kimbell on the Keystone Quartz project that the Forest Service presented no hard data to support or demonstrate the biological impact on old-growth species viability across the forest of further reducing Douglas-fir old-growth habitat below minimum forest plan standards, which themselves may be inadequate in light of more recent scientific information. Species in the Northern Region, including the HNF, thought to prefer old-growth habitat for breeding or feeding include northern goshawk, flammulated owl, pileated woodpecker, black-backed woodpecker (after wildfire or beetle epidemic), fisher, marten, Canada lynx, and wolverine.

For the Helena N.F., sensitive old-growth dependent species include the northern goshawk and flammulated owl. According to official FS policy, the HNF "must develop conservation strategies for those sensitive species whose continued existence may be negatively affected by the forest plan or a proposed project." FSM 2670.45. These strategies would address the forest-wide and range-wide conditions for the affected species, allowing site-specific viability analysis to be tiered to the forest-wide viability analysis, and would establish quantifiable objectives for the affected species. These strategies must be adopted prior to implementation of projects that would adversely impact sensitive species habitat. FSM 2622.01, 2670.45.

Comment #60

Please demonstrate that this project will leave enough snags to follow the Forest Plan requirements and the requirements of sensitive old growth species such as flammulated owls and goshawks. Loggers are required to follow OSHA safety standards. Will these standards require snags to be cut down? After snags are cut down for safety for OSHA requirements will there still be enough snags left for old growth sensitive species?

Specifically how will the Stonewall Project affect Flammulated owls, cavity-nesters usually associated with mature stands of ponderosa pine and Douglas-fir? Among other habitat characteristics, flammulated owls benefit from an abundance of large snags and a relatively dense under-story. The flammulated owl is a sensitive species in Region One, and is largely dependent on old ponderosa pine forests. According to a 2002 Region-wide assessment, not referenced in the 2003 FEIS for the Project, such forests only occur at 12-16% of their former, pre-fire suppression/pre-logging (that is, "historic") levels, and thus species viability has been determined to be at risk. The Northern Region also recognizes that its strategy for restoring habitat for the flammulated owl and found in the Island South project that "in no way guarantees that flammulated owls will be restored to viable levels."

Snag densities recommended by experts to support cavity-nesting birds range from 2.1 to 11 snags per acre of greater than 9" dbh. Please note that the fact that more recent science has called into question the lower snag densities cited in the earlier research, and the more recent science implies that about 4 snags per acre may be the minimum required to insure viability.

Comment #61

The Project is also designed to reduce under-story density through thinning. What surveys has the HNF specifically designed to detect flammulated owls? The FS has not developed a conservation strategy for the flammulated owl in the HNF, or in the Northern Rockies. Absent an appropriate landscape management strategy for insuring their viability, based upon the best available science, it is arbitrary and capricious to dismiss potential impacts on the ground where the FS has failed to conduct the kind of comprehensive surveys that would reveal their presence.

This convenient excuse for not protecting for a species that is becoming exceedingly rare, a strategy of managing for extinction (since protection premised on detection affords greatest protection to the species that least need it) has been condemned by the FS's own leading expert in the northern region, Mike Hillis:

> With the exception of the Spotted Owl…, the U.S. Forest Service has not given much emphasis to owl management. This is contrary to the National Forest Management Act of 1976 (NFMA) which mandates that all wildlife species be managed for viable populations. However, with over 500 vertebrate species this would be difficult for any organization. Recognizing the absence of detailed information on owl habitat, the apparent association of owls with snags, mature, and old-growth timber (both rapidly

> declining), it seems inconsistent that the U.S. Forest Service has placed little emphasis on owl management. One might conclude that the agency's painful experiences with the Spotted Owl in Oregon and Washington have evolved into a 'hear no evil, see no evil' approach for other forest owls as well.

Holt and Hillis, "Current Status and Habitat Associations of Forest Owls in Western Montana" (1987).

State-of-the-art conservation biology and the principles that underlie the agency's policy of "ecosystem management" dictate an increasing focus on the landscape-scale concept and design of large biological reserves accompanied by buffer zones and habitat connectors as the most effective (and perhaps only) way to preserve wildlife diversity and viability (Noss, 1993).

The FS has stated: "Well distributed habitat is the amount and location of required habitat which assure that individuals from demes,[4] distributed throughout the population's existing range, can interact. Habitat should be located so that genetic exchange among all demes is possible." (Mealey 1983.)

[4]Subpopulations.

Comment #62

The FS has acknowledged 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. (Lewis and Clark NF, Dry Fork EA Appendix D at p. 9.)

The FS should firmly establish that the species that exist, or historically are believed to have been present in the analysis area are still part of viable populations. The analysis must cover a large enough area to include a cumulative effects analysis area that would include truly viable populations. Analysis must identify viable populations of MIS, TES, at-risk, focal, and demand species of which the individuals in the analysis area are members in order to sustain viable populations. Since Forest Plan monitoring efforts have failed in this regard, it must be a priority for project analyses. Identification of viable populations is something that must be done at a specific geographic scale.

Comment #63

Unfortunately, region-wide the FS has failed to meet Forest Plan old-growth standards, does not keep accurate old-growth inventories, and has not monitored population trends in response to management activities as required by Forest Plans and NFMA (Juel, 2003).

Please disclose how stands to be treated compare to Forest Plan or Regional old-growth criteria. In order to disclose such information, please provide all the details, in plain language, of these areas' forest characteristics (the various tree components' species, age and diameter of the various tree components, canopy closure, snag density by size class, amounts of down logs, understory composition, etc.).

Comment #64

Since almost all of the proposed project is within management area 20 (MA-20) which is to managed to be maintain and enhance grizzly bear habitat, please show how this project will benefit grizzlies bears and how it will negatively impact them.

Comment #65

Please do the same for lynx.

Comment #66

Please examine how this project will affect all ESA listed, MIS and sensitive species.

Comment #67 One of the biggest problems with the FS's failure to deal forthrightly with the noxious weed problem on a forest wide basis is that the long-term costs are never adequately disclosed or analyzed. The public is expected to continuously foot the bill for noxious weed treatments—the need for which increases yearly as the HNF continues the large-scale propagation of weeds, and fails to monitor the effectiveness of all its noxious weed treatment plans to date. There is no guarantee that the money needed for the present management direction will be supplied by Congress, no guarantee that this amount of money will effectively stem the growing tide of noxious weed invasions, no accurate analysis of the costs of the necessary post-treatment monitoring, and certainly no genuine analysis of the long-term costs beyond those incurred by site specific weed control actions.

Comment #68 Our goals for the area include fully functioning stream ecosystems that include healthy, resilient populations of native trout. The highest priority management actions in the project area are those that remove impediments to natural recovery. We request the FS design a restoration/access management plan for project area streams that will achieve recovery goals. The task of management should be the reversal of artificial legacies to allow restoration of natural, self-sustaining ecosystem processes. If natural disturbance patterns are the best way to maintain or restore desired ecosystem values, then nature should be able to accomplish this task very well without human intervention (Frissell and Bayles, 1996).

Comment #69 Please utilize the NEPA process to clarify any roadless boundary issues. It is not adequate to merely accept previous, often arbitrary roadless inventories—unroaded areas adjacent to inventoried areas were often left out. Additionally, there is a lot of public support for adding unroaded areas as small as 1,000 acres in size to the roadless inventory.

Comment #70 We request a careful analysis of 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 temperature.

Comment #71 Please disclose the locations of seeps, springs, bogs and other sensitive wet areas, and the effects on these areas of the project activities.

Comment #72 Where livestock are 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, stream bank stability and subsequent sedimentation.

Comment #73 Please disclose in the NEPA document the results of up-to-date monitoring of fish habitat and watershed conditions and how this project will affect the fish in the project area.

Comment #74 It is extremely important the FS disclose the environmental baseline for watersheds. Generally, this means their condition before development or resource exploitation was initiated. For example, the baseline condition of a stream [This] means the habitat conditions for fish and other aquatic species prior to the impacts of road building, logging, livestock grazing, etc. Therefore, proper disclosure of baseline conditions would mean estimates of stream stability, pool frequency conditions, and water temperature range—essentially the values of Riparian Management Objectives along with such parameters as sediment levels. When such information is provided, comparison with the current conditions (after impacts of development) will aid in the assessment of cumulative effects of all alternatives.

Prescribed fires and mechanical treatments may adversely affect soil productivity. NFMA requires the FS to "not allow significant or permanent impairment of the productivity of the land." [36 C.F.R. § 219.27(a)(1).] NFMA requires the Forest Service to "ensure that timber will be harvested from National Forest System lands only where—soil, slope, or other watershed conditions will not be irreversibly damaged." [16 U.S.C. 1604 (g)(3)(E).]

Lit Reviews

The Sheep Creek Salvage FEIS (USDA Forest Service, 2005a) states at p. 173:

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

Comment #75 Please disclose how the productivity of the land been affected in the project area and forestwide due to noxious weed infestations, and how that situation is expected to change in the coming years and decades.

Harvey et al., 1994 state:

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

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

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

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

The article goes on:

> Countless activities, including livestock grazing, recreation, road building, logging, mining, and irrigation degrade soils on public lands. Because there are no laws that directly address and protect soils on the public lands, consideration of soils in land use planning is usually only in the form of vaguely conceived or discretionary guidelines and monitoring requirements. This is a major gap in the effort to provide ecosystem-level protection for natural resources.

> The rise of an "ecosystem approach" in environmental and natural resources law is one of the most significant aspects of the continuing evolution of this area of law and policy. One writer has observed that there is a
>
> > fundamental change occurring in the field of environmental protection, from a narrow focus on individual sources of harm to a more holistic focus on entire ecosystems, including the multiple human sources of harm within ecosystems, and the complex social context of laws, political boundaries, and economic institutions in which those sources exist.
>
> As federal agencies focus increasingly on addressing environmental protection from an holistic perspective under the current regime of environmental laws, a significant gap remains in the federal statutory scheme: protection of soils as a discrete and important natural resource. Because soils are essential building blocks at the core of nearly every ecosystem on earth, and because soils are critical to the health of so many other natural resources—including, at the broadest level, water, air, and vegetation—they should be protected at a level at least as significant as other natural resources. Federal soil law (such as it is) is woefully inadequate as it currently stands. It is a missing link in the effort to protect the natural world at a meaningful and effective ecosystem level.

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

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

Comment #76 Please provide estimates of current detrimental disturbance in all previously established activity areas in the watersheds affected by the proposal.

Comment #77 Please disclose the link between current and cumulative soil disturbance in project area watersheds to the current and cumulative impacts on water quantity and quality. Please disclose if there are any WQLS streams or TMDL streams in the project area.

Comment #78 Please disclose measures of, or provide scientifically sound estimates of, detrimental soil disturbance or soil productivity losses (erosion, compaction, displacement, noxious weed spread) attributable to off-road vehicle use.

Comment #79 Please disclose the results monitoring of weed treatments on the HNF that have been projected to significantly reduce noxious weed populations over time, or prevent spread. This is an ongoing issue of land productivity.

Comment #80 Please disclose how the proposed “treatments” would be consistent with Graham, et al., 1994 recommendations for fine and coarse woody debris, a necessary consideration for sustaining long-term soil productivity.

Comment #81

It has been well-established that site-specific Biological Evaluations (BEs) or Biological Assessments (BAs) must be prepared for all actions such as this. Further, the Forest Service Manual requires that BEs/BAs consider cumulative effects. The Forest Service Manual states that project BEs/BAs must contain "a discussion of cumulative effects resulting from the planned project in relationship to existing conditions and other related projects" [FSM 2672.42(4)]. "Existing conditions" obviously are the current conditions of the resources as a result of past actions.

Comment #82

Published scientific reports indicate that climate change will be exacerbated by logging due to the loss of carbon storage. Additionally, published scientific reports indicate that climate change will lead to increased wildfire severity (including drier and warmer conditions that may render obsolete the proposed effects of the Project). The former indicates that the Stonewall restoration and Fuels Project may have a significant adverse effect on the environment, and the latter undermines the central underlying purpose of the Project. Therefore, the Forest Service must candidly disclose, consider, and fully discuss the published scientific papers discussing climate change in these two contexts. At least the Forest Service should discuss the following studies:

Lit Reviews

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- Harmon, Mark E. 2001. Carbon sequestration in forests: addressing the scale question. Journal of Forestry 99:4: 24-29.

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- Harmon, Mark E, and Barbara Marks. 2002. Effects of silvicultural practices on carbon stores in Douglas-fir – western hemlock forests in the Pacific Northwest, USA: results from a simulation model. Canadian Journal of Forest Research 32: 863-877.

- Homann, Peter S., Mark Harmon, Suzanne Remillard, and Erica A.H. Smithwick. 2005. What the soil reveals: potential total ecosystem C stores of the Pacific Northwest region, USA. Forest Ecology and Management 220: 270-283.

- McKenzie, Donald, Ze'ev Gedalof, David L. Peterson, and Philip Mote. 2004. Climatic change, wildfire, and conservation. Conservation Biology 18:4: 890 - 902.

Comment #83 Please evaluate all of the costs and benefits of this project. Please include a detailed list of all the costs to the agency and the public.

Comment #84 The EA claims that an alternative with no temporary roads was not developed because it would not be economically viable (EA at 2-7). If all of the action alternatives lose money how is that economically viable?

They certainly aren't for taxpayers.

Comment #85 Thank you for your attention to these concerns. Please keep us on your list to receive further mailings on the proposal.

Sincerely,

/s/

And on behalf of:

Michael Garrity

Alliance for the Wild Rockies

P.O. Box 505
Helena, Montana 59624
406-459-5936

Sara Johnson

Native Ecosystems Council

P.O. Box 125
Willow Creek, MT 59760

And for

Steve Kelly, Executive Director
Montana Ecosystems Defense Council
P.O. Box 4641
Bozeman, MT 59772
Tel: (406) 586-4421

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06/11/2013 Garrity, Johnson, Kelly Letter

Comment #	Response	Topic
1	An environmental impact statement is being prepared for the Stonewall Vegetation Project. Current watershed and fish population conditions are disclosed in the DEIS as well as project effects to them. Salvage of dead trees in the RHCAs is permitted by INFISH; design criteria to protect floodplains and allow for large woody debris recruitment to streams are included in the project design. Improvements to the project area are planned with the project and include culvert upgrades and road maintenance to reduce erosion and sediment input to streams.	NEPA/Fisheries
2	A biological assessment for Section 7 consultation with the Fish and Wildlife Service will be prepared prior to signing of a Record of Decision (ROD). A viability assessment for western cutthroat trout is included in the DEIS.	Fisheries – bull trout FWS
3	Effects of proposed activities, which include activities identified by the SW Crown of the Continent, are discussed in chapter 3 of the FEIS and in the project Biological Assessment (BA).	Wildlife - grizzly
4	A project specific Biological Assessment (BA) that evaluates effects to threatened and endangered species including grizzly will be prepared prior to signing of a Record of Decision (ROD). Should the BA document adverse effect on listed species, formal consultation would be initiated. The BA and concurrence letter from the US Fish and Wildlife Service will be included in the project record.	Wildlife - grizzly
5	While the DEIS recognized that open road density would increase during implementation, it did not provide specific road density changes. Changes in open and total road density during project implementation have been added to the FEIS and the moving windows analysis has been updated with this information. Effects to grizzly have been updated, including changes in TMRD, OMRD and Core are discussed in the wildlife section of chapter 3 of the FEIS.	Wildlife – road density
6	See response to comment 4.	Wildlife - grizzly
7-1	The National Fire Plan and the Tri County Fire Working Group Regional Community Wildfire Protection Plan are outside the scope of this analysis. This project analysis tiers to the FEIS completed for the Helena National Forest, Forest Plan as amended, and incorporates by reference the Forest Plan (see Forest Plan II/33-34, III/35, Appendix R for fire management). The Forest Plan, as amended, provides the direction for land management activities. Actions proposed with this project to reduce fuels within the wildland urban interface areas were designed to address Forest Plan direction, as amended.	NEPA

Comment #	Response	Topic
7-2	See response to comment 7-1	NEPA
7-3	Figure 44 displays the fire risk ratings for the WUI with the project area. Providing details of home locations on lands adjacent to National Forest System lands is outside the scope of this analysis.	Fire/Fuels – WUI map
7-4	See response to comment 7-1	NEPA
7-5	US Fish and Wildlife consultation regarding the National Fire Plan and the Tri County Fire Working Group Regional Community Wildfire Protection Plan are outside the scope of this analysis. Part of the analysis process for this analysis is consultation with the US Fish and Wildlife Service.	NEPA
7-6	Consultation pertaining to the Forest Plan level NRLMD is outside the scope of this project. The Forest Service is completing project specific consultation with the USFWS for effects to listed species. Updated analysis information has been added to the threatened and endangered section in the wildlife section of chapter 3 of the FEIS. Upon further consideration of additional information since release of the DEIS, the project analysis for lynx has been updated. The updated analysis resulted in a May effect – likely to adversely affect determination for lynx. The FS is conducting formal consultation with the United States Fish and Wildlife Service and the Biological Opinion will address lynx and lynx critical habitat.	Wildlife – lynx
7-7	The revision of the Helena Forest Plan is beyond the scope of the Stonewall Vegetation Project analysis. Noxious weeds are discussed in the DEIS (main discussion at pages 493-502). Forest plan direction and other relevant information have been considered and incorporated into project design features to address areas of concern (pages 7, 46-47).	NEPA
7-8	As noted in the noxious weeds analysis ground disturbance increases the susceptibility of an area to weed invasion (DEIS pg 502). As noted in the soils analysis, (DEIS pg 517) "…forestry practices have generally become more effective in limiting the amount of area affected by detrimental soil disturbance to comply with the Forest Plan measure of soil variability(i.e. 20%) since adoption of forestry Best Management Practices (BMPs) in 1988.	Noxious weeds
7-9	As noted in the noxious weeds analysis (DEIS pg 496) a variety of factors contribute to the spread of noxious weeds. Roads are a major factor because the soil disturbance involved during construction increases the susceptibility of weed invasion and because roads become a vector for spread of existing infestations and the introduction of new weeds as seeds and plant parts are carried on vehicles.	Noxious weeds
7-10	Creating a Forest Plan amendment to include binding legal standards that address noxious weeds is beyond the scope of this analysis. Forest plan direction, the *Final Environmental Impact Statement: Helena National Forest Noxious Weed Treatment*	Noxious weeds/NEPA

Comment #	Response	Topic
	Project and accompanying *Record of Decision (*USDA Forest Service 2006d) and other relevant information were considered for this project analysis. Noxious weeds are discussed in the DEIS (main discussion at pages 493-502). Appropriate measures were incorporated into project design features to address areas of concern (See DEIS pages 7, 493-502, 514; project design features at 46-47).	
7-11	Noxious weed infestations are detrimental to native fauna and flora and present the greatest large-scale threat to native ecosystems that exist in the Nation's wild lands today (DiTomaso 2000; Lodge and Shrader-Frechette 2003; Lonsdale 1999; Mack et al. 2000; Pauchard et al. 2003) (DEIS page 493).	Noxious weeds
7-12	The *Federal Noxious Weed Act* (1974) provides for the control and management of non-indigenous weeds that injure or have the potential to injure the interests of agriculture and commerce, wildlife resources, or the public health. The Act requires that each federal agency: develop a management program to control undesirable plants on federal lands under the agency's jurisdiction; establish and adequately fund the program; implement cooperative agreements with state agencies to coordinate management of undesirable plants on federal lands; establish integrated management systems to control undesirable plants targeted under cooperative agreements. The Forest Plan for the Helena National Forest (USDA Forest Service 1986) has outlined noxious weed management objectives and control measures: Page II/22, which state: • Implement an integrated weed control program in cooperation with state of Montana and County Weed Boards to confine present infestations, and prevent establishing new areas of noxious weeds. Noxious weeds are listed in the Montana Weed Law and designated by County Weed Boards. • Integrated Pest Management, which uses chemical, biological, and mechanical methods, will be the principal control method. Spot herbicide treatment of identified weeds will be emphasized. Biological control methods will be considered as they become available. • Funding for weed control on disturbed sites will be provided by the resource which causes the disturbance. Prevention and control measures are required by Forest Service Manual (FSM) 2081.2 - Prevention and Control Measures (FSM 2080). The *Helena National Forest Noxious Weed Vegetation Treatment Environmental Impact Statement* and the accompanying ROD	Noxious weeds

Comment #	Response	Topic
	(USDA Forest Service 2006) provide environmental standards and guidelines for control and management of noxious weeds.	
7-13	Related project impacts have been analyzed and project design features incorporated, along with incorporation of appropriate best management practices.	Noxious weeds/NEPA
7-14	Northern goshawks within the Blackfoot landscape have been monitored for over 15 years and as described in the FEIS, includes both historical use (1995), as well as more recent activity. There are two known active nests within the project area which have been monitored annually since 2009. Survey efforts have varied and have included project area surveys, as well as surveys of known nests. Pileated and hairy woodpeckers have been documented as part of the Region 1 landbird monitoring program between 1994 and 2008. The Stonewall project area includes three transects, which have documented use by both the pileated and hairy woodpecker. Pileated woodpecker use of the project area has also been documented through observations of foraging activity. Use of the Blackfoot landscape by marten (which includes the Stonewall project area) has been confirmed by historical and recent trapping records, through winter hair surveys conducted by Forest Service personnel in 2011 and 2012 and by recent tracking surveys by Wild Things Unlimited in 2009/2010.	Wildlife – MIS
7-15	Effects of big game resulting from changes in elk security and thermal cover have been updated in the wildlife section of chapter 3 of the FEIS. Big game populations and wolverine foraging habitat are discussed. See response to comment 4, related to formal USFWS consultation.	Wildlife - elk
7-16	Fire proofing as suggested by the commenter is not proposed, although as discussed throughout the FEIS and in the project fuels report, proposed treatments would reduce risk of large-scale wildfire and re-introduce fire to the landscape. Proposed treatment would also promote habitat conditions that more closely approximate historical conditions. Effects of treatment and changes in habitat are discussed in the wildlife section of chapter 3 and will result in benefits to some species, whereas habitat would be reduced for others. Because treatment would promote historical habitat conditions, while reducing effects to wildlife through implementation of project design features, it is expected that habitat would be maintained for all wildlife species that utilize the project area.	Wildlife -
7-17	See response to comment 7-16.	Wildlife -
7-18	Effects of timber harvest on vegetation diversity and structure, which affect wildlife habitat and long-term forest health are discussed throughout chapter 3 of the FEIS. /while treatment would reduce habitat for some species, proposed actions would	Wildlife -

Comment #	Response	Topic
	also enhance or restore declining wildlife habitats, promote historic vegetation conditions at both the stand and landscape level and reduce the risk of large-scale wildfire due to removal of MPB mortality. These anticipated benefits are based on effects of similar treatments and existing research referenced throughout the FEIS.	
7-19	The historic role of mixed severity fire, including changes and benefits to wildlife habitat are discussed throughout chapter 3 of the FEIS, as well as in the project wildlife, fuels and silviculture reports. Anticipated changes in vegetation and wildlife habitat resulting from mixed severity fire are based on effects of similar treatments and research referenced throughout these documents.	Wildlife -
7-20	Existing conditions and anticipated effect from the project when considering direct, indirect and cumulative effects are discussed in the DEIS, chapter 1 and chapter 3 by resource topic.	NEPA
7-21	Existing conditions and anticipated effect from the project when considering direct, indirect and cumulative effects are discussed in the DEIS, chapter 1 and chapter 3 by resource topic. Analysis of many millennia is outside the scope of this analysis.	NEPA
7-22	The DEIS addressed forest plan direction pertaining to insect and disease management, and discussed mountain pine beetle, Douglas-fir beetles and spruce budworms in chapter 3 (pp. 110-112). Additional discussions of insect (presence, role, impacts) could be found throughout the summary and DEIS (for an example of some of the discussions, see DEIS pages i, xi, 18-22, 27, 37, 68-69, 120-121, 131, 141-142, 147, 155-156, 298, 342, 364, 428, 468, 540, appendix B 98-104 among others). These discussions were carried forward into the FEIS. Many beetle related research items were considered during this analysis that included background information.	Silviculture
7-23	Determining if the forest can survive without beetles is outside the scope of this analysis. See response to 7-22 regarding discussions of insects.	Silviculture/NEPA
7-24	The hydrology section discloses there were no water quality listings in the Lincoln Creek, Beaver Creek or Keep Cook Creek watersheds on the Montana 303(d) list (DEQ2008). See discussions at DEIS pages 535 to 536.	Hydrology
7-25	The Stonewall project area does not include management of areas that have experienced stand replacing fire. Part of the purpose and need is to create a more resilient forest, and management actions are designed to leave adequate numbers of mature trees to provide desired species seed sources to regenerate stands, or planting may be considered to ensure desired reforestation on National Forest System lands.	Silviculture
7-26	Although improving watershed health is not a direct part of the	Hydrology

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	purpose and need, improvements to area roads through implementation of best management practices is anticipated to result in a decreased level of sediment delivered from roads (DEIS, table 139). Additional analysis of hydrology resources was disclosed in the DEIS at pages 529 through 552. The purpose and need for action for this project is noted in chapter 1 of the EIS: Improve the mix of vegetation composition and structure across the landscape that is diverse, resilient, and sustainable to wildfire and insects. • Enhance and restore aspen, western larch, and ponderosa pine species and habitats. Modify fire behavior to enhance community protection while creating conditions that allow the reestablishment of fire as a natural process on the landscape. Integrate restoration with socioeconomic considerations. • Utilize economic value of trees with economic removal. Action is needed to reduce insect mortality related fuels within the wildland urban interface and move the landscape towards desired conditions described in the Forest Plan. This action responds to the goals and objectives outlined in the Forest Plan for the Helena National Forest, and helps move the project area towards desired conditions described in that plan (USDA Forest Service 1986).	
7-27	Anticipated effects of proposed actions on snags and dead wood, including effects on species such as flammulated owls and goshawk that prefer late successional forest conditions are discussed in chapter 3 of the FEIS. While proposed harvest would reduce snags, with implementation of project design features that require retention of large diameter snags, snag recruitment trees and a minimum of 2 snags per acre in harvest units, and retention of snags greater than 12 inches d.b.h in burn units, Forest Plan standards for snags will be met. While it is recognized that snags per acre will vary, and that a range of conditions will exist, because of the widespread availability of snags in all size and decay classes within all project area drainages, retention of snags within treatment units, and recruitment of new snags due to on-going MPB mortality and high stand density within unaffected stands, snags will continue to be distributed across the project area and habitat would continue to be available to support cavity dependent species.	Wildlife
7-28	See response to comment 7-27.	Wildlife
7-29	See response to comment 7-10 regarding analysis of noxious weeds.	Noxious weeds
7-30	The comment does not address the merits of the proposed action,	Silviculture carbon

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	alternatives, or the adequacy of the analysis of environmental effects. The following topics related to the comment were discussed in the DEIS: Carbon storage relative to the Stonewall Vegetation Project was discussed in the DEIS at pages 176-177. Old growth forest conditions were disclosed in the DEIS at pp. 215-219, 222-240. No designated old growth in 3rd-order drainages would be logged with this project and other existing old growth habitat would maintain old growth characteristics. Forest Plan old growth direction would be met. (DEIS p. 240).	
7-31	The comment does not address the merits of the proposed action, alternatives, or the adequacy of the analysis of environmental effects. Carbon storage relative to the Stonewall Vegetation Project was discussed in the DEIS at pages 176-177. Analyzing the effects of National Forest logging on U.S. carbon stores is beyond the scope of the Stonewall Vegetation Project analysis	Silviculture carbon
7-32	The proposed action and its action-alternative are aimed at long-term forest conservation and management consistent with national forest policy and local plans and agreements. The DEIS at pp. 176-177 discusses non-significant effects of the proposed action and alternatives to carbon storage or release, consistent with current national environmental policy. Therefore the Forest Service will not include in the final EIS any modification in response to the comment. See also response to comment 7-26 for the purpose and need for this project.	Silviculture carbon
7-33	The project design features in chapter 2 note the visual quality items, to meet forest plan standards, and note the units where the design feature applies.	Visuals
7-34	Ground vegetation: general reference to vegetation present on the forest floor below the shrub layer. Revegetated: returning a site to a vegetated state, e.g., through planting seeds to encourage growth of desired vegetation species. “Restablishes” in reference to trees being reestablished on a site is not specifically stated in the visual quality standards. Trees are considered reestablished when seedlings are present in quantities sufficient to be considered stocked. Stocking criteria would be established for each unit based upon site conditions, treatment objectives, and Forest Plan direction and would be documented in silvicultural prescriptions developed for the project. Regeneration treatments would be monitored (FSM 2472.4) to access treatment success and schedule additional corrective work if the units are not	Visuals

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	adequately proceeding toward desired stocking guidelines. The temporal boundaries used in the Scenery analysis were disclosed as follows: short-term: The temporal boundary used varied from immediate upon project completion up to 5 years after project completion long term: up to 20 years. Twenty years is used as the long-term timeframe because it could take 20 years before new vegetation fills in created openings allowing areas to blend back into the landscape.	
7-35	See response to comment 7-14. Additionally, wolverine and Canada lynx use of the area has been documented during track surveys conducted by Wild Things Unlimited (2009 and 2010) as well as historic and recent documentation from Montana Natural Heritage records and from recent lynx documentation in Squires et al (2013). While there have been no formal surveys for grizzly, as described under affected environment, use of the project area by bears has been documented, including recent use along the Blackfoot River.	Wildlife - goshawk
7-36	See response to comment 7-14 and 7-35. Project area white-bark pine has been documented during recent surveys (since 2008) within stands proposed for treatment (stand diagnosis reports).	Wildlife
7-37	See response to comment 7-14 and 7-35.	Wildlife
7-38	Removing roads in the project area is outside the scope of actions proposed for the Stonewall Vegetation Project. The cumulative effects of ongoing travel management efforts were considered for this analysis.	Transportation/NEPA
7-39	Consultation with the USFWS is ongoing and will be completed prior to a decision on this project.	Wildlife/Fisheries
7-40	The final Biological Assessment (BA) addressing federally listed species along with other project reports (e.g., Biological Evaluation), will be available on the Forest project website.	Wildlife/Fisheries/NEPA
8	Limitations of habitat models used in the analysis are discussed under wildlife assumptions in the FEIS. As described, wildlife habitat conditions are based on R1-VMAP (satellite imagery) as well as Intensified Grid Data, which is based on on-the-ground plots. Models described in Samson (2005, 2006) and summarized in Criteria for Wildlife Models on the Helena National Forest (USDA FS 2009a) are based on point of detection data that have been successfully utilized to predict habitat relationships.	Wildlife
9	The Forest process for identifying and designating old growth is discussed under methodology in chapter 3 of the EIS and in the project old growth report. As described the HNF incorporated definitions provided by Green et al. (1992) in Old Growth Forest types of the Northern Region into the Forest Plan. Green et al. (1992) describes minimum stand characteristics for old growth for	Wildlife/Silviculture

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	various forest types and habitat type groups. Additional characteristics such as snags and dead wood are used to describe habitat quality. The Forest Plan 3rd order drainage standard is an attempt to provide spatial distribution areas to be managed as existing and future old growth, although the need to maintain old growth outside these areas was recognized. As a result in addition to providing 592 acres of old growth within 3rd order drainages, 175 acres of verified old growth and 436 acres of stands with the potential to be old growth are being maintained outside 3rd order drainages. The old growth analysis has edited for clarity in the FEIS. The importance of old growth to wildlife and biological diversity is discussed in the Management Indicator Species (MIS) section of the FEIS. The importance of old growth to late successional species including the pileated woodpecker and northern goshawk are recognized and discussed in the wildlife section of chapter 3 of the EIS. A recently active goshawk nests occurs within a designated old growth stand. Consequently maintaining Forest Plan old growth would help to provide habitat for late successional/old growth species. The analysis for both species also includes an evaluation of landscape conditions, which include an assessment of snags and dead wood, as well as the availability of nest stands, or patches of suitable closed canopy forest preferred by goshawk. So while it is suggested that the HNF ignores regional old growth direction to the detriment of wildlife, based on analysis presented in the FEIS, Forest and regional direction for old growth are being met. This is expected to help to maintain or promote habitat for late successional/old growth associated wildlife species.	
10	The Forest Plan requires that monitoring of old growth MIS take place in order to "measure the effect of management activities on representative wildlife habitats with the objective of ensuring that viable populations of existing native… species be maintained (Forest Plan II/17). The Northern goshawk was chosen as an MIS species for old growth due to the diverse prey base and nesting habitat commonly found in late successional forests. Pileated woodpeckers were chosen as an old growth MIS because they are the largest primary cavity excavator on the Forest and because they have the most restrictive requirements in terms of snag size and their feeding requirements for large snags and down logs, important structural component of late successional forest. Forest-wide monitoring for these species are summarized in the Forest monitoring and evaluation reports and have included species and habitat monitoring as suggested, including project and old growth goshawk nest surveys, snag and downed wood availability, monitoring associated with the Forest landbird program, and Forest-wide availability of suitable goshawk and pileated	Wildlife

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	woodpecker habitat (Samson 2006 a and b). This information, as well as on-going re-assessment of intensified grid data on lands affected by mountain pine beetle mortality is collectively used to meet Forest Plan objectives and monitoring requirements. Finally, based on monitoring data, habitat requirements for old growth MIS as prescribed in the Forest Plan are being met (USDA FS 2009).	
11	This comment is noted. Field validation of project area habitat conditions, including validation of wildlife habitat models was completed during field review of treatment stands and included biologist field work, elk hiding and thermal cover surveys conducted during the 2013 field season, lynx multi-story habitat surveys (USDA FS 2009), and field documentation of elk hiding cover conditions following mountain pine beetle mortality. See also response to comment 8.	Wildlife
12	This comment is noted. Forest and project area goshawk monitoring was conducted according to the Goshawk Field Inventory Methods Helena National Forest 2009 and the Northern Goshawk Inventory and Monitoring Technical Guide (USDA FS 2006),. Pileated woodpecker data was collected according to the Birds and Burns Point Count Protocol available at http://www.rmrs.nau.edu/wildlife/birdsandburns/. Both of these are accepted protocols and include landscape level survey. See also response to comment 8.	Wildlife
13	See response to comments 8 and 9.In addition to satellite imagery data, intensified grid data and stand diagnosis reviews were used to estimate snags, downed wood and the size and density of forest cover.	Wildlife
14	See response to comments 10, 11 and 13.	Wildlife
15	See response to comments, 10-13.	Wildlife
16	Forest –wide monitoring for marten is summarized in the Forest monitoring reports (USDA FS 2009). As described, monitoring has included habitat monitoring using satellite imagery and intensive grid data and carnivore winter track surveys (Wild Things Unlimited 2009).	Wildlife
17	Effects from proposed activities on the Northern goshawk are discussed in chapter 3 of the FEIS and include; effects of timber harvest and recent wildfire, changes in nesting, foraging, post-fledgling habitat and prey availability, and potential changes in competition. The need to maintain active nest sites nests was recognized and project design features are in that would restrict activities around known nests, restrict activities during the post-fledgling period, and maintain structural conditions within 180 acres of active nests. Anticipated effects are based in part on Samson (2006a), who summarized recent (2000 and newer) studies on the effects of vegetation treatments on northern	Wildlife

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	goshawks and indicate that; the majority of goshawk pairs move from nest stands when stand structure is modified by more than 30%; (2) human disturbance is not a factor if 70% of the nest stand structure is maintained and timber management operations are time restricted during the nesting period; (3) timber harvest has no effect on goshawk breeding area occupancy, nest success, or productivity 1 to 2 years after treatment; and (4) no difference in the productivity of northern goshawks occurs in logged versus unlogged areas. Based on this research and with implementation of PDF's that restrict activities during the nesting/post-fledgling season and retain structure around nests, implementation of alternatives 2 and 3 are not likely to cause a local or regional change in habitat quality or population status for the northern goshawk.	
18	The analysis on goshawk presented in chapter 3 of the FEIS includes recommendations provided by Clough (2000) in western Montana, as well as those of Reynolds et al (1992). Also it was recognized that goshawks prefer mature forests with large trees and relatively closed canopies for nesting (Reynolds et al 1992, Hayward and Escano 1989, Squires and Reynolds 1997, Clough (2000). While the commenter suggests that 20 to 50 percent old growth within nesting areas need to be maintained , in their review of the status for this species, the U.S. Fish and Wildlife Service (1998) found no evidence showing that goshawk are dependent on large, unbroken tracts of "old growth " or mature forests or specifically selects for old growth. The need to maintain the integrity of goshawk nest sites was recognized and with implementation of project design features, there would be no timber harvest within 180 acres of active nests. Also while burning would occur during within the 180 acre buffer of the Stonewall East nest, there would be no activity permitted within 40 acres, treatment would occur outside the nesting and Post-fledgling period and proposed low-severity burning would not remove large diameter trees or reduce canopy closure. Consequently proposed treatments are consistent with recommendations by Reynolds et al (1992) and the integrity of active nesting territories would be maintained. Finally, the analysis also recognized the recent debate in the literature between Greenwald eta l (2005) and Reynolds et al (1992), although Reynolds et al (2007) findings were consistent with the U.S. Fish and Wildlife Services review of the species (USDI Fish and Wildlife Service 1998).	Wildlife
19	Additional analysis of fragmentation including effects to species such as the northern goshawk that prefer closed canopy interior forest have been added to the FEIS. While the commenter suggests that home range activities and sizes proposed by Crocker Bedford (1990) be implemented, in their status review for this	Wildlife

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	species, the US Fish and Wildlife (1998) found no evidence showing the goshawk is dependent on large, unbroken tracts of "old growth " or mature forests. This is also substantiated at a more local level by Clough (2000) who, in a random sample of available vegetation types in west central Montana, found goshawks selected for nest stands of mature and older forest that were approximately 40 acres in size, surrounded by a mix of younger forest and non-forested openings. The analysis presented in the FEIS follows more local research by Clough (2000), as well as research by Reynolds et al. (1992), which has been determined by the courts to be the best science. See also response to comment 18.	
20	The analysis considered the population status of the fisher, citing important genetic research done in Region 1 by Vinkey (2003), and the wildlife analysis also considered recommendations by Wittmer et al. (1998) (see wildlife section of chapter 3 of the EIS,) and both action alternatives maintain riparian habitat and associated travel corridors, retain existing old growth, and maintain restrictions on public access. Changes to fisher habitat resulting from proposed actions were identified and are discussed in the wildlife section of the EIS. While both action alternatives would reduce fisher habitat, as described, snags and downed wood would be provided within sites treated and across the landscape, riparian habitat and preferred travel corridors would be maintained and habitat would continue to be available to accommodate fisher use. The need to provide closed canopy mature forest by species such as fisher was also recognized and the FEIS includes an alternative that would reduce wildfire risk and promote the retention of large diameter trees and snags, while maintaining 86 percent of the existing fisher habitat. Because the fisher is not yet listed or proposed for listing, formal or informal consultation with the USFWS will not be initiation for fisher. See response to comment 4.	Wildlife
21	The wolverine is now a proposed threatened species, per findings of the USDI Fish and Wildlife Service for the Distinct Project Segment (DPS) occurring in the contiguous United States, dated February 4, 2013 and found at http://federalregister.gov/a/2013-048. As described in the FEIS, the USFWS concluded that the primary threat to the contiguous U.S. population is risk of eventual habitat and range loss due to climate warming. Other impacts identified In their finding on the wolverine DPS included human use and disturbance, dispersed recreational activity, infrastructure development, transportation corridors and land management. See the wildlife section of the EIS for information on wolverine and details of how proposed activities associated with this project	Wildlife

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	would affect wolverine or their habitat. As described, because harvest occurs at lower elevations that lack deep persistent snow cover, den and dispersal habitat would not be affected. Also public access would not change, there would be no increase in permanent road corridors or increase in trapping pressure and remote security habitat would be maintained. Finally, the available scientific information does not indicate that land management activities similar to that proposed pose a threat to the DPS. As a result none of the alternatives would jeopardize the wolverine. See response to comment 4 related to Fish and Wildlife Service consultation.	
22	Please refer to the wildlife section of the EIS related to effects of treatment on the black-backed woodpecker, Forest-wide habitat and snag retention. We have disclosed that some impacts to individual black-backed woodpeckers may occur. While there would be a reduction in lower quality habitat, high quality burned habitat would be unaffected. We also disclose that recently burned habitat is abundant and well distributed on the HNF and across Region 1. In addition we believe that there is abundant insect infested forest habitat on the Lincoln Ranger District , the HNF and across Region 1 and that this habitat, in addition to recently burned forests provides abundant habitat for this species.	Wildlife
23	See response to comment 22.	Wildlife
24	Flammulated owls and their habitat on the HNF and in the project area are discussed chapter 3 in the wildlife section of the FEIS. Monitoring for flammulated owls has occurred on the Blackfoot landscape and flammulated owls have been documented at nine locations near the project area. While it is recognized that the project area does not provide high quality flammulated owl habitat, considering this documentation, the increased availability of large diameter snags, the predominance of ponderosa pine/Douglas-fir at lower elevations, and presence of suitable habitat, it is likely the project area is utilized for foraging if not nesting. As described in the FEIS, large diameter ponderosa pine snags have been declining and if increases in stand stocking continue, large diameter ponderosa pine and flammulated owl habitat would continue to decline. The management strategies proposed would promote structural conditions preferred by flammulated owls (Hayward and Verner 1994, PIF 2000) over the long-term, including maintenance of large diameter ponderosa pine. Also when viewed across the landscape, the resulting habitat conditions will better represent historic or reference conditions. As a result treatments proposed under the action alternatives would improve stand and landscape level conditions	Wildlife

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	characteristics preferred by the flammulated owl. Finally, because owls have been detected near the project area, it is likely that the preferred habitat created would be utilized.	
25	Boreal toads and their habitat are discussed in the wildlife section of chapter 3 of the FEIS. The analysis considered the best science available for Region 1 (i.e. Werner et al 2004) and recognizes documentation within the project area. The analysis recognized that mortality is possible and that there would be a reduction in suitable habitat under both of the action alternatives. It was also disclosed that implementation of project design features would reduce the likelihood that breeding individuals would be affected, that breeding habitat would be maintained within treatment units and across the landscape, that proposed burning would promote riparian vegetation and foraging habitat preferred by boreal toads and that suitable habitat would continue to be available to support local populations.	Wildlife
26	Effects of proposed actions on critical lynx habitat, including changes to primary constituent elements have been updated and are discussed in the wildlife section of chapter 3 of the FEIS. Upon further consideration of additional information since release of the DEIS, the project analysis for lynx has been updated. The updated analysis resulted in a May effect – likely to adversely affect determination for lynx. The FS is conducting formal consultation with the United States Fish and Wildlife Service and the Biological Opinion will address lynx and lynx critical habitat. Watershed conditions would be improved with road maintenance to reduce surface erosion that contributes sediment to streams channels. Culverts are also planned to be replaced to reduce the risk of failure and allow for 100 year flood flows.	Wildlife/Fisheries
27	A Biological Assessment will be submitted to the USFWS with determinations for listed species, including lynx, and will be available for review. Concurrence from the USFWS will be in place prior to issuing a decision on this project. See also response to 7-40 pertaining to the availability of the Biological Assessment. See the wildlife section of chapter 3 of the FEIS for an updated discussion on lynx effects and discussion on policy. The Northern Rockies Lynx Amendment, which is referenced in the FEIS, amended the Helena Forest Plan and a subsequent Biological Opinion has been issued on the NRLA and covers “take” on Forests included in the NRLA. See response to comment 26 regarding the updated lynx analysis discussed in the FEIS.	Wildlife/NEPA
28A	DEIS Appendix B (pp. 77-93) included tables noting Helena National Forest Plan requirements related to timber harvest and prescribed fire and disclosed Project compliance.	NEPA

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28B	Available information of past, current, and reasonably foreseeable activities is disclosed in Appendix C of the EIS. The resource analysis provided in chapter 3 discusses activities by resource section.	NEPA
28C	The Montana Department of Fish, Wildlife, and Parks were included in the scoping efforts for this project and their input considered. Scoping comments received were distributed in Appendix A of the DEIS (see letter 77). The FEIS includes comments and responses from the review of the DEIS.	NEPA
28D	The Montana Department of Fish, Wildlife, and Parks were included in the scoping efforts for this project and their input considered. Scoping comments received were distributed in Appendix A of the DEIS (see letter 77). The FEIS includes comments and responses from the review of the DEIS.	NEPA
28E	The hydrology section discloses there were no water quality listings in the Lincoln Creek, Beaver Creek or Keep Cook Creek watersheds on the Montana 303(d) list (DEQ2008). See discussions at DEIS pages 535 to 536.	Hydrology
28F	A Biological Assessment will be submitted to the USFWS with determinations for listed species and will be available for review. Concurrence from the USFWS will be in place prior to issuing a decision on this project. Specialist reports, including the final Biological Assessment will be posted on the Forest project website. See the wildlife section of chapter 3 of the FEIS for updated analysis discussions on listed species.	Wildlife/Fisheries/NEPA
28G	See the wildlife section of chapter 3 of the FEIS for discussions on sensitive and management indicator species. Analyses for deer and elk have been updated to consider new information. Specialist reports, including the final Biological Assessment will be posted on the Forest project website.	Wildlife
28H	Snags are discussed under the Habitats of Special Concern section in chapter 3 of the EIS. This section discusses the methodology for the snag analysis.	Snags
28I	The existing, during project activities and post-project road densities within the project area were considered for affected resources. The road information was reviewed and updated between the release of the draft EIS and the final EIS. See wildlife analysis for road densities in the project area.	Wildlife
28J	Evaluating the Helena National Forest's record of compliance with State best management practices regarding stream sedimentation from ground-disturbing management activities is beyond the scope of the Stonewall Vegetation Project analysis. Periodic monitoring reports prepared by the Helena National Forest are available on the forest website, and were considered in	Forest Monitoring

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	this analysis.	
28K	Evaluating the Helena National Forest's record of compliance with its monitoring requirements as set forth in its Forest Plan is beyond the scope of the Stonewall Vegetation Project analysis. Periodic monitoring reports prepared by the Helena National Forest are available on the forest website, and were considered in this analysis.	Forest Monitoring
28L	Evaluating the Helena National Forest's record of compliance with the additional monitoring requirements set forth in previous DN/FONSIs and RODs on the Helena National Forest is beyond the scope of the Stonewall Vegetation Project analysis. Periodic monitoring reports prepared by the Helena National Forest are available on the forest website, and were considered in this analysis.	Forest Monitoring
28M	See the plant section in chapter 3, the discussion under methodology discloses the information considered for the analysis, including information from field surveys.	Plants
28N	Noxious weeds are discussed in chapter 3 of the EIS. Methodology is discussed and available information was considered.	Noxious weeds
28O	Chapter 3 of the DEIS disclosed the estimated impacts from noxious weeds from proposed activities.	Noxious weeds
28P	Information on existing detrimental soil disturbance was displayed in the soil section of the DEIS on pages 520-523 and summarized in tables 125, 129, and 130 The soils analysis was reviewed and has been updated for the FEIS.	Soils
28Q	Information on projected detrimental soil disturbance after treatments was displayed in table 129 (alternative 2) and 130 (alternative 3) of the DEIS. The soils analysis was reviewed and has been updated for the FEIS.	Soils
28R	Information on projected detrimental soil disturbance with mitigation was displayed in table 129 (alternative 2) and 130 (alternative 3) of the DEIS. The soils analysis was reviewed and has been updated for the FEIS.	Soils
28S	The soils section in chapter 3 of DEIS discussed research that supports maintaining, and where lacking, increasing soil organic matter levels is critical for sustaining forest health and productivity (Jurgensen et al. 1997); the recommended amount of CWD for the project area is 5 to 20 tons per acre, outlined from Brown et al. (2003) and Graham et al. (1994) for maintaining soil quality while minimizing fuel hazards; The Region 1 technical guide for soil detrimental disturbance analysis (USDA Forest Service 2009) states, *"…new activities would be designed so that they do not create detrimental soil disturbance (DSD) on more than 15% of an activity area (R1 Supplement to FSM 2554.03). In other words, existing DSD plus the DSD predicted for proposed activities would*	Soils

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	not exceed 15% of a given activity area. In areas where more than 15% DSD exists from prior activities, the cumulative detrimental effects should not exceed the conditions prior to the planned activity and should move toward a net improvement in soil quality." This therefore sets the threshold value for DSD at 15 percent. The soils analysis was updated to consider updated monitoring information, see the soils section in chapter 3 of the FEIS.	
28T	The anticipated timeline for implementation has been updated. Timber harvest and cutting treatments are estimated to occur between 2015-2020, with burning activities anticipated to occur after harvest and cutting treatments when conditions are appropriate.	NEPA
28U	The funding sources for implementation is not known at this time and may vary. Some activities may be funded from program funds (e.g., fuels reduction, wildlife habitat enhancement), some activities may be funded as stewardship projects, other activities may be funded from Knutson-Vandenberg funds.	Economic/NEPA
28V	The current level of old growth forest in each third order drainage in the project area is disclosed in the Habitats of Special Concern section of the DEIS chapter 3 at pp. 215-219.	Old growth
28W	The DEIS disclosed the methodology and assumptions pertaining to the old growth analysis at pages 215-217.	Old growth
28X	Available information was considered for the analysis of old growth forest conditions in the project area, and disclosed in the Habitats of Special Concern section of the DEIS chapter 3 (pp. 215-219).	Old growth
28Y	Forest Plan direction is designed to address species viability. Providing habitat viability of populations is a Forest Plan level analysis, beyond the scope of this individual project analysis. Forest Plan direction regarding old growth direction would be met, see DEIS chapter 3 at pp. 215-219 for existing conditions; no old growth is proposed for harvest and old growth characteristics would be maintained in old growth habitat within the project area after proposed activities pp. 222-240. The wildlife section discusses effects on species associated with old growth forest habitat.	Old growth
28Z	The current level of old growth forest in each third order drainage in the project area is disclosed in the Habitats of Special Concern section of the DEIS chapter 3 at pp. 215-219, no designated old growth is proposed for harvest and old growth habitat characteristics would be maintained in old growth habitat within the project area after proposed activities pp. 222-240. The FEIS contains these discussions as well.	Old growth
28AA	The current level of old growth forest in each third order drainage	Old growth

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	in the project area is disclosed in the Habitats of Special Concern section of the DEIS chapter 3 at pp. 215-219, The wildlife analysis in chapter 3 of the DEIS discloses habitat information related to old growth associated species.	
28BB	The current level of old growth forest in each third order drainage in the project area is disclosed in the Habitats of Special Concern section of the DEIS chapter 3 at pp. 215-219, no designated old growth is proposed for harvest and old growth habitat characteristics would be maintained in old growth habitat within the project area after proposed activities pp. 222-240. The DEIS disclosed impacts to old growth MIS including northern goshawk and pileated woodpecker (pp.289-299). Terminology has been edited in the FEIS to clarify the categorization of field validated old growth, and other stands outside third order drainages are discussed as other old growth.	Old growth
28CC	Old growth in the project area is disclosed in the Habitats of Special Concern section of the DEIS chapter 3 at pp. 215-219, the methodology used to identify old growth is located on pp. 217-219. The DEIS disclosed impacts to old growth MIS including northern goshawk and pileated woodpecker (pp.287-299). Terminology has been edited in the FEIS to clarify the categorization of field validated old growth, and other stands outside third order drainages are discussed as other old growth.	Wildlife/Old growth
28DD	The analysis of existing big game hiding cover, winter range, and security has been updated to incorporate updated information. The updated analysis is disclosed in the big game analysis in the wildlife section in chapter 3 of the FEIS.	Wildlife big game
28EE	The analysis of big game hiding cover, winter range, and security during implementation has been updated to incorporate updated information. The updated analysis is disclosed in the big game analysis in the wildlife section in chapter 3 of the FEIS.	Wildlife big game
28FF	The analysis of big game hiding cover, winter range, and security after implementation has been updated to incorporate updated information. The updated analysis is disclosed in the big game analysis in the wildlife section in chapter 3 of the FEIS.	Wildlife big game
28GG	The analysis of big game hiding cover, winter range, and security has been updated to incorporate updated information. Methodology used is discussed in the big game analysis in the wildlife section in chapter 3 of the FEIS.	Wildlife big game
28HH	This comment pertains to a review of the Forest Plan and is outside the scope of this project analysis. Sensitive and Management Indicator Species are discussed by habitat type in the wildlife section in chapter 3 of the FEIS. Old growth forest conditions were disclosed in the DEIS at pp. 215-	Forest monitoring – sensitive species

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	219, 222-240. No designated old growth in 3rd-order drainages would be logged with this project and other existing old growth habitat would maintain old growth characteristics. Forest Plan old growth direction would be met. (DEIS p. 240).	
28II	Known actions within and adjacent to the project area were considered in cumulative effects analyses and are disclosed in the affected resource sections in chapter 3 and appendix C of the FEIS. The anticipated effects of the proposed activities are disclosed by resource in chapter 3 of the FEIS.	Private land
28JJ	The Fire and Fuels analysis in chapter 3 of the FEIS discusses methodology used for analysis and the anticipated future fire behavior potential by flame length and fire type.	Fire/Fuels
28KK	The Helena Forest Plan (USDA Forest Service 1986), as amended, identifies management actions appropriate to be considered by management area. Decisions made regarding the overall management of the Helena National Forest are beyond the scope of this project analysis. The purpose and need for the Stonewall Vegetation Project is discussed in chapter 1 of the FEIS.	NEPA
28LL	The Helena Forest Plan (USDA Forest Service 1986), as amended, identifies management actions, e.g., timber harvest and prescribed burning, appropriate for use as tools to move vegetation conditions towards desired conditions. Forest-wide level conditions are appropriate to be discussed and analyzed in forest plan revision efforts, and beyond the scope of individual site specific project analyses. The Stonewall Vegetation Project FEIS considers past, present and reasonably foreseeable actions and discloses cumulative effects analyses by resource topic in chapter 3 and appendix C of the FEIS.	NEPA
28MM	The analysis discusses how this project complies with the Roadless Rule. Inventory and evaluation of roadless areas takes place at the forest plan level. Unroaded areas adjacent to IRAs that overlap with proposed treatment areas were evaluated for potential impacts to their roadless and wilderness characteristics.	Inventoried Roadless Areas
28NN	Climate change was discussed in the following DEIS chapter 3 sections: vegetation (includes ramifications of a changing climate), fire and fuels, habitats of special concern, wildlife, noxious weeds and plants. The DEIS (page 90) noted the anticipated impact of climate change: “Climate changes will most likely bring about some change in site characteristics leading to climax plant community changes and so Biophysical Setting changes, but the direction and magnitude of the changes are unknown and would be very small within the time frame of this analysis.”	Climate change
28OO	The DEIS discussed carbon storage at pages 176-177. The following excerpt is from the Atmospheric Carbon Report for this analysis found in the project file (Amell and Klug 2013): The Forest Service has reviewed scientific papers attached to this	Silviculture - Carbon

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	comment and other pertinent literature concerning forest carbon stocks, and the general, broad-scale relationships between forestry operations, atmospheric carbon exchange and global climate concerns. All literature submitted or cited by commenters is listed in a report titled, "Literature and Citations Received from Scoping for the Stonewall Vegetation Project," located in the project record. That report includes interdisciplinary-team determinations of relevance or applicability to the project of each literature item listed. With regard to the [comment], we recognize, as [asserted in the] second point, [that] variance or actual change in climate—past, present and future—potentially affects current and future conditions of the Helena National Forest. These facts are considered and addressed in the formulation of project objectives and the design of proposed and alternative actions. Through these, we seek to culture forest conditions in the Stonewall area that are resilient as possible to disturbance-events, processes, or trends that can—when sufficiently large, intense, or long term—detract from national forest conservation and the delivery of public benefits specified in law and policy. … In [the Atmospheric Carbon Report] we discuss further the first topic raised by [the comment]: the effects of proposed treatments on carbon storage versus no action. The topic is relevant to effects analysis because it identifies an environmental condition the Stonewall Project could change. The Forest Service recognizes that by manipulating forest vegetation through [various means including] silviculture, management of hazardous fuels, and fire, carbon is added to or removed from the earth's atmosphere; the manner and degree to which this happens as a result of the actions proposed can be at least qualitatively analyzed and described in comparison to no action. [These qualitative effects are discussed in DEIS Chapter 3 under Carbon Storage, pp. 176-177.] Concerning possible indirect climate effects from project-caused carbon release or storage, the Stonewall Project NEPA process will not attempt to make such an analysis. This position is based upon the fact that questions about whether or how to analyze effects to climate resulting from federal land and resource management are still under consideration by the White House Council on Environmental Quality (CEQ). Currently, CEQ has issued no operative guidance on this, as explained more thoroughly [in the Atmospheric Carbon Report (Amell and Klug 2013)] in the … section, "Regulatory Direction and Guidance on Consideration of Climate Change in Project Related NEPA Analysis."	
28PP	The soils and hydrology sections in chapter 3 of the FEIS disclose the affected environment, direct, indirect and cumulative effects on soil and hydrology resources. As discussed in the analysis, WEPP modeling was used to analyze erosion and sedimentation by drainage.	Hydrology/Soils
28QQ 1-10	1-5. This comment requested maps of the area to show several elements. Appendix C includes a map of the recorded past, present and reasonably foreseeable actions; this map was updated and analyses reviewed for the FEIS. The analyses consider impacts from past, present and reasonably foreseeable actions, including	NEPA

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	timber harvest, livestock grazing, recreation, roads, fire as well as insect and disease mortality. The discussion of direct, indirect and cumulative effects are located under the various resource sections in chapter 3 of the DEIS and FEIS 6. Figure 44 of the DEIS on page 188 displayed the Wildland Urban Interface within the Stonewall Project boundary. Displaying the existing or future density of human residences within 1.5 miles from the project unit boundaries was determined not necessary for the disclosure of analysis effects from proposed activities. Cumulative effects analysis considered activities occurring on National Forest System lands as well as lands of other ownership, and is discussed by affected resource in chapter 3 of the DEIS and FEIS. 7.The analysis of big game hiding cover has been updated to incorporate updated information and is discussed in the big game analysis in the wildlife section in chapter 3 of the FEIS 8. See response to 7-30 regarding old growth forest. The DEIS included maps of old growth forests in the habitats of special concern section in chapter 3 of the DEIS (See DEIS figures 57 and 64). These maps have been updated in the FEIS to clarify terminology. 9.The analysis of big game security areas has been updated to incorporate updated information and is discussed in the big game analysis in the wildlife section in chapter 3 of the FEIS. 10. The Stonewall Vegetation Project area does not contain any recognized moose winter range. Effects to dry forest habitats, where moose are noted to occur, are disclosed in the wildlife section in chapter 3 of the FEIS.	
29	No wetland areas were observed during field reviews of the locations of roads to be built then obliterated after timber harvest. Water features identified in the forest GIS database are displayed in maps provided in the FEIS.	Hydrology
30	The DEIS and FEIS include project design features, near the end of chapter 2, to minimize the spread of noxious weeds. The Forest will continue to address noxious weeds as per the Helena National Forest Noxious Weed Treatment Project (USDA Forest Service1996). Noxious weeds are discussed in chapter 3 of the FEIS.	Noxious weeds
31	An alternative that eliminates units that have noxious weeds present on roads within units from fire management proposals was considered (DEIS pages 62-63).	Noxious weeds
32	See response to comment 7-10 regarding analysis of noxious weeds.	Noxious weeds
33	See DEIS page 494, Figure 82 General location of noxious weeds in the Stonewall Vegetation Project area.	Noxious weeds

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34	See response to comment 7-10 regarding analysis of noxious weeds.	Noxious weeds
35	Noxious weed treatment will continue to occur in accordance with the requirements specified in the Final Environmental Impact Statement: Helena National Forest Noxious Weed Treatment Project and accompanying Record of Decision (DEIS page 495).	Noxious weeds
36	Any seeding that occurs will be done in compliance with Forest Plan standards. Recommended certified weed free native seed mixtures that are in compliance with the Forest Plan are included as a project design feature. (Englebert 2012a)	Noxious weeds
37	Table 3 of the Noxious Weed Specialist Report indicates the following units have mapped noxious weed infestations: 1, 3-9, 11-36, 38, 42, 43, 46-65, 67-71, 73-75, 78-82, 84-86	Noxious weeds
38	The remaining units either do not have mapped occurrences or they have no treatment proposed under this project. (Englebert 2012a)	Noxious weeds
39	Forest plan direction *Final Environmental Impact Statement: Helena National Forest Noxious Weed Treatment Project* and accompanying *Record of Decision (*USDA Forest Service 2006d) and other relevant information have been considered and incorporated into project design features to address areas of concern (pages 7, 493-502, 514; project design features at 46-47).	Noxious weeds
40	There are no threatened, endangered or proposed plant species known to occur on the Helena National Forest (USDI Fish and Wildlife Service 2011b) (DEIS page 475). Whitebark pine is the only sensitive plant species known to occur in the project area (DEIS page 475-477).	Botany
41	Effects to rare plants and their habitats and project design features intended to minimize or avoid effects are discussed in Chapter 3 (DEIS page 480-493).	Botany
42	See comment 41	Botany
43	Burn plans will be prepared to conduct burning during timeperiods favorable for meeting burn objectives.	Fire – prescribed burning
44	Presence of whitebark pine, effects expected, and project design features for the protection/promotion of whitebark pine are discussed in the Plants section of the DEIS on pages 491 & 492 and in the Vegetation section. Design feature SILV-2 was developed to protect/promote whitebark pine.	Silviculture/Botany
45	The no action alternative excludes burning in the presence of whitebark pine regeneration. The action alternatives includes prescribed burning treatments in prescription Groups 6, 7, and 8, described at DEIS pages 36-37; they are conditioned by design feature SILV-2 shown at DEIS page 49. The proposed treatments and project design features are intended to conserve whitebark pine habitat, increase the presence of the species, and benefit wildlife species that are ecologically	Silviculture- WBP

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	associated. The suggestion of not burning but rather 'daylighting' around pine seedlings—which we infer means removing competing vegetation—is actually an option that may be employed in selected areas as follows. The Forest Service will prepare a detailed burn plan prior to prescribed burning. At that stage the project design feature SILV-2 would apply to identify areas to be excluded from burnin, and specify the means to keep fire out or minimize its intensity, methods could include 'daylighting' around pine seedlings. The design feature to avoid or limit the degree of possible adverse effects to whitebark pine communities. Whereas the treatments with mitigation are not predicted to result in any intense or severe effects to the whitebark pine resource (The DEIS discussed effects to whitebark pine at pages 141 and 154-155), the Forest Service declines to include in the final EIS an alternative course of action that would more uniformly exclude burning from such areas.	
46	The comment concerns the possible merit and feasibility of reforesting whitebark pine habitat through tree planting. Conservation and improvement of whitebark pine habitat, and regenerating the species in that habitat, are among the desired conditions toward which the project is designed to make progress (DEIS p. 18). Therefore, the Forest Service will, at the completion of prescribed fire activities in whitebark pine habitat, determine whether there is a need for artificial reforestation treatments to complement the natural reforestation processes that are expected to occur. Where needed and feasible, artificial reforestation in this case might involve tree planting or possibly direct seed placement, using available, site-suitable rust-resistant seedlings or seed. All such considerations would be made through on-site diagnoses and prescriptions prepared or reviewed by a certified silviculturist. To incorporate these elements into the proposed action and its action-alternative, the Forest will include in the final EIS an additional, corresponding project design feature.	Silviculture- WBP
47	Forest and Inventory Analysis data for the Helena NF recorded white pine blister rust on about 19 percent of the live whitebark pine trees in the plots. However, blister rust surveys of whitebark pine in two stands south of the Stonewall project area on the Helena National Forest done in 2007 and 2009 found 74 and 97 percent WPBR infection levels (see WBP Survey_granite.xls and WBP Survey_redmtn6253.xls in project records). Given that the purpose of the blister rust surveys was to closely examine trees for the presence of blister rust, we suspect infection levels within the project area to be closer to the survey values than that shown in FIA data. Also, given the widespread presence and impacts of the disease throughout the Intermountain West (appendix B), there is no reason to believe that the condition is not similar to other	Botany/Silviculture-WBP

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	places in the state (DEIS page 113).	
48	The process for the development of the proposed action was described in chapter 1 of the DEIS. Gathering vegetation data on all ownerships is beyond the scope of this analysis. Available forest GIS information was considered. The Fire and Fuels analysis in chapter 3 of the DEIS discussed methodology, including use of available R1 VMAP vegetation data, and the anticipated future fire behavior potential by flame length and fire type.	Fire/Fuels – WUI, NEPA
49	The Forest Plan provides a framework for management actions. Individual projects are proposed to cover discrete areas. Future management proposals will undergo appropriate analysis based on the conditions present at that time. Speculating future funding and environmental conditions for a potential future course of treatment is beyond the scope of this analysis.	Fire/Fuels
50	The fire analysis included in chapter 3 of the DEIS discussed the anticipated effects over time. The noted research papers were reviewed during the literature review and that and other information considered in the Stonewall analysis.	Fire/Fuels
51	The fire analysis included in chapter 3 of the DEIS discussed the anticipated effects over time. Hessburg and Lemkuhl (1999) was reviewed during the literature review completed, and was considered along with other information during the Stonewall analysis.	Fire/Fuels
52	Project area old growth was discussed under the Habitats of Special Concern section of the DEIS (pages 68-69, 215-219, 222-240). DEIS tables 55 through 57 (pages 222-224) display the existing stands with old growth characteristics. The DEIS disclosed at page 240 that the Forest Plan direction regarding old growth would be met. The existing old growth stands within the project area would continue to provide old growth habitat. The maps of old growth have been updated in the FEIS to clarify terminology. The DEIS disclosed effects on pine marten (pages 302, 326, 444-448), northern goshawk (page 294-297, 325, 428-436), pileated woodpecker (pages 297-300, 325, 436-442) and migratory birds (pages 315-318, 327, 348-354, 474-475). Analyses of these species are found in the respective areas in the wildlife analysis in chapter 3 of the FEIS. The analysis presented also identifies the cumulative effect analysis area used and provides rationale for its selection.	Wildlife – old growth
53	The effects of the past management actions, including roads, were considered in the Stonewall Vegetation Project analysis of existing condition and cumulative effects analyses and are discussed under the separate resource topics in chapter 3 of the FEIS.	Transportation

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	The Stonewall Vegetation Project does not propose changes to the permanent travel management within the project area. Travel management was analyzed and addressed in separate efforts and outside the scope of the Stonewall Vegetation Project analysis.	
54	The Forest Service understands this comment as essentially arguing that fuel reduction actions "artificialize the forest ecosystem" to the detriment of "ecosystem function" and therefore such activities must be restricted and mitigated. The comment points to literature cautioning land managers against generalizing or over-projecting to any particular location scientific findings about historical fire regimes and thereby possibly concluding in error that "uncharacteristic vegetation patterns" have resulted from past fire suppression and exclusion. The Forest Service concurs that past fire suppression and exclusion have affected vegetation patterns. The activities proposed are responsive to land and resource management objectives of the Forest Plan. The Forest Plan embodies the public laws, regulations, and policies governing management of the Helena National Forest. Achieving Forest Plan objectives, of which hazardous fuel reduction is one, requires the manipulation of forest vegetation, or silvicultural practices. So also does the improvement or replacement of timber stands—treatments that are also proposed and related to fuel reduction in this case. The DEIS presents the project in the context of moving towards desired conditions identified in the Forest Plan. The DEIS shows how the proposed action is informed by local collaborative partnerships, current forest conditions, ecological amplitudes, historical reference conditions, environmental quality assurance, and operational and financial feasibility. The proposed activities were designed to satisfy policy that requires treatment of current conditions—to reduce fuel hazards and improve or replace timber stands, while also operating within the environmental standards and feasibility factors. We considered public input and comments from with the involved stakeholders. All of this together makes up our resource-management job, as contrasted with avoiding or limiting "mechanical manipulation [that does not maintain] ecosystem function." The Forest Service understands the concern regarding blowdown as pertaining to mature lodgepole stands that have developed under high-density conditions over many decades. We wish to clarify that under this project we are not thinning or improvement-cutting any such stands. All of the mature lodgepole pine stands in the project area, and the mature lodgepole components of mixed stands, are highly to severely affected by mountain pine beetle. Thus we are improvement-cutting only those stands that have sufficient components of other species such as Douglas-fir or larch,	Silviculture – FP direction

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	to be the retained growing stock (Treatment Group 1). Where lodgepole is predominant, regeneration-harvest cuttings are proposed to replace these highly damaged stands (Treatment Groups 3 and 4). Veblen (2003) was reviewed during the literature review and that and other information was considered in the Stonewall analysis.	
55	Programmatic issues such as development of fire management plans and policies are outside the scope of the Stonewall Vegetation Project analysis. Developing programmatic forest-wide policies and fire management plans is more appropriate during revision of the land and resource management plans. This project analysis tiers to the FEIS completed for the Helena National Forest, Forest Plan as amended, and incorporates by reference the Forest Plan (see Forest Plan II/33-34, III/35, Appendix R for fire management). The Forest Plan, as amended, provides the direction for land management activities. Actions proposed with this project to reduce fuels within the wildland urban interface areas were designed to address Forest Plan direction, as amended. Ament (1997) was reviewed during the literature review and that and other information was considered in the Stonewall analysis as considered	Fire/Fuels
56	The methodology sections under each resource area notes the information used in analysis (e.g., survey, monitoring or other) and cumulative effects analysis information. Past project effects are discussed by resource area in chapter 3. See also appendix C for cumulative effects information. Available Forest monitoring information was considered for this analysis and noted where cited in the DEIS and FEIS.	NEPA
57	Appendix C included available information from past, present, and ongoing projects relevant to the cumulative effects with this project. Each resource discussion in chapter 3 identified the boundary used for cumulative effects analysis.	NEPA
58	Evaluating the status of Forest level monitoring and monitoring or mitigation required or recommended in any NEPA document is beyond the scope of this analysis. Available Forest monitoring information was considered for this analysis and noted where cited in the DEIS and FEIS.	Forest Monitoring
59	Forest and regional viability of late successional/old growth species are discussed in the management indicator species section, by forest type in the wildlife section in chapter 3 of the FEIS and as described, viability analyses are based on the Northern Region Viability Protocol, the Draft White Paper on Managing for Viable Populations (USDA FS 2001), in a Conservation Assessment for the Northern Goshawk, Black-backed woodpecker, Flammulated Owl,	Wildlife

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	and Pileated Woodpecker in the Northern Region and USDA Forest Service Habitat Estimates for Managing Viable Populations of the Northern Goshawk, Black-backed Woodpecker, American Marten, and Fisher(Samson 2006), which summarizes the status and viability of these species within the Region and on the Forest. Cumulative effects to wildlife, including rationale for selection of the analysis area boundary are discussed in chapter 3 of the FEIS. See response to comments for Forest-wide monitoring of late successional wildlife.	
60	See response to comment 7-27 related to snag availability for late successional/old growth species and Plan compliance. See response to comment 59 related to Forest and Regional conservation assessment for the flammulated owl and response to comment 24 related to flammulated owl documentation and effects of treatment.	Wildlife
61	See response to comment 24 for flammulated owl surveys conducted near the project area, whereas comment 60 summarizes the Forest strategy used to ensure viability of this species. .	Wildlife
62	Forest and Regional availability of suitable habitat for the pileated woodpecker, flammulated owl, northern goshawk, black-backed woodpecker, American marten and fisher are discussed by species in the wildlife section in chapter 3 of the FEIS. It was also recognized that for some species analysis beyond the project area is needed. Consequently elk were evaluated at the herd unit scale, grizzly across Bear Management Units and Lynx across Lynx Analysis Units, analysis and cumulative effect boundaryies are discussed by species. The analyses for grizzly bear, Canada lynx and big game have been updated in the respective species analyses in the wildlife section of chapter 3 of the FEIS.	Wildlife
63	This comment was submitted in response to scoping. The requested analysis and documentation was provided in the DEIS and supporting reports. Current and future old growth resources of the project area, and predicted non-significant effects of the alternatives to those resources, are fully discussed in the Stonewall Vegetation Project Old Growth and Snag Analysis (Amell 2012) located in the project record, and incorporated into the DEIS at pages xi-xii, 68-69, and 215-240. Terminology was updated and the information has been carried forward into the Habitats of Special Concern section in chapter 3 of the FEIS.	Wildlife/Silviculture – old growth
64	See DEIS Table 2, Management areas (DEIS page 9). No management area 20 exists in the project area. Effects to grizzly bear were analyzed and discussed in chapter 3 of the DEIS (see especially pages 269-275, 322, 348, 352). The grizzly bear analysis has been updated to incorporate updated road	Wildlife – grizzly bear

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	information. See the updated analysis for grizzly bear in the threatened and endangered portion of the wildlife section in chapter 3 of the FEIS.	
65	The lynx analysis has been updated to incorporate updated information. See the updated analysis for lynx in the threatened and endangered portion of the wildlife section in chapter 3 of the FEIS.	Wildlife - lynx
66	The lynx analysis has been updated to incorporate updated information. See the updated analysis for lynx in the threatened and endangered portion of the wildlife section in chapter 3 of the FEIS.	Wildlife - lynx
67	Noxious weeds are discussed in the analysis. Noxious weed treatments costs related to the Stonewall project activities were considered in the site specific economic analysis. The 2006 Record of Decision and accompanying EIS for treating weeds on the Helena National Forest (USDA Forest Service 2006c) was discussed in the analysis and direction incorporated into the proposed action and project design features. Addressing noxious weeds on a forest-wide basis is beyond the scope of this project analysis.	Noxious weeds
68	The Forest Service goal is also functioning stream ecosystems that include healthy, resilient populations of native trout. Improvements to the road system associated with this project would reduce effects to the watersheds by reducing sediment, improving drainage and fish passage. Additional road improvements including several miles of decommissioning and storage are being analyzed in the Blackfoot Travel plans that would greatly reduce impacts of roads on streams.	Fisheries - trout
69	Inventory and evaluation of roadless areas takes place at the forest plan level. Unroaded areas adjacent to IRAs that overlap with proposed treatment areas were evaluated for potential impacts to their roadless and wilderness characteristics. See DEIS page 595-603 and Table 154 and 155.	IRA boundary
70	Analysis of impacts to fish and habitat were included in the DEIS (pages 552-567).	Fisheries
71	Effects to water resources were discussed in the Hydrology section of the DEIS (pages 529 through 552). DEIS page 532 disclosed the geographic information system data used for the analysis. Hydrologic features were displayed in DEIS figure 83. Effects to water resources are discussed in the Hydrology section in chapter 3 of the FEIS.	Hydrology
72	The existing conditions are discussed by resource area under affected environment in chapter 3 of the FEIS. Effects of ongoing livestock grazing were considered in the analyses of vegetation, soils, and hydrology discussed in chapter 3 of the FEIS.	Livestock Grazing monitoring

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	Monitoring identified for this project is listed near the end of chapter 2 of the FEIS. Range condition monitoring related to livestock grazing activities are managed under allotment management plans and beyond the scope of this analysis.	
73	Current conditions of fish populations and habitat are disclosed in the DEIS as well as effects of the project.	Fisheries
74	See also responses to comments 7-20, 56, and 57 regarding direct, indirect and cumulative effects analysis.	NEPA
75	The Forest Service recognizes that land productivity is reduced by noxious weed infestations. That issue is addressed Forest-wide under the *Final Environmental Impact Statement: Helena National Forest Noxious Weed Treatment Project* and accompanying *Record of Decision (*USDA Forest Service 2006d). The analysis completed for this project discloses how noxious weeds are expected to respond under the different alternatives, what the environmental consequences are and incorporated practices designed to minimize or avoid potential adverse effects particular to this project.	Plants
76	Current and cumulative soil disturbance was disclosed in the DEIS for each individual treatment unit. The soils analysis has been updated in the FEIS.	Soils
77	Current and cumulative soil disturbance was disclosed in the DEIS for each individual treatment unit. The soils analysis has been updated in the FEIS. Sediment modeling was also completed to assess the possibility of sediment delivery to streams. Assessments of water quantity affects from disturbances were done by the project hydrologist. See the soils and hydrology sections in chapter 3 of the FEIS.	Soils - Sedimentation
78	Soil disturbance from off-road vehicle use was taken into account when formulating the current conditions and estimating current detrimental soil disturbance. The soils analysis was updated according to regional protocol considering disturbance in stands with records of past disturbance. See soils section in chapter 3 of the FEIS.	Soils
79	See comment 75. This project includes monitoring for and treatment of noxious weed infestations that may occur as a result of the proposed activities.	Noxious weeds
80	Soil productivity is discussed in the soils section in chapter 3 of the FEIS.	Soils
81	A project wildlife report and Biological Evaluation was prepared for the Stonewall project Cumulative effects evaluated in these documents are disclosed in the sensitive species discussion in the wildlife section in chapter 3, and appendix C of the FEIS discloses past, present and reasonably foreseeable future activities.	Wildlife

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82	The interdisciplinary team reviewed the literature noted above for consideration in the analysis. The literature review document is available in the project file. The soils analysis addresses carbon storage. (Jurgensen et al. 1997; Page-Dumroese and Jurgensen 2006) We recognize that variance or actual change in climate—past, present and future—potentially affects current and future conditions of the Helena National Forest. These facts are considered and addressed in the formulation of project objectives and the design of proposed and alternative actions. Through these, we seek to culture forest conditions in the Stonewall area that are resilient as possible to disturbance-events, processes, or trends that can—when sufficiently large, intense, or long term—detract from national forest conservation and the delivery of public benefits specified in law and policy. The Forest Service recognizes manipulating forest vegetation through silviculture, management of hazardous fuels, and fire, carbon is added to or removed from the earth's atmosphere; the manner and degree to which this happens as a result of the actions proposed can be at least qualitatively analyzed and described in comparison to no action (DEIS Chapter 3 under Carbon Storage, pp. 176-177). Concerning possible indirect climate effects from project-caused carbon release or storage, the Stonewall Project NEPA process will not attempt to make such an analysis. This position is based upon the fact that questions about whether or how to analyze effects to climate resulting from federal land and resource management are still under consideration by the White House Council on Environmental Quality (CEQ). Currently, CEQ has issued no operative guidance on this, as explained more thoroughly [in the Atmospheric Carbon Report (Amell and Klug 2013)] in the … section, "Regulatory Direction and Guidance on Consideration of Climate Change in Project Related NEPA Analysis."	Silviculture – climate change, carbon storage
83	Pages 632-644 of the DEIS disclosed the economic analysis for this project. The economic analysis will be updated for the FEIS based on current market and stand conditions, and also to reflect any changes in the alternatives. Financial efficiency is just one tool that is used to evaluate the costs and benefits of a project. Many non-market values associated with natural resource management are best handled apart from, but in conjunction with a more limited financial efficiency framework. These nonmarket benefits and costs associated with the project are discussed throughout the various resource sections of the DEIS.	Economic
84	The Stonewall Vegetation Project analysis is an EIS. All scoping comments received for this project were included in appendix A of the DEIS. Scoping comments did not include comments to consider	NEPA

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	an alternative with no temporary roads. Alternatives considered but eliminated from detailed study were included in chapter 2 of the DEIS. The Stonewall Vegetation Project analysis did not consider an action alternative with no temporary roads since that suggestion was not raised for this project. The no action alternative addresses an alternative that does not include construction of roads that would be obliterated following activities.	
85	Commenters will be included on future mailing regarding this project.	NEPA

June 5, 2013

Certified, Return Receipt Mail: 7012 2920 0000 0073 0177

Amber Kamps, District Ranger
Lincoln Ranger District
1596 Highway 200
Lincoln, MT 59639

RE: COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE STONEWALL VEGETATION PROJECT

Hello,

Native Ecosystems Council (NEC) and the Alliance for the Wild Rockies (AWR) would like to provide the following comments regarding the draft environmental impact statement (DEIS) for the proposed Stonewall Vegetation Project.

1. General Comments:

This document is far too large for the very limited amount of analysis data that is actually present. It is a violation of the National Environmental Policy Act (NEPA) by creating a massive document that is full of meaningless, undocumented assumptions. This DEIS could have been 20% of the size and still provided the same amount of information that was in it. The Forest Service has made public involvement on this project very difficult, and the size of the document will likely discourage many publics from commenting.

2. Aspen Management

A-Lack of Fire

The DEIS suggests that aspen will be enhanced with forest thinning because aspen is being limited by conifer invasion and a lack of fire. The current best science does not support the claim that a lack of fire is causing aspen decline. Aspen and conifers instead cycle in abundance on suitable sites with aspen being more prominent after fires, and conifers being more prominent until the next fire cycle moves through. In addition, the DEIS did not actually provide any monitoring data on the level of conifer encroachment in stands proposed for treatment. It is not clear how serious encroachment is at

B-Conifer Encroachment

this time per stand. Across the west, the most severe problem for aspen is destruction of shoots by cattle grazing. This is likely the problem in the Stonewall Project Area as well. Yet there was no information provided on the impact of livestock grazing, even though one purpose of the project is to improve aspen. You can't fix a problem if it is not correctly defined. The current literature on aspen also notes that any activities that increase sprouting need to be fenced so that new aspen trees are not destroyed by cows. The treatment of aspen in the Stonewall Project is likely a death sentence for aspen, as they will be stimulated to regenerate and this regeneration will be destroyed. Any aspen areas treated need to be fenced from livestock.

C-Livestock Grazing

3. Forest Plan Amendment

A-Elk Security

The use of a Forest Plan amendment for wildlife standards 3 and 4(a) requires a separate environmental analysis with alternative development and analysis of cumulative effects of failure to meet these standards across the Helena National Forest. Only 5 of 27 EHUs meet 4(a) and 10 of 27 meet standard 3. Failure to look at the chronic violations of these wildlife standards across the Forest indicates the agency has failed to take a hard look at amending the Forest Plan for this project. In addition, amending these 2 wildlife standards for the Project is not consistent with the best available science, and the amendments will authorize a project that violates elk habitat effectiveness and elk security.

B-Elk Vulnerability

The analysis of Forest-wide effects of the chronic failures to meet Forest Plans standard 3 and 4(a) need to include an assessment of elk vulnerability, including the percentage of bull harvest that occurs in the first week of the hunting season.

C-Elk Security and Blackfoot Travel Plan

Also, it is not clear how this proposed site-specific amendments relate to the agency's travel planning where this portion of the Forest is proposed for a programmatic amendment to 3 and 4a. For example, the proposed Forest Plan programmatic amendment for the Blackfoot travel planning area would not allow elk security to decrease below 30%, and not be reduced any lower if the 30% is not being met. It is not clear how the Stonewall Project will affect elk security, as the analysis in the DEIS is flawed. However, it appears that the Project would violate the proposed Forest Plan Amendment for the Blackfoot Travel Plan.

4. Elk Analysis

A-Analysis in Violation

The DEIS analysis of elk and project impacts was so flawed and lacking in analysis that it is a violation of the NEPA, the NFMA and the APA.

B-Analysis differs from Blackfoot Travel Plan

The agency implies that logging will increase forage, and that this is needed to increase the local elk populations because they are below recommended levels. Yet the Blackfoot Travel Planning DEIS claims that elk numbers have been steadily increasing, with the benchmark level of 6400 identified in the Plan being actually 13,075 elk. Elk are at or near the 2004 population objectives of the MFWP.

C-Bull Elk

There was no analysis of bull elk vulnerability for the Project Area. Is the first week bull elk harvest objective of less than 40% being met? What is the trend of branch antlered bulls in the population? How were these issues considered in the decision to amend 4(a) and 3 for the Project for the Beaver Creek and Keep Cool EHUs?

D-Elk Security

The analysis of project impacts on security seems flawed. How can a considerable number of currently closed roads (closed year long) that will be needed for the Project not reduce elk security? How can cover removal of 1,169 acres not affect elk security? The current best science defines elk security as blocks of contiguous forest cover. The agency needs to analyze elk security by the current best science.

The DEIS needs to map elk security areas before, during and after logging and burning.

E-Roads and Elk Habitat Effectiveness

The same problem exists for habitat effectiveness. The DEIS failed to define the miles of currently closed roads that will be used for the Project. It seems impossible that habitat effectiveness can remain unchanged during project implementation. Please define the mileage of all road categories that will be used, including year-long closures as defined in the Blackfoot Travel Plan DEIS.

Also please evaluate open road density during logging by the average size of an elk home range, so that direct effects of the Project can be identified to the public.

F- Big Game Hiding Cover and Thermal Cover

The definition of hiding cover requires it to be at least 40 acres in size. It does not appear that this Forest Plan standard was applied to the Project.

The DEIS claims that all thermal cover has already been lost due to the pine beetle, so logging will not affect it. Where is the documentation for this? We believe that logging of any forest cover on big game winter ranges is a Forest Plan violation. Even if the stands do not currently provide thermal cover, they will regain thermal cover much more quickly that if these areas are logged.

The agency did not complete Forest Plan amendments for violating management area direction for T-1 and T-3 for 50% hiding cover and 25% thermal cover. Also, cover cannot be removed adjacent to past harvest units that still do not contain cover. Provided some level of cover between past and proposed units does not qualify as Forest Plan direction, as hiding cover much be at least 40 acres in size (T-3). The T-1 MA standard that logging must enhance winter range was never verified as well. What data and/or current science has documented increased elk numbers on treated winter range, including treatments that reduce thermal cover? How can violation of a Forest Plan standard (25% thermal cover) be considered habitat improvement for elk?

In regards to T-3 where hiding cover must exist in past harvest units prior to additional logging adjacent to the unit, the agency cannot use the definition of hiding cover (hides 90% of an elk at 200 feet), since you are already using the 40% canopy cover definition. You have to stay consistent with the definition that you pick for the analysis. Please define how old an old clearcut has to be to provide a 40% canopy cover. What height does the stand have to be before it is hiding cover? This is not defined in the Forest Plan definition, but is clearly important in regards to clearcuts and regeneration.

G-Mule Deer Habitat

The current best science has documented that the optimum mule deer habitat is older growth mid-elevation and low elevation forest. The Project will clearly degrade mule deer habitat. Since the mule deer is a Forest MIS, the cumulative effects of logging impacts on mule deer across the Forest need to be included in the analysis to address Forest-wide viability.

Mule deer do not use large security blocks like elk. Please discuss mule deer vulnerability as per current and projected levels after project implementation.

H-Burning Sagebrush

It is not clear why sagebrush will be burned, and why this isn't degradation of both elk and mule deer spring, calving/fawning, and winter habitat. Why would key habitat for 2 Forest MIS be destroyed with burning? Sagebrush has about 12% protein in the winter, while grass has about 3% protein. Burning sagebrush will not improve forage for deer or elk.

I-Big Game Winter Range

There was no monitoring or science provided to define why the treatments on big game winter range will improve habitat for elk and/or mule deer. Specifically, what forage plants will increase, why are these plants important to big game, and what science or monitoring shows that big game populations have increased as a result of these winter range treatments?

6.Treatment of Inventoried Roadless Lands

A-Roadless Rule

The Forest Service will violate the 2000 Roadless Area Conservation Rule by severely degrading inventoried roadless lands with slashing and prescribed burning. The impacted IRA is being used as a "jobs program" for the Forest Service, instead of being managed by natural processes. The violation of the Roadless Area Conservation Rule also triggers a NEPA violation because the agency is providing false claims as to why the IRA needs to be managed, including with burning and thus forest destruction.

B-Burning-

C-lack of fire

There are extensive burned areas adjacent to the Project Area as per the Snow Talon fire. Why is it determined that there is a lack of natural fire on this landscape, in order to justify more burning, especially in the Bear-Marshall-Scapegoat-Swan (BMSS) IRA? The smaller alternative 3 would burn 3,565 acres!

D- vegetation composition

The proposed burning in the IRA is justified by claims that prescribed fire and tree slashing will promote ecological restoration of a mix of vegetation composition and structure. This has no meaning to the public, since the desired mix of vegetation structure and composition was never defined. Also, what is wrong with the current mix of vegetation structure and composition that needs to be restored? This claim is clearly a NEPA violation, as the agency is provided vague, undefined rationales as to why IRAs need to be burned. The agency also claims that burning will reduce severe wildfire, will maintain scenic qualities, and will have long term

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benefits to naturalness. It is not clear what these claims are based on. Why is spot slashing and extensive burning considered natural, while wild fires are not considered natural.

There will be a lot forest burned with the proposal. This includes 5-10 acres patches of burned forest in low burning areas (326 acres), 10-20 acres burned patches in mixed severity burning (36 acres), and 30-75 acre burned patches on 3,265 acres also with mixed severity burning (Alternative 3). The specific reason why these forests need to be burned to restore ecological restoration was never provided in the DEIS. This is a curious claim, as every species of wildlife evaluated in the DEIS will have habitat removed for the short or long term with burning. This includes the threatened lynx, sensitive fisher, MIS pine marten, goshawk, pileated woodpecker, and many songbirds. Please define why restoration in IRAs requires the removal of habitat for a host of vulnerable wildlife species. What science is this based on?

E - wildlife habitat

In particular, the slashing/burning of IRAs will remove lynx habitat, both current and future habitat. The DEIS at vii notes that the current condition in these areas is moving towards Douglas-fir, subalpine fir and spruce, and away from early seral species as loegepole pine, ponderosa pine, aspen, and western larch, and at viii that lodgepole pine is becoming mixed species of alpine fir and spruce.. The recent research on lynx in the adjacent Seeley Lake area notes that lynx habitat contains a mix of species, but subalpine fir and spruce are key. So why would IRAs need to have lynx habitat removed to be restored?

F - lynx habitat

The sensitive fisher is also dependent upon older forest habitats with dense, complex understories. Older climax conditions with spruce and alpine fir will provide high quality habitat for the fisher, and the proposed burning will degrade fisher habitat. Natural processes are restoring fisher habitat from old fires, while prescribed burning will eliminate fisher habitat. Why isn't the fisher also considered in restoration needs?

G- fisher habitat

There is a natural restoration of lynx and fisher habitat from natural succession in the IRA to be treated. Since this is the best action for restoration, why isn't it included in an action alternative?

Core grizzly bear habitat will be burned in the project, including almost 2,000 acres. Grizzly bears will be displaced from this activity, which defeats

H-core grizzly bear habitat

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the purpose of core habitat. This burning will reduce cover for grizzly bears, a species that likes dense cover (DEIS 271). Also, 230 acres of denning habitat will be destroyed with burning. These adverse impacts clearly do not represent "restoration" of ecosystem values.

7. Purpose for Project

A-Forest Health

The stated purpose for the Project is similar to what we addressed above, in that the public is being mislead as to the reason for the Project. The DEIS claims that the project will improve the long term health and reduce fuels, that it will enhance wildlife habitat by restoring aspen, and will improve forest health by reducing susceptibility to insects and disease; will restore tree species diversity to improve wildlife habitat, and will improve habitat and connectivity, and will move the area to a more health ecosystem. There was not a single quantitative measure as to how these various factors were measured by the agency, so that the public can understand what these claims actually mean. For example, how is forest health defined? It apparently does not include wildlife. As noted in the DEIS, a host of wildlife depend upon dead trees for nesting and foraging habitat. So removing dead trees killed by the pine beetle clearly will not improve forest health. For another example, the problem with current tree species diversity for wildlife was never defined. Why does it need to be changed, and what does it need to be changed to in order to address habitat problems for wildlife.

B-Conifers in aspen stands

Even logging aspen stands is not clearly a benefit to wildlife. Mixed aspen/conifer stands are known to be important for various wildlife species, including the threatened lynx. Conifers in aspen stands provide the larger class of snags needed by many wildlife species as well. The actual rationale for removing conifers from aspen was not provided. What level of canopy cover of conifers in aspen is being targeted for treatment? What level of conifer canopy cover is considered problematic for aspen viability? There was no inventory of a single aspen stand as to current condition. And as mentioned previously, the problem for aspen in the west appears to be

C-Livestock and aspen

largely destruction by livestock. Removal of livestock would be a valid restoration project for aspen and wildlife habitat. There was no proposal in the DEIS for this valid action.

AS for the pine beetle, the research by Jones in Idaho (1991as cited in the bibliography) clearly demonstrated that fishers were selecting lodgepole pine stands in the winter that were infested with pine beetles, and were

falling apart. This created an abundant supply of logs, an important feature for fisher habitat.

D-Benefits of pine beetle

There has been research on the Helena National Forest regarding the benefits of the pine beetle to wildlife. Why is this research being ignored, and instead, the agency continues to claim that pine beetle infested areas need to be logged.

8. Cumulative Effects/Snag Habitat Analysis

There was no discussion in any of the wildlife sections as to the amount of logging that has already occurred in the Project Area, with the exception of the roadside hazard tree removal of 382 acres (DEIS 230). Yet past logging has been very extensive in this landscape, and it likely explains the shortage of habitat for almost all evaluated wildlife species in the Project Area (e.g., goshawk, pileated woodpecker, fisher, pine marten, elk security, habitat effectiveness). As is noted in the DEIS, for example at 217 notes that per FIA data, there are almost no snags in past logging units, clearcuts.

Past logging includes:

3,872 acres of clearcutting
373 acres of other types of harvest
822 acres of precommercial thinning
7,922 acres of fuels treatments

A - Logging and snag-associated wildlife

These past logged areas and fuels treatment areas were never mapped. So the public cannot see how they relate to the proposed additional logging. Of particular concern is the snag habitat within these thousands of acres of logged and treated habitats. There was no analysis of how these past logging area have affected snag-associated wildlife. This is a significant lack of analysis, as it shows that the agency has not taken a hard look at the proposed logging. If the impacts of past logging are unknown on over 25-30% of the forest wildlife that depends upon snags and logs, how can additional logging be planned?

The association between past and planned logging areas was also not addressed as per fragmentation of snag habitat. Since there are likely few to now snags in past harvest units, and also, most wildlife will not nest/roost/den in logged areas, the additional logging close to past logging

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areas will create large voids of snag habitat. It is not clear that there is any limit to the size of these habitat voids that the agency is planning. Also, what percentage of any localized landscape can lack snag habitat and still maintain viability of snag-associated wildlife? The only analysis of snags in the DEIS is a summary of the average snag densities across the entire landscape. This is a meaningless analysis, as any localized impacts of logging cannot ever show a change in snag habitat, since these changes will be washed out by the average over thousands of acres.

As noted by the DEIS at 258, fragmentation leads to smaller patch sizes and greater distances between habitats, and can decrease density and increase edge effects. How fragmented does forested snag habitat have to become before it is unsuitable for persistence of snag-associated wildlife?

The FIA data also overestimates snags, since this data was not taken in harvest units (DEIS 220).

B Lack of snags

The retention of several snags per acre in harvest units, as is claimed to be implemented for the Project (e.g, DEIS 217), will not maintain forested snag habitat for wildlife. It will not even maintain snags for those species that will nest in clearcuts, or partially-logged areas. As is noted in the DEIS, any snags left in units will fall within several up to 14 years (DEEIS xi). This means that for the majority of the next 100 years, there will be no snags in harvest units, or snags that are at least 10 inches dbh, as is the minimum recommended size of snags as per the current best science. Yet there was no analysis in the DEIS as to what this lack of snags will do for viability of associated species.

The claim that the project will actually increase snags is based on the prescribed burning that is planned to kill many acres of forest. These forests will produce and retain snags even if they aren't burned, while burning will destroy the forests for a host of vulnerable wildlife species. So it is an improbable claim that burning the forest to create more snags will benefit wildlife, and balance out the loss of snags in harvest units. In addition, many species of wildlife will not nest in burned forests, just as they do not nest in harvest units. So there is no point in burning a forest to create snags, and most snag-associated species will not benefit from this.

The DEIS at 245 claims that the agency is following the Northern Region Snag Protocol, including that developed for the eastside forests. There is no

analysis provided as to what the Protocol requires, or how this is consistent with the Helena Forest Plan snag direction. They are not the same, so how can the agency follow both? If an agency claims they are using certain management recommendations in a DEIS/EIS, then these recommendations must be followed, or the public is being mislead. Please define what implementation of the Northern Region Snag Protocol entails, and if you are using it. If not, why not? Isn't this Protocol the current best science?

C -Availability of large snags

Large snags are the most limiting on the landscape, and are the most important to wildlife. The impact of the project on treated acres on short and long term availability of large snags was never addressed in the DEIS.

D -Snags and MIS

The claim that the Project will meet the Forest Plan snag direction is meaningless for most wildlife species, including the pileated woodpecker and hairy woodpeckers, both MIS for the Forest. Neither species will nest in harvest units in general, as they require relatively high canopy cover and a high density of larger snags (more than 2 smaller snags per acre). The Helena Forest Plan has no management direction for cavity-nesting species that will not nest in harvest units, except for old growth habitat. And this standard is for only 5% habitat, while at least 20 % old growth is recommended for the pileated woodpecker. So the Forest Plan has no conservation strategy for the MIS pileated woodpecker.

E - Old growth and MIS

9. Roads

A-Open road density

The open road density within the two lynx analysis units (LAUs) is stated in the DESI at 266 to be 2.8 miles per section in BL-07, and 1.9 in BL-08. The open road density for elk is stated to be 1.69 and 1.74 for the two impacted herd units (Beaver Creek and Keep Cool) (DEIS 450). The Forest Plan at II/19 requires that the open road density in grizzly bear recovery habitat be no greater than 0.55 miles per section. The 2006 BiOp for Recovery Habitat at page 23 notes that the open road density for the Arrasta subunit is 0.47 miles per section, and for the Red Mountain subunit, 0.36 miles per section. This seems unusual given that the open road densities in the overlapping LAUs are much, much higher. This discrepancy was never addressed. Nor was the likely increase in open road density during Project implementation ever addressed.

The mitigation measures in the DEIS at 55 note that the Project will require use of closed and restricted roads. Yet there is no actual description of how

many miles of each of these types of roads will be used, or how much it will increase open road density during Project implementation. The assumption seems to be that as long as the public is not allowed on these closed/restricted roads, they do not count as open motorized routes for elk and grizzly bears. The science for this assumption needs to be provided. The grizzly bear management guidelines for the NCDE define an open road as more than 1 vehicle trip per day for a season, which will clearly include logging roads.

B-Grizzly Bear Consultation

The agency failed to complete formal consultation for the Project for grizzly bears, or obtain an incidental take statement from the USFWS, for the Project. The agency claims (e.g., xv, 405) that the project is not likely to adversely impact bears. Yet as noted above, a considerable number of restricted and closed roads will be used for the Project. Thus the open road density will increase, and thus will trigger higher adverse impacts for the bear than already exist in this Northern Continental Divide Ecosystem (NCDE), for the Arrasta and Red Mountain grizzly bear subunits of the Landers Fork Bear Management Unit (BMU).

C-Consultation Arrasta and Red Mtn.

The agency also failed to complete formal consultation for the Project to address the planned violations of the 19-19-68 recommendations for management of the two affected subunits, Arrasta and Red Mountain. Although partial adherence to these recommendations was allowed in the 2006 BiOp, adherence to these recommendations is not currently being met, and will clearly not be met during project implementation.

10. Grizzly Bear

A-Formal Consultation

As noted above, if the Project violates the open road density standard for grizzly bears in Recovery Habitat, this would qualify as an adverse impact. It is questionable whether the agency will actually meet this standard. This alone would trigger consultation and an project incidental take statement. Consultation is also required because there will be an increase in open road density during Project implementation, over existing conditions. Formal consultation is also required because the Forest is violating the incidental take permitted for the Arrasta and Red Mountain subunits at present, and this violation will be exacerbated with Project implementation.

In 2006, the USFWS provided a biological opinion (BiOp) for grizzly bear recovery habitat on the Helena National Forest. This BiOp defined the level

percentage of the Red Mountain and Arrasta bear subunits as per the Flathead National Forest Amendment 19 guidelines, or the 19-19-68 rule (no more than 19% of a subunit containing more than one mile of open road per section, no more than 19% of a subunit containing over 2 miles per section of total road, and at least 68% core habitat. During the 2006 BiOp, the Arrasta subunit met all three criteria (BiOp Table 4 at page 22). The open road density was 15%, the total road density was 17%, and security habitat was 75%. Currently, the open road density is 17%, the total road density is 21%, and core habitat is 73%. So this subunit is out of compliance for total road densities, and is not meeting the incidental take statement of 2006.

The Red Mountain subunit had 25% open road densities in 2006, 19% total road densities in 2006, and 67% security in 2006. Currently, the open road density is 25%, the total road density is 24%, and security is 56%. In 2006, the USFWS determined that the open road density level of 25% was included in the incidental take statement. And security levels were close to the recommendations. However, security has currently declined considerably below 68%, while the total road density has declined considerably below the recommended level (24% versus 19%). Thus the Forest is currently out of compliance with the 2006 incidental take statement, and thus in violation of the Endangered Species Act.

B-Incidental Take

The agency has no current BiOp for grizzly bear habitat in the distribution zone outside the Recovery Zone. The evaluated distribution zone in the previous BiOp was based on bear distribution in 2002, or 11 years ago. An updated BiOp is clearly required for management of grizzly bears outside the 2002 distribution zone. The planned impacts to this landscape outside the Recovery Zone include at least 197 acres of logging and 399 acres of burning, which are displacement activities. Also, the open road density during these activities will be an adverse impact.

C-update Biological Opinion

The agency will also create adverse impacts to grizzly bears by burning in core habitat. This will include at least 1821 acres (DEIS 398). This includes burning of 1218 acres of core habitat in the Arrasta subunit, and at least 603 acres of core habitat in the Red Mountain subunit. These activities will occur when grizzly bears would be using this habitat, and will displace bears from core habitat. This displacement defeats the purpose of core habitat, especially when other land management activities will be occurring in the surrounding landscape. This failure to adhere to the recommendations for core habitat is a violation of the ESA, and adverse impacts to grizzly bears

D-burning

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will result. This burning includes the destruction of 116 acres of denning habitat in the Arrasta subunit, and 114 acres of denning habitat in the Red Mountain subunit.

E-Maps

The agency failed to provide any maps of the current core habitat in the two subunits that lie within the Project Area. The agency also failed to define the seasonal security areas for grizzly bears in the Project Area, as required in the management protocol (NCDE Access Management Rule Set Proposed Direction 1998).

F-Seasonal Security Areas

G-Best Science

The agency failed to use the current best science in defining Project impacts on grizzly bears. New science indicates that open road densities outside of core habitat is just as important as core habitat, as bears have to travel through non-core habitat to reach other core areas. Thus open road densities need to be managed separately from core habitat. This better explains the environment that grizzly bears are living in. The agency needs to define open road densities outside the core areas for the Project, and define how these densities affect habitat suitability and mortality risk for grizzly bears.

11. Canada Lynx (Lynx)

A-ESA Violation

The Project Area is located in Unit 3 of lynx critical habitat. The agency claims at DEIS 393 and xv that the Project may affect, but will not adversely affect the threatened lynx. This is a violation of the ESA, since lynx will be adversely impacted by the Project. The agency is required to do formal consultation for the Project to obtain a BiOp and incidental take statement from the USFWS. The Forest Service does not currently have a programmatic or site-specific BiOp for critical lynx habitat.

B-Precommercial Thinning

Examples of detrimental impacts to lynx from the Project include at least 822 acres of precommercial thinning. This destroys hare summer habitat, and thus adversely impacts lynx. This precommercial thinning will occur in old harvest units as well as mature forest stands that will be logged. These include younger forest stands that have not yet developed relatively dense understories, or suitable lynx winter habitat. Thus the precommercial thinning in these stands will eliminate future lynx winter habitat, a habitat that is key to lynx persistence. The prescribed burning, as well as logging, is also intended to remove the understory of treated stands, especially spruce and alpine fir. These smaller understory trees will either be slashed prior to burning, or slashed during logging operations. These are the key tree species

in lynx winter habitat, and thus this understory removal will eliminate lynx winter habitat in burning and harvest units. The objective of most (or all) of the treatments is actually to eliminate existing and developing lynx winter habitat (e.g., DEIS viii, 15, 57, 69, 99, Table 29 at pages 157). The complete stand will be removed in regeneration harvest units, which will also remove existing and developing lynx winter habitat. A good example of lynx winter habitat is provided in Figure 41 at DEIS 183, and this is identified as a problem because of ladder fuels. The current best science indicates that

C-Winter Travel Barriers

winter lynx habitat should not only be preserved, but recruited to promote conservation of the lynx in Montana. In addition, both thinned forests, as well as regeneration units, will create winter travel barriers to lynx, making habitat use in the winter much more difficult. Logging will eliminate developing old growth, which is key to lynx winter survival.

D-Habitat Fragmentation

There was no analysis in the DEIS regarding fragmentation impacts to lynx from the Project, including logging and burning. Since lynx do not cross openings in the winter, and also avoid thinned forests, fragmentation will be greatly increased with the Project. Also the past impacts of logging, burning and fragmentation were not addressed. The DEIS at 260 notes that fragmentation reduces patch size and increases the distances between suitable habitats for wildlife, and at 262 notes that lynx must be able to move freely between hunting patches of suitable habitat. This will not be possible when the habitat is fragmented with travel barriers in the winter. The DEIS

E-Connectivity

at 378 acknowledges that regeneration units will reduce connectivity for lynx, but did not identify that thinned forests have similar effects as per the current best science. It is not correct, also, as claimed in the EIS at 378, that the pine beetle infestation has reduced connectivity for lynx. DWD and remaining understories will still provide some level of cover for lynx, and remaining smaller trees will quickly fill in since they will not be logged. The current best science indicates that at a given level of fragmentation, habitat is too diluted to allow persistence of a species. The agency needs to define what level of fragmentation and availability of winter lynx habitat is needed in this landscape to promote conservation of the lynx.

F-Lynx Winter Habitat

The DEIS does not ever address lynx winter habitat. There are endless references to hare winter habitat, but this is not the same and winter lynx habitat. Only older multistoried forest stands are winter lynx habitat, while young clearcuts are winter hare habitat, but not winter lynx habitat. Because the agency did not indicate this critical difference between winter hare and winter lynx habitat was addressed in the analysis, the entire analysis is

flawed. The agency needs to specifically address the management of winter lynx habitat. This is the most key factor in lynx persistence.

The NRLMD does not address lynx winter habitat. So adherence to the general principles of the NRLMD does not ensure persistence of lynx. The NRLMD also does not address habitat fragmentation, or recruitment of lynx winter habitat from mid-seral forests. The NRLMD therefore cannot be used as a measure of impact from proposed management of forests where lynx are present. And of course, the NRLMD has not had consultation for critical habitat, a factor that also makes it unusable as a measure of impacts to lynx.

The DEIS notes at 99 that 69% of the Project Area is an alpine fir habitat type. This means that at least 69% of the Project Area could provide lynx winter habitat is left to develop naturally. This landscape obviously has the potential to provide important habitat to lynx, which is likely why it has been designated as Unit 3 critical habitat. Management activities that promote seral forests rather than climax spruce and Engelmann spruce will not promote conservation of the lynx.

G-Lynx Habitat Vegetation

H-NRLMD

The DEIS notes that the 6% exemption as per the NRLMD will be applied to the Project (DEIS xv). Tkhe 6% exemption in the NRLMD applies to occupied lynx habitat, not critical lynx habitat. This exemption even for occupied lynx habitat is arbitrary, as it was never based on any habitat minimums that lynx need, including winter habitat and habitat fragmentation. The reduction of winter lynx habitat is critical to lynx persistence, as the DEIS at 262 notes that 29% of identified lynx mortalities in the winter were due to starvation.

I-Seeley Lake Population

Lynx in Montana appear to be declining in the Seeley Lake area, which contains the best lynx population in the state. Any management actions that further reduce lynx habitat in a declining population will potentially jeopardize the continued existence of lynx in the Northern Rockies.

The DEIS at 262 notes that a lynx was known to den in the Canyon Fire 24 years after the fire. It was also noted that DWD provide both logs and overhead cover as security for lynx kittens when they are old enough to travel. This brings up a key point in forest management in lynx habitat. Forest thinning and regeneration harvest do not have the same effects as fire, as fire leaves the DWD for both current use by hares and by lynx as travel

cover, and as future denning habitat for lynx. This is a significant issue that was never addressed in the NRLMD.

J-Summer Hare Habitat

The DEIS does not address, or even identify the adverse impact to lynx from precommercial thinning of young clearcuts that are currently unsuitable for lynx because they do reach above the winter snow levels (DEIS 262, 375). This treatment is not included in Tables 91-92 of the DEIS at 375. This will entail the destruction of summer hare habitat, and be an adverse impact on lynx, and the acres involved need to be identified to the public.

G-continued

The DEIS does not address the high value of mid-seral forest stands that will eventually develop into lynx winter habitat, the habitat most critical to lynx persistence. The DEIS does note, however, that old growth is best for lynx at 265. Yet the development of this older forest habitat is completely ignored, as are the impacts of the proposed logging and burning on preventing this development of winter lynx habitat.

F-continued

The suitability of winter lynx habitat in each of the 2 LAUs affected was never addressed in the DEIS. BL-7 has 32% winter habitat, while BL-8 has only 13%. Is either level adequate, and if not, recruitment should be considered, not prevention of recruitment as is planned in the Project. Table 91-92 does not include any information on lynx winter habitat, so apparently it was not even considered in the analysis, even though it is key to lynx conservation.

K-IRA

The destruction of lynx habitat in the IRA does not promote ecosystem function. This destruction is a violation of the Roadless Area Conservation Rule, as IRAs are especially important to promote persistence of threatened and endangered species, or areas that are free from agency management activities. Burning forests, including key winter habitat, as well as creating movement barriers in burned areas up to 75 acres, is directly counter to lynx preservation.

L-Treatments

The DEIS, for example at 375, claims that logging will promote multistory lynx habitat. This is both a NEPA and an APA violation, as the rationale and science, plus monitoring, upon which this claim was not provided. This is clearly a misrepresentation of the impacts of the project being presented to the public. Also, the DEIS at 378 claims that burning will promote hare habitat over nontreatment. The basis and science for this claim also were not provided. This information is quite important, especially as from all

appearances, the treatments will have severe adverse impacts on lynx, rather than will be beneficial. Also, the DEIS at 395 claims that partial harvest and burning will improve non-winter hare habitat. The basis for this claim was never provided. It is not clear why forest thinning and removal of most of the understory will improve hare summer habitat, since cover will be removed. No scientific reports to demonstrate that this type of harvest has increased hare numbers in Montana were cited.

The DEIS at 380 acknowledges that logging and burning will reduce red squirrel habitat, a potentially important alternate prey species for lynx.

H-continued

The agency claims they are following the NRLMD, yet this is not actually correct. The requirement that no more than 30% of an LAU be in an unsuitable condition at any given time cannot be met due to the Snow Talon Fire. This is a Forest Plan violation. LAU B-08 currently has 36.7% unsuitable lynx habitat. The agency is violating the NEPA as well by claiming the NRLMD standard for no more than 30% habitat unsuitable is currently being met in the Project Area.

The NRLMD does not provide a NEPA assessment of project impacts on lynx. For example, 15% of a LAU could be clearcut at any given time. For LAU B-07, there is only 331 acres of unsuitable habitat at present. Alternate 3 would create at least 582 acres of additional unsuitable habitat (regenerated). The total lynx habitat in this LAU is 17,632 acres. 15% of this equates to 2644 acres. Thus a total of 2644 acres, minus the existing 331 acres, could be clearcut within the next 10 years. The Stonewall Project will not come close to reaching this allowed habitat loss. This clearly demonstrates that the function of the NRLMD is to allow considerable habitat loss in lynx habitat, even though lynx population declines may result.

The DEIS did not define the number of total acres that are allowed on the Helena National Forest as per the 6% exemption provided for in the NRLMD.

12. Old Growth Management

A-Logging and Burning Old Growth

There is no information provided on how much old growth, as per the Region 1 old growth types defined in Green et al. 1991, that occur in the Project Area. Also, it is not clear how much old growth has been previously logged. This information is important, as 3 of the Forest's MIS require

considerable levels of old growth. The pine marten should have 20% old growth, the goshawk should have 20% old growth, and the pileated woodpecker should have 20-25% old growth. Also, forest songbirds should have 20-25% old growth. You cannot not address viability of this suite of species if the old growth management program is not defined. You can ensure that you are meeting the diversity requirements of the NFMA without this type of analysis. Meeting the Forest Plan standard of 5% "designated" old growth does not meet the NEPA requirements to address the needs of old growth-associated species. This 5% does not even define actual old growth.

In regards to old growth, it is also important to demonstrate that recruitment old growth is also being provided. Replacement old growth cannot be provided if older and mid-seral stands are degraded with logging and burning.

B-logging old growth

The DEIS claims that logging old growth will not affect its value to wildlife. No citations were provided to support this claim. The current best science indicates that logging will degrade values for the goshawk, fisher, pine marten, lynx, and many forest songbirds.

C-map old growth

Existing old growth stands should be mapped as well. Also, their location to proposed and past treatment units would provide valuable information to the public, especially dealing with fragmentation. Many wildlife species require minimum sizes of old growth, and small patches of old growth would not meet their needs.

D-burn in old growth

It is not clear why the agency would burn old growth forests. This is ecosystem destruction, and appears to be based on a jobs program for the agency, not ecosystem management.

13. Forest Plan Monitoring of MIS Populations

The DEIS failed to provide any monitoring data for MIS population trends, or habitat availability on the Helena National Forest. This information is especially important for the Stonewall Project, as habitat for MIS pine marten, goshawk, pileated woodpecker and the hairy woodpecker will all be reduced with the Project. Given that habitat losses are planned, the agency needs to demonstrate that population viability is still being maintained, not just for the project area, but cumulatively across the Forest. This would not be so critical is habitat for these species was not being reduced by agency

management activities. Also, for these MIS, the DEIS failed to define how diversity will be maintained as per ensuring viability of these various MIS. There is not current biologically-effective conservation strategy in the Helena Forest Plan for any of the 4 MIS, goshawk, pileated woodpecker, pine marten and hairy woodpecker. As noted previously, the 5% old growth standard for the Forest Plan is far below what management recommendations for 3 of these 4 species defines (20-25%). The Forest Plan is not currently capable of ensuring viability of any of these MIS.

13. Pine Marten

A-Habitat Monitoring

The DEIS failed to provide any population or habitat monitoring for the pine marten. The 5% old growth standard for the pine marten in the Forest Plan is insufficient, as 20% is needed as per the current best science. In addition, the DEIS at 444 notes that 60% of a landscape should provide mature forest habitat for the pine marten. There was no analysis as to how the proposed old growth management will ensure viability of this MIS. AS per the DEIS at 302, only 35% of the Project Area has trees over 10 inches dbh, so habitat currently is limited. This may actually be lower, since it is unlikely that all these forests have canopies over 40%. With treatment on up to almost 3,000 acres of pine marten habitat with both logging and burning, habitat would be reduced down to only about 6,000 acres, or 28% of the landscape. The agency did not indicate whether this was enough habitat to allow persistence of marten, since it would be far below the 60% composition of mature forest indicated as necessary for this MIS.

B-Old Growth Management

C-Treatments effects

The DEIS claims that partial harvests will maintain pine marten habitat. The canopy cover for treated areas was never provided, however. In addition, the DEIS at 301 and 444 notes that marten like closed canopy forests. No Forest Plan monitoring was provided to indicate how marten respond to partial logging on the Helena National Forest. No science was cited indicating marten are not harmed by partial logging. It was noted that regeneration harvest removes marten habitat, which is correct.

The fragmentation impacts of logging and burning were not evaluated in the DEIS. Pine marten avoid crossing openings, especially in the winter. The Project will result in extensive fragmentation of marten habitat, and will add to fragmentation impacts of past logging. The level of fragmentation that pine marten can tolerate in their habitat was not identified. It is unknown if 60% mature forest with closed canopies currently exists, or will continue to

exist, after Project implementation. There is no evidence that the agency is attempting to maintain pine marten populations in this landscape, or elsewhere on the Forest.

14. Pileated Woodpecker

A-Existing level of Habitat

It is not clear how much total habitat is available for pileated woodpeckers in the Project Area. Pileated woodpecker habitat is not even defined as per characteristics. This lack of information results in a flawed analysis, since the impacts of the project cannot be accurately defined. For example, the pileated woodpecker generally likes habitat with dense canopies and multiple canopy layers, and a large abundance of large logs and snags. All these features will be removed with treatment, including burning. The DEIS at 439 indicates that 16% of pileated woodpecker habitat will be removed, with a total potential 3,570 acres affected. The existing level of pileated woodpecker habitat is not provided, and could not be estimated due to the erratic information provided on habitat effects. This information needs to be provided to the public. Also, the adequacy of existing habitat needs to be addressed, as well as how proposed reductions will affect habitat availability. As one example, the DEIS does not address how old growth habitat levels are meeting recommended levels for this species.

The Forest Plan standard for old growth is inadequate to ensure persistence of this woodpecker, as is the Forest Plan snag standard. This standard addresses snags in harvest units, or areas where the pileated woodpecker generally avoids for nesting.

Overall, it is not clear if even existing habitat for the pileated woodpecker is adequate in the Project Area. The agency has no data on Forest population trends of this species even though they are proposing to further reduce habitat in the Stonewall Project. This depletion of MIS habitat requires a Forest-wide analysis of cumulative effects, since the agency is demonstrating that management activities are not preserving habitat for this woodpecker in sight-specific projects. If this is happening across the Forest, then this species may be losing viability.

15. Goshawk

The DEIS failed to evaluate goshawk habitat by the current best science. Habitat analysis for wildlife typically includes the full range of age and size

classes, including for the goshawk as per the southwest guidelines. This was not done for the Project, and it is impossible to determine the status of goshawk habitat in this landscape by forest age and canopy density class. The Region 1 definitions of goshawk habitat cannot be compared to the southwest guidelines, so the latter information should also be provided. This information is available through Region 1 VMap methodology.

A-Foraging Habitat

The DEIS should simply define goshawk foraging habitat, as the use of both foraging and nesting habitat is confusing and makes any analysis difficult to understand. It is also not clear if these acres overlap, which would actually be the case.

The DEIS at 380 and 430 correctly notes that intermediate harvest will reduce red squirrels, which is reasonable given this species is associated with mid and late seral closed canopy forest (DEIS 253). The DEIS at 430 also notes that intermediate harvest will reduce snowshoe hares. Both the red squirrel and snowshoe hares are key goshawk prey species in Montana. The DEIS claims that other prey species will increase, thereby maintaining goshawk foraging habitat, but which species these are were never identified. Overall, the proposed actions, including both logging and burning, will eliminate or severely degrade goshawk foraging habitat, and thus reduce the potential of this landscape to maintain breeding goshawks. This is all the more likely given that this habitat is already degraded from past logging and fires. It appears that there is only 35% foraging habitat (mid to old forest habitats) in the Project Area (trees over 10 inches dbh) (Table 104), while the current best science recommends 60% of this foraging habitat. In addition, the current best science recommends 20% old growth as prime foraging habitat. The level of old growth in this landscape was never

B-Breeding Habitat

provided. The Project will treat up to almost 3,000 acres through logging and burning, which could reduce goshawk habitat down to 24%. These reductions will also occur within both goshawk postfledging areas. The agency failed to define why this level of habitat is suitable for goshawk breeding in this landscape as per the current best science. It is likely that both goshawk territories will be eliminated, or converted into ephemeral territories, due to habitat losses.

C-Red-tailed Hawk

This degradation will be exacerbated by the conversion of much of this logged/burned habitat into red-tailed hawk habitat. The DEIS suggests that there is no science indicating this is a problem, but this is incorrect. An extensive analysis of habitat conversion from goshawk to red-tailed hawk

habitat has been done, and demonstrates this is a severe management problem for goshawks.

D-Population Monitoring The Forest has no population monitoring data for goshawks, so their population trend is unknown. It is likely that the management activities proposed for the Stonewall Project are similar to typical management programs across the Forest, where goshawk habitat is being systematically eliminated and/or degraded. The Project must evaluate habitat trends for this MIS across the Forest, and demonstrate that management activities are not systematically eliminating this MIS from the Forest.

The agency is also violating the Forest Plan, due to lack of population monitoring, by failing to measure the effects of management activities on MIS habitat, including the goshawk. The vague assumptions regarding project impacts on goshawk prey species, and the effect of forest opening on invasion of red-tailed hawks, demonstrate a total lack of any monitoring on management effects on goshawks.

There was no information provided in the DEIS as to what the current estimated population trend of goshawk and goshawk habitat on the Helena National Forest is. So the agency clearly did not take a hard look at how the current project may affect forest viability in both population numbers and habitat availability. There was also no information provided on the productivity and quality of the two goshawk territories in the Project Area. Occupancy rates of nest sites is a good indicator of habitat quality. The agency needs to compare occupancy rates with existing habitat levels, and address what this indicates for this landscape for goshawk viability.

Even though the DEIS suggests that goshawk foraging habitat should be at least 40% (this is not actually science, as the prey present is what determines foraging habitat), the agency then claims that foraging habitat will still be maintained even if the canopy cover is reduced below 40% (DEIS 430).

The Project will not maintain the required size/density of snags for goshawks in harvest units. The current best science recommends 2 snags at least 18 inches dbh per acre in goshawk foraging habitat. This exceeds the Helena Forest Plan snag direction.

16. Fisher

A-Fisher Prey Species

The proposed treatments will impact fisher in at least 2 manners. The DEIS at 430-431 notes that logging and burning will reduce the red squirrel, the red-backed vole, and the snowshoe hare, all important prey species for the fisher.

B-Impact of Intermediate Harvest

The DEIS claims that only 9-12% of fisher habitat will be removed with the project, including logging and regeneration harvest. No impact is suggested for intermediate harvest (DEIS 413). This is incorrect, as the fisher relies upon complex forest structure, including the understory, and this understory will be removed with logging and burning. In addition, the fisher does not use habitat with less than 50% canopy, and this canopy level will not be met in many of the partial harvest units (although this information is never clearly provided).

Considering all impacts, from regeneration harvest to partial harvest to burning, from 25-38% of existing fisher habitat will be removed in the project. It appears that current habitat is about 38% of the landscape (DEIS xvi), but is more likely 35% (or less) which is forests with trees over 10 inches dbh as per Table 104. The DEIS at 279 indicates there are only 4,400 acres of fisher habitat in the Project Area, which would be only 18% habitat! If 2516 acres are degraded with treatment with Alternative 3, this would leave only 1884 acres of fisher habitat remaining, or 8%. Thus the Projecvt will largely eliminate fisher habitat in this landscape.

C-Project Treatments

The agency did not define how much habitat is required on a landscape to allow persistence of fisher, so the impacts of the project are unknown but likely severe. The agency clearly did not take a hard look at project impacts as a result.

D-Fisher Viability

Given the agency's management regime which will remove over half of the existing fisher habitat in the Project Area, the agency needs to demonstrate that this is not a Forest-wide pattern, and that in spite of management in the Stonewall Project Area, fisher habitat is being maintained in occupied areas of the Helena Forest. However, it appears that the Stonewall Project Area is one of the limited areas that the fisher does occur on the Helena National Forest. So the agency has not demonstrated that the viability of this species will be maintained on the Forest due to the Stonewall Project.

E-Fragmented Habitat

A hard look was also clearly not taken due to the lack of assessment of fragmentation impacts on fisher. They are known to avoid crossing openings greater than 82 feet wide, and prefer forest patches at least over 100 acres in size. The Project will create many movement barriers for the fisher, and reduce remaining habitat to potentially unusable levels for persistence. In addition, fisher at known to avoid using clearcuts until they are almost 50

F-Clearcutting

years old. Thus the impacts of clearcutting will be long term. These long term impacts were not addressed in the DEIS.

The removal of forest stands impacted by the mountain pine beetle will clearly be an adverse impact to fisher. Research in Idaho noted that older forest stands impacted by pine beetles were important winter habitat for fisher because of an abundance of logs.

17. Wolverine

A-Treatments

The DEIS at 73 noted that recent fires have reduce wolverine habitat on 23,000 acres (DEIS 406). Yet the Project proposes to burn several thousand more acres of wolverine habitat. The rationale for this ecosystem restoration was not provided.

Past impacts of logging and fire on wolverine prey were not assessed.

B-Prey Species

The wolverine prey species include red squirrels and snowshoe hares (DEIS 275). All the proposed treatments will reduce both prey species, so the Project will have adverse impacts on wolverine foraging ability.

C-Denning Habitat

The Project will burn almost 1,000 acres of wolverine denning habitat. This will also be an unnecessary adverse impact called ecosystem restoration.

D-Biogogical Opinion

The agency failed to obtain a BiOp for these adverse impacts on wolverine, since the species will likely be listed prior to or during project implementation.

A-continued

Forest thinining will cause earlier spring snow melt, thereby reducing habitat quality for the wolverine in treated areas.

18. Shrubs

Big sagebrush is the dominate mountain shrubs in the Project Area (DEIS 256). Up to 700 or more acres of mountain shrub habitat will be burned in the Project.. Sagebrush is important habitat for many songbirds, as nesting/foraging habitat. It is also important as big game cover and forage. Open sagebrush areas with mixed conifers is also fall/winter habitat for the goshawk. No rationale was provided as to why sagebrush will be burned (destroyed) with ecosystem restoration. Fuels reduction that requires elimination of important wildlife habitat will have much higher adverse impacts that beneficial effects in fire reduction. The chances of a given area burning are extremely small, while the chances of habitat loss for wildlife benefiting from sagebrush are 100%.

19. Whitebark Pine

A-Burning

Whitebark pine will be logged and burned in the Project (e.g., DEIS at 141), even though it is a sensitive species that is a candidate species for listing under the ESA. The DEIS provided no rationale as to why this tree must be destroyed in order to restore ecosystems. If this species is listed during Project implementation, the agency will require a BiOp to address degradation and/or destruction of whitebark pine or nutcracker habitat.

As is noted in the DEIS at 253, whitebark pine depends upon the Clark's nutcracker for viability. Whitebark pine is only marginally used by this nutcracker, as lower elevation, more productive forests, including ponderosa pine, are the primary foraging areas for this bird. Thus conservation of whitebark pine (in addition to not actually destroying it with fire, or logging its habitat) depends on management of this nutcracker. There is no mention

B-Clark's Nutcracker

of a conservation strategy for the Clark's nutcracker in the DEIS. The DEIS at xviii claims that the Project will restore 4,200 acres of flammulated owl habitat. This logging/burning will also destroy Clark's nutcracker habitat by significantly reducing the conifer seed production that will occur on these acres. This will be a direct adverse impact on whitebark pine.

20. Flammulated Owl

The flammulated owl is noted to be listed not only as a sensitive species by the USFS, but as a high priority species by the Montana Steering Committee. Habitat in the Project Area is limited to approximately 1500

acres (DEIS 286). The agency has no idea if these acres are currently occupied by this species. This comprises only 6% of the Project Area, which is very limited amount of habitat for any species. Yet the agency will log and burn at least 435 acres of this habitat, or about 30% of existing habitat. It is not clear why this will ensure continued suitable habitat levels for this species. No analysis was provided as to why this will still provide adequate breeding habitat for this species. So there is no basis for claiming that the Project will not threaten viability of this species in this portion of the landscape. In addition, the DEIS does not address Forest-wide management of flammulated owl habitat, and if enough habitat is being maintained to ensure Forest-wide viability. If other areas of the Forest that provide flammulated owl habitat are being managed in the same manner (reducing existing habitat to very low levels), then the viability of this species across the Forest is questionable.

A-Breeding Habitat

The DEIS also failed to address why the current level of flammulated owl habitat is so low. The impacts of past logging (cumulative effects) were never addressed. It is clear the agency failed to take a hard look on project impacts on this species, since historical levels of habitat were never identified. If losses have already been quite significant, additional losses will be much more significant, and alternative actions that would avoid additional losses would have been considered.

B-Treatments

The DEIS at 423 notes that logging/burning may kill nesting/juvenile flammulated owls because no surveys have been done in the Project Area, even though this species has been documented in this landscape (DEIS 250).

The DEIS at xviii claims that the Project will restore 4,200 acres of flammulated owl habitat. The basis for this claim was never provided. There is research on the Bitterroot National Forest where it was noted that some flammulated owls nested in old partial harvest units that were quite old. It was also noted that these units had retained more trees that partial harvest units that were not used by nesting flammulated owls. So it is clear that there is a given level of harvest that will make nesting habitat unsuitable. This possibility was never addressed in the DEIS. It was just assumed that any logging will improve/restore flammulated owl habitat. The Bitterroot study did not claim that logging restored flammulated owl habitat, just that some nesting habitat was maintained. This study also noted that just because owls were nesting in snags in these units did not mean the habitat quality was equal to unlogged areas. This would require a study of nesting productivity,

C-Nesting Habitat

something that was not done in the study. So there is no evidence that logging in the Stonewall Project will maintain, let alone improve (restore) flammulated owl habitat.

D-Snags

The DEIS in the flammulated owl section claims that snag habitat in logged areas will meet the Northern Regional Snag Management Protocol, and thus will maintain owl habitat. The levels of snags required by this Protocol were not identified. However, they clearly exceed both the number of size of snags required by the Helena Forest Plan. If the agency tells the public they are using specific management recommendations for wildlife, then these recommendations have to be followed. There is no evidence this is being done for snags, including in flammulated owl habitat.

B-continued

The current best science indicates that understory and multiple canopies are typical of flammulated owl habitat. Both of these factors will be eliminated with burning and partial logging. Therefore, any claims that partial logging will maintain/restore owl habitat are false.

21.Migratory Songbirds

A-Closed-Canopy Forest

The Project will burn 13% of shrub habitat, and reduce closed canopy forests from 13,322 down to at least 9,907 acres (Table 87 at DEIS 344), or by 26%. The rationale for this reduction was never identified. It is not clear why this was chosen as an agency action, since this closed canopy forest is important for the goshawk, pileated woodpeckers (Forest MIS), the fisher (a Forest sensitive species), and lynx (a threatened species) (Id.). It is not clear why the pine marten was not included as a closed-canopy species, another Forest MIS. Also, priority species include the goshawk, pileated woodpecker, pine marten, lynx and fisher.

B-Treatments

The information provided in Table 87, DEIS 344, is vague and quite incorrect. The important factors that affect songbirds are not actually evaluated. These include at least 5 factors, including logging disturbance, hiding/thermal cover, conifer seed production, foraging substrate, and old growth.

There are at least 13 songbird species in Montana that are sensitive to logging and burning, and are generally only found in undisturbed forests. All of these species will be harmed by the Project.

Hiding and thermal cover, provided by dense forest canopies and structurally complex overstories and understories, are key to songbirds to protect them from inclement weather, especially in the early breeding season. In order to ensure successful reproduction, dense cover may be important to prevent predation, the most common cause of nest failure in songbirds. Hiding cover at the ground level is particularly critical to young songbirds when they fledge from the nest and are flightless for several days. If there is no hiding cover at this period, these young flightless birds will likely be killed by predators, or possibly by inclement weather due to a lack of thermal cover.

Clearcutting, burning and partial harvest will reduce the density of trees used as foraging substrate for most bird species, either on tree trunks or in the tree canopy, for insects. Forage reduction will also be reduced due to the agency's priority of reducing forest pests, as mountain pine beetles, Douglas-fir beetles, etc. Finally, forage for songbirds will be drastically reduced by a reduction in conifer seed production. There will be a huge reduction in the production of conifer seeds per acre, and this will also result in a huge reduction in songbird carrying capacity, including for priority species as the red crossbill, Cassin's finch, and Montana Species of Concern the Clark's nutcracker.

C-Old Growth

There was no analysis in the DEIS regarding the importance of old growth forests to many songbirds. Even though the Montana Partners in Flight 2000 report was cited (DEIS 250), the recommendation in there for 20-25% old growth for forest songbirds was not noted or considered.

A number of migratory songbirds are associated with or benefited by sagebrush, such as the Brewer's sparrow, chipping sparrow, mountain bluebird, green-tailed towhee, Cassin's finch, and Loggerhead shrike. There

B-continued

was no specific rationale provided as to why sagebrush habitat will be burned with habitat loss for many species of songbirds. It is not clear why this would represent ecosystem restoration.

D-Cowbirds

The impact of cowbird parasitism due to forest clearcutting and partial harvest was not addressed in the DEIS. This can be a significant adverse impact on many songbirds. Given the almost total lack of analysis of Project impacts on songbirds, it is clear that the agency has not taken a hard look at any of the likely impacts of the Project on migratory songbirds.

B-continued

The DEIS needs to clearly provide an estimate of the reduction of carrying capacity in forest and shrubland songbirds that will result from the proposed actions. This is the only way the public can understand the environmental impacts of agency management actions, in order to meet the requirements of the NEPA. The DEIS also needs to identify what the conservation strategy is for migratory songbirds, as this is not clear in the DEIS. Given that all actions will reduce habitat for some migratory species, and will not benefit any of them, there is a concern that this is the standard practice across the Forest, and that as a result, carrying capacity of migratory birds has been progressively declining over many years due to management practices of burning and logging.

Regards,

Sara Jane Johnson, NEC
PO Box 125
Willow Creek, MT
Phone: 406-285-3611

SJJ for
Mike Garrity, AWR
PO Box 505
Helena, MT 59624
Phone: 406-459-5936

6/5/13 Johnson Garrity Letter

Comment #	Response	Topic
1	The environmental impact statement prepared included most of the information prepared by the interdisciplinary team specialists in response to previous public involvement regarding disclosure of project analysis information in the environmental documents completed on the Helena National Forest. Electronic formatted documents were available to allow documents to be easily searched for specific items of interest.	NEPA
2A	The 'current best science' noted in the comment was not identified or included for review or consideration. Aspen was discussed under the vegetation section in the DEIS (pages 118-158), with anticipated effects summarized by alternative (pages 156-158). In addition, wildlife species associated with aspen types were discussed in the DEIS	Silviculture
2B	Stands identified for treatment have varying degrees of conifer encroachment, which is documented in the stand diagnosis and stand exam data.	Silviculture
2C	A project design feature for protecting aspen is included: Promote and protect existing aspen as needed during implementation. The DEIS discussed the presence of aspen at page 118: "In general, we can characterize aspen in proposed units and the project area as: (1) small clones, (2) heavily competing with to suppressed by conifers, and (3) a minor stand component (with a few exceptions)." The DEIS analysis considered the effects of livestock grazing on aspen and disclosed the anticipated effects pertaining to aspen at pages 132, 139-140, 153, and 156-158.	Silviculture
3A	The Forest is in the process of revising the land and resource management plan. Forest-wide standards for elk habitat effectiveness and elk security will be evaluated with that analysis. The draft Record of Decision for the Stonewall Vegetation Project addresses the site specific proposed amendment items related to this analysis. Adjustments in treatment timing were made and the elk analysis in the wildlife section of the FEIS has been updated to incorporate updated information.	Wildlife – FP amend elk
3B	See response to 3A pertaining to forest-wide standards. The elk analysis in wildlife section of the FEIS has been updated to incorporate additional information, including bull/cow ratios and consistency with elk population objectives in the State Elk Plan (MFWP 2005).	Wildlife – FP amend elk
3C	The draft Record of Decision for the Stonewall Vegetation Project addresses the site specific proposed amendment items related to this analysis. Adjustments in treatment timing were made and the elk analysis in the wildlife section of the FEIS has been updated to incorporate updated information, including changes in open road density and elk security during implementation. Anticipated levels of elk security habitat would be consistent with levels of elk security described in the Blackfoot travel plan.	Wildlife – FP amend elk

Comment #	Response	Topic
4A	The elk analysis has been updated in the wildlife section of the FEIS. See response to comments 3a through 3c and 4E for additional information updated in the FEIS.	Wildlife –elk
4B	The elk analysis has been updated in the wildlife section of the FEIS. Updated elk analysis is based on field surveys and herd unit information provided by the Montana Fish, Wildlife and Parks (MFWP 2005) elk management plan, as well as by more recent assessment of herd conditions (Kolbe 2012b).	Wildlife –elk
4C	The elk analysis in the wildlife section of the FEIS has been updated to incorporate updated information, including elk vulnerability.	Wildlife –elk
4D	See response to comment 3C. The elk analysis has been updated in the wildlife section of the FEIS. An updated elk security map is included in the FEIS.	Wildlife –elk
4E	The elk analysis has been updated in wildlife section of the FEIS, including habitat effectiveness discussions.	Wildlife –elk
4F	The elk analysis has been updated in wildlife section of the FEIS, including discussions of hiding and thermal cover. The draft Record of Decision for the Stonewall Vegetation Project addresses the site specific proposed amendment items related to this analysis.	Wildlife –elk
4G	Effects to mule deer and changes in habitat are discussed in the mule deer portion of the wildlife section of the FEIS.	Wildlife –mule deer
4H	The elk analysis in the wildlife section of the FEIS notes: Burning in shrub and grasslands has also been shown to increases both production and nutritional quality that benefit elk (Van Dyke and Darragh 2007) and low severity fire generally has the greatest benefit to elk when a mosaic of burned and unburned lands is available (USDA Forest Service 2011b, Long et al. 2008a). Burning is proposed to reduce encroaching conifer, to promote vigor of decadent sagebrush and stimulate reproduction of young sage. The value of sagebrush to wildlife was recognized and project design features are in place that will limit burning within sagebrush and ensure that sagebrush would be maintained on affected sites in the short and long-term. The compliance with Forest Plan Standard 8 is discussed near the end of the mule deer analysis in the wildlife section of the FEIS.	Wildlife –elk/deer
4I	The elk and deer analyses have been updated in the wildlife section of the FEIS. Forage availability for elk is variable across the project area. Due to the lack of disturbance, remote wilderness and roadless lands don't contain vegetative conditions that are conducive to producing abundant forage (MFWP 2005). Year-round forage species that would be expected to increase include shrubs such as *ceanothus* (Crotteau et al. 2012), Rocky Mountain maple, and serviceberry (Lentile et al. 2007).	Wildlife –elk /deer

Comment #	Response	Topic
	(There is no comment # 5)	
6A	The Stonewall project complies with the 2001 Roadless Area Conservation Rule (36 CFR 294.13(b)(1)(ii), and 36 CFR 294.13(b)(2)), as described in the DEIS, CH 3 Inventoried Roadless Areas, Compliance with Forest Plan & Other Relevant Laws, Regulations, Policies and Plans on page 602.	Inventoried Roadless Areas - IRA
6B	See response to comment 6A. The potential effects to roadless resources from the proposed action and alternatives were analyzed and disclosed in the DEIS, CH 3 Inventoried Roadless Areas beginning on page 580, pursuant to the requirements of NEPA.	Inventoried Roadless Areas - IRA
6C	Proposed burning was identified as an appropriate treatment tool to move vegetation towards desired conditions described in the Forest Plan.	Fire/Fuels
6D	The proposed burning in the IRA is based upon a comparison of the existing conditions and the desired mix of vegetation types. The Forest Plan and EIS describe the desired condition. The fire regime and fire return intervals have been interrupted, therefore implementing prescribed burning under controlled conditions will result in fire effects similar to natural moderate intensity fires that historically occurred, instead of the uncharacteristic high intensity wildfires that are common with these fuel loads and right weather conditions.	Silviculture – veg composition Wildfire
6E	The purpose and need for action is determined by the extent and intensity of differences between the existing and desired conditions, as noted in chapter 1 (DEIS pages 9-10): "Due to vegetation conditions in the project area being relatively homogenous by type, the area has not been very resilient to insects and disease. Stands were and are susceptible to insect attack and the mountain pine beetle outbreak has spread through the project area and many other stands remain highly susceptible to Douglas-fir beetle. Different types of proposed treatments would create more diverse vegetative structure moving the area towards more heterogeneous than homogeneous conditions. By taking actions now, a more diverse and sustainable forest may result moving the area towards meeting the Forest Plan direction of having a healthy and productive forest ecosystem." The proposed burning in the IRA is based upon a comparison of the existing conditions and the desired mix of vegetation types. The Forest Plan and EIS describe the desired condition. Effects of burning on wildlife habitat are disclosed in the species specific analyses in the wildlife section of the FEIS chapter 3.	Wildlife
6F	See response to 6E regarding the purpose and need for the project. As described in response to comment 6E, burning is proposed to achieve a variety of objectives. Treatment objectives include promoting ponderosa pine, western larch Effects of proposed action on lynx were discussed in the wildlife section of the DEIS. The lynx analysis has been updated to incorporate additional information in threatened and endangered portion of the	Wildlife

Comment #	Response	Topic
	wildlife section of the FEIS.	
6G	Treatment effects to fisher are discussed in the wildlife section of the FEIS and fisher habitat will be reduced due to proposed burning. While natural processes are increasing stand structure and fisher habitat, other processes such as MPB mortality are reducing habitat and much the proposed treatment occurs in areas where habitat has been or will be reduced in the future due to continued mortality. Also an alternative was developed that reduces potential impacts to fisher (alternative 3) and a "natural restoration alternative (No Action) was considered. See response to comment 6E	Wildlife - wildlife
6H	Effects of proposed action on grizzly bear were discussed in the wildlife section of the DEIS. The grizzly bear analysis has been updated to incorporate additional information in threatened and endangered portion of the wildlife section of the FEIS. Finally, a Biological Assessment (BA) that evaluates effects to threatened and endangered species including grizzly will be prepared and consultation with the United States Fish and Wildlife Service will be completed prior to signing of a Record of Decision (ROD), and will be included in the project record.	Wildlife - wildlife
7A	The project is designed to move towards the desired conditions described in the forest plan. A comparison discussion was provided in the DEIS at pages 156 through 162 on the achievements of purpose and need to enhance and restore aspen, western larch, and ponderosa pine species and habitats, and improve the mix of vegetation composition and structure across the landscape that is diverse, resilient, and sustainable to wildfire and insects. The level of dead trees was discussed in the DEIS under the subheading "Snags" see DEIS pages 220-222, 229-231, 236-237, 240. Wildlife related to dead wood, standing and down, were discussed in the DEIS. Black-backed woodpecker and flammulated owl are two sensitive species associated with snag habitat (DEIS pages 282-286). Pileated woodpecker and hairy woodpecker are two management indicator species associated with snag habitat (DEIS pages 297-301). The DEIS disclosed at page 347: "While the action alternatives would reduce snags and DWD and modify understory and overstory structure and species composition as described above, these habitats would continue to be available across the landscape. Additionally, due to fire restoration and reduced conifer encroachment, habitat for species that prefer or require the dry forest community would be maintained or improved over the long term."	NEPA forest health and purpose and need
7B	The DEIS discussed the presence of aspen at page 118: "In general, we can characterize aspen in proposed units and the project area as: (1) small clones, (2) heavily competing with to suppressed by conifers, and (3) a minor stand component (with a few exceptions)." The aspen stands identified for treatment were reviewed by the forest	Silviculture – conifer/aspen

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	staff and selected due the higher concentrations of conifer to aspen. There are numerous stands within the project area that are not being treated; therefore that habitat component is still available. As aspen need full sunlight to grow vigorously, the increased shade component from conifers reduces that viability. There is not a specific threshold of canopy closure by conifers that leads to aspen decline, but rather is a series of causal factors. The lynx analysis has been updated to address updated information and is discussed in the wildlife section of the FEIS.	
7C	Aspen treatments and anticipated effects were discussed in the DEIS (see pages 132, 139-140, 153, and 156-157). Livestock grazing management is analyzed under allotment management plans and beyond the scope of this analysis.	NEPA
7D	Effects of Mountain Pine Beetle mortality on wildlife and wildlife habitat are discussed throughout chapters 3 and 4 of the FEIS. While MPB has resulted in overstory mortality and reduced cover, benefits of mortality including increased understory vegetation and forage and increases in snags and down wood were recognized as a benefit to wildlife. While the DEIS recognized that MPB mortality increased habitat for snag dependent bird species such as the black-backed and hairy woodpecker, as the commenter points out, it did not include recent research on the HNF within beetle killed habitat. Information (Dresser et al. 2012) was consider and has been added to the wildlife discussion of MPB effects in the management indicator species section under the pileated woodpecker and hairy woodpecker discussions in the wildlife section in chapter 3 of the FEIS.	Wildlife - MPB
8A	Effects of past activities including logging and fuel treatments are discussed under the alternatives and species cumulative effects sections in the FEIS. The analysis summarized all past activities within the project area and combined area. For clarity, this information, has been displayed in the FEIS and includes activities since 1950 including over 4,000 acres of harvest, approximately 8,000 acres of fuels treatments, 4,500 acres of reforestation treatment and 800 acres of pre-commercial thinning. The methodology used to estimate snags is discussed under the Habitats of Special Concern section. The snag estimate presented is based on stand exam and Forest Inventory and Analysis (FIA) plots (DEIS page215), which included snags resulting from MPB mortality at that time. Also as described, because past harvest/regeneration units cannot be expected to have many snags and these sites are not represented in the FIA grid intensification plots used, we assumed that past harvest/regeneration treatment areas would have no snags and computed the 2008 snags per acre accordingly. Consequently effects of past actions on snags were considered and the snag estimate presented conservatively estimates available snags and habitat for snag dependent wildlife. In order to better address the distribution of snags, snag availability by	Wildlife – snag associated wildlife

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	watershed has been added to the dead wood analysis presented in the wildlife section of the FEIS. While it is suggested that proposed logging would create "large voids" of habitat for snag dependent species, all harvest units would retain a minimum of 2 snags/acre, maintain large diameter snags, retain residuals if snags are absent and comply with Forest Plan standards related to snags. Also intermediate units would contain between 75 and 300 residuals per acre and regeneration harvest units would contain between 5 and 150 residuals per acre and these would be available for future snag recruitment. While it is recognized that snags per acre will vary, and that a range of conditions will exist, because of the widespread availability of snags in all size and decay classes within all project area drainages, retention of snags within treatment units, and recruitment of new snags due to on-going MPB mortality and continued high stand density on unaffected lands, snags will continue to be distributed across the project area and habitat would continue to be available to support cavity dependent species as discussed in the dead wood section and in sensitive species section under the black-backed woodpecker and flammulated owl , and in the management indicator species section under the pileated woodpecker and hairy woodpecker discussions in the wildlife section in chapter 3 of the FEIS.	
8B	This comment is noted. See response to comment 8A and availability of residual trees in all units for future snag recruitment and maintenance of habitat to support cavity dependent species. The snag analysis methodology and assumptions was discussed in the DEIS at pages 215-222.	Wildlife – snag
8C	See response to comment 8A. The DEIS included project design features specific to snags; the project design features were updated and are provided near the end of chapter 2 of the FEIS. See also the Dry Forest Habitat description in the wildlife section in chapter 3 of the FEIS regarding mortality of large diameter trees has increased with recent MPB mortality. While there is currently an abundance of large diameter snags, as existing large snags fall down and due to a reduction in ponderosa pine regeneration, recruitment of future large diameter snags would be reduced. Proposed treatments are designed to retain large diameter snags, as well as promote conditions that would result in recruitment of future large diameter snags.	Wildlife – snag
8D	The analysis recognized that not all harvest units would provide habitat for all species and that treatment would reduce habitat for both the pileated and hairy woodpeckers (See individual species discussions in the wildlife section in chapter 3 of the FEIS. See also response to comment 8A regarding snags, and available habitat for cavity dependent species.	Wildlife – snag
8E	While the pileated woodpecker prefers the structure associated with	Wildlife – snag

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	old growth habitat, it is not an old growth obligate and this species utilizes and has been documented in mid to late seral forest conditions across the project area and forest. See the pileated woodpecker analysis under the management indicator species section in the wildlife section of chapter 3 of the FEIS.	
9A	Road density information was updated to incorporate updated information from the Blackfoot winter travel plan. The road densities discussed in the FEIS accurately reflect existing conditions of the Bear Management Units, Lynx Analysis Units and Elk Herd Units evaluated. See species specific analyses in the wildlife section in chapter 3 of the FEIS. The moving windows analysis, which identifies total and open road densities by BMU was re-run for the Blackfoot winter travel plan and Stonewall FEIS. Also total and open road densities that would exist during implementation have been added to the big game analysis in the wildlife section in chapter 3 of the FEIS.	Wildlife – lynx road density
9B	Effects of proposed treatments on grizzly and Canada lynx were discussed in the DEIS and have been updated for the FEIS (see species discussions in the threatened and endangered portion in the wildlife section in chapter 3 of the FEIS). A Biological Assessment (BA) that evaluates effects to threatened and endangered species including grizzly and lynx will be prepared prior to signing of a Record of Decision (ROD). Consultation with the United States Fish and Wildlife Service will be completed for this project. The BA and outcome from consultation with the United States Fish and Wildlife Service will be included in the project record.	Wildlife – Grizzly roads
9C	See response to comment 9B.	Wildlife – Grizzly FWS
10A	See response to comment 9B.	Wildlife – Grizzly
10B	See response to comment 9B.	Wildlife – Grizzly
10C	See response to comment 9B.	Wildlife – Grizzly
10D	See response to comments 6G and 9B.	Wildlife – Grizzly
10E- 10F	The grizzly bear analysis has been updated to incorporate updated road information. The FEIS contains an updated route density and security core – moving Windows Analysis. See grizzly bear analysis in the Threatened and Endangered species discussions in the wildlife section in chapter 3 of the FEIS.	Wildlife – Grizzly
10G	This comment is noted and open road densities during project implementation have been added to the FEIS. While open road densities outside of core habitat were not separated out as suggested, effects of roads on grizzly bear habitat and mortality risk factors for all lands within project area BMU's were evaluated in the FEIS. See grizzly bear analysis in the Threatened and Endangered species discussions in the wildlife section in chapter 3 of the FEIS. Also see response to comment 9B regarding consultation with the United States Fish and	Wildlife – Grizzly

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	Wildlife Service.	
11A	See response to comment 9B regarding ongoing project specific consultation with the United States Fish and Wildlife Service.	Wildlife – lynx
11B	All intermediate harvest treatment sites occur within the WUI and are near private land/structures that are at risk from wildfire. The Canada lynx analysis was updated to incorporate additional information. See Canada lynx analysis in the Threatened and Endangered species discussions in the wildlife section in chapter 3 of the FEIS. Project design features are in place that will ensure that no burning would occur in winter hare habitat on lands outside the WUI. All treatments are in compliance with Northern Rockies Lynx Management Direction (NRLMD). See also response to comment 9B regarding ongoing project specific consultation with the United States Fish and Wildlife Service.	Wildlife – lynx
11C	See response to comment 11B related to treatment within winter hare habitat. Also summer and winter movement corridors, as well as landscape linkages were considered and are discussed in the updated Canada lynx analysis in the Threatened and Endangered species discussions in the wildlife section in chapter 3 of the FEIS. See response to comment 9B and Fish and Wildlife Service concurrence.	Wildlife – lynx
11D	Additional information on project area fragmentation has been added in the updated Canada lynx analysis in the Threatened and Endangered species discussions in the wildlife section in chapter 3 of the FEIS. The information added included information provided in Squires et al 2013, that was based on project area documentation of lynx and winter and summer movement corridors.	Wildlife – lynx
11E	The Canada lynx analysis was updated to incorporate additional information, including treatment effects on lynx den and foraging habitat. See Canada lynx analysis in the Threatened and Endangered species discussions in the wildlife section in chapter 3 of the FEIS.	Wildlife – lynx
11F	The Canada lynx analysis was updated to incorporate additional information, including treatment effects on winter habitat. See Canada lynx analysis in the Threatened and Endangered species discussions in the wildlife section in chapter 3 of the FEIS. The project analysis for lynx has been updated and impacts were determined to result in a May effect – likely to adversely affect determination for lynx. The Forest Service is conducting formal consultation with the USFWS and the Biological Opinion will address lynx and lynx critical habitat. See Canada lynx analysis in the Threatened and Endangered species discussions in the wildlife section in chapter 3 of the FEIS. Also see response to comment 11H related to unaffected habitat maintained.	Wildlife – lynx
11G	The Canada lynx analysis was updated to incorporate additional information, including treatment effects on lynx habitat. See Canada lynx analysis in the Threatened and Endangered species discussions in the wildlife section in chapter 3 of the FEIS.	Wildlife – lynx

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11H	The Canada lynx analysis was updated to incorporate additional information, including treatment effects on lynx habitat. The project analysis for lynx has been updated and impacts were determined to result in a May effect – likely to adversely affect determination for lynx. The Forest Service is conducting formal consultation with the USFWS and the Biological Opinion will address lynx and lynx critical habitat. See Canada lynx analysis in the Threatened and Endangered species discussions in the wildlife section in chapter 3 of the FEIS.	Wildlife – lynx
11I	Information from Squires et al 2010 and Squires et al. 2013 that provides documented lynx use in the Seeley Lake area has been considered in the updated Canada lynx analysis in the Threatened and Endangered species discussions in the wildlife section in chapter 3 of the FEIS. The project analysis for lynx has been updated and impacts were determined to result in a May effect – likely to adversely affect determination for lynx. The Forest Service is conducting formal consultation with the USFWS and the Biological Opinion will address lynx and lynx critical habitat. See Canada lynx analysis in the Threatened and Endangered species discussions in the wildlife section in chapter 3 of the FEIS.	Wildlife – lynx
11J	Treatment effects in unsuitable stand initiation habitat (e.g. young clearcuts that are not suitable habitat) were discussed on pages 375 to 376 of the DEIS, and as described, treatment would reduce snowshoe hare habitat on the affected sites. The acres of unsuitable stand initiation habitat affected by treatment are displayed in tables 91 and 92 of the DEIS. See updated Canada lynx analysis in the Threatened and Endangered species discussions in the wildlife section in chapter 3 of the FEIS.	Wildlife – lynx
11K	Effects of burning to lynx habitat within project LAU's, including effects to inventoried roadless areas and anticipated effects to movement are discussed in the updated Canada lynx analysis in the Threatened and Endangered species discussions in the wildlife section in chapter 3 of the FEIS.. See response to comments 11F and 11G related to retention of winter hare habitat and comment 11D related to effects on lynx movement.	Wildlife – lynx
11L	Effects of harvest on hare habitat are discussed in the updated Canada lynx analysis in the Threatened and Endangered species discussions in the wildlife section in chapter 3 of the FEIS.	Wildlife – lynx
12A	The Forest Plan addresses the National Forest Management Act requirements and includes direction for old growth management. Project area old growth was discussed under the Habitats of Special Concern section of the DEIS (pages 68-69, 215-219, 222-240). DEIS tables 55 through 57 (pages 222-224) display the existing stands with old growth characteristics. The DEIS disclosed at page 240 that the Forest Plan direction regarding old growth would be met. The existing old growth stands within the project area would continue to provide	Silviculture – old growth

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	old growth habitat. Maps of old growth were provided in the DEIS in figures 57, 64 and 71 (DEIS pages 232, 238 and 289). The maps of old growth have been updated in the FEIS to clarify terminology. The DEIS disclosed effects on pine marten (pages 302, 326, 444-448), northern goshawk (page 294-297, 325, 428-436), pileated woodpecker (pages 297-300, 325, 436-442) and migratory birds (pages 315-318, 327, 348-354, 474-475). Analyses of these species are found in the respective areas in the wildlife analysis in chapter 3 of the FEIS.	
12B	The analysis does not claim that logging old growth will not affect its value to wildlife, but that designated old-growth habitat would remain largely unchanged including providing structural conditions such as large-diameter trees and increased levels of snags and DWD (DEIS page 240). Effects of proposed treatments on goshawk, pine marten, lynx and songbirds are discussed under their respective species headings in the wildlife section of the FEIS.	Wildlife – old growth
12C	Project area old growth was discussed with maps provided under the Habitats of Special Concern section of the DEIS (pages 68-69, 215-219, 222-240). DEIS tables 55 through 57 (pages 222-224) display the existing stands with old growth characteristics. The old growth maps have been updated to clarify terminology in the FEIS. The DEIS appendix C included a map depicting past activities and this appendix has been updated in the FEIS.	Silviculture
12D	The DEIS disclosed at page 240 that the Forest Plan direction regarding old growth would be met. The two stands of existing old growth proposed for prescribed burn treatments are anticipated to continue to provide old growth characteristics. Effects of proposed treatments on MIS were disclosed in the DEIS (pages 287-302, 428-448). This information is also disclosed in the FEIS under the MIS analysis in the wildlife section of the FEIS.	Silviculture
13	Forest-wide monitoring data related to MIS are discussed in the FEIS and included landbird monitoring information, Region 1 songbird data, Forest and Region wide assessments and monitoring, project area documentation/monitoring and Statewide data (Samson 2006a and b, Avian Science Center 2006a-c, Montana Natural Heritage Program 2011, 2013, USDA FS 2008d, USDA FS 2011c, USDA FS 2011e, USDA FS 2012h and Wild Things Unlimited 2011). See response to comment 13A related to carnivore monitoring and 15D related to goshawk monitoring.	Wildlife – MIS monitoring
13A	Forest monitoring for marten has included project EA's, habitat sampling by transects of marten use, survey data collected as part of the Northern Region fisher surveys, MFWP furbearer survey route locations and data collected by Wild Things Unlimited (USDA Forest Service 2012h). Carnivore monitoring has also been completed within the Blackfoot landscape, and use of the project area by marten has	Wildlife – pine marten

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	been documented (Wild Things Unlimited 2012, USDA Forest Service 2011c). As described under methodologies, marten habitat is monitored by and based on the Forest using intensified grid data. Marten are used as an indicator of large blocks of mature forest and while there are no Forest old growth objectives related to marten, the Stonewall project complies with Plan direction related to old growth.	
13B	American marten analysis is disclosed under Management Indicator Species in the wildlife section of chapter 3 of the FEIS. See response to comment 12A regarding old growth habitat discussions.	Wildlife – old growth MIS
13C	The DEIS disclosed effects on pine marten (pages 302, 326, 444-448). American marten analysis is disclosed under Management Indicator Species in the wildlife section of chapter 3 of the FEIS. The landscape connectivity and fragmentation effects discussion in the wildlife section in chapter 3 of the FEIS.	Wildlife – pine marten
14A	The DEIS disclosed effects on pileated woodpecker (pages 297-300, 325, 436-442). Pileated woodpecker is address under management indicator species in the wildlife section in chapter 3 of the FEIS. Pileated woodpecker habitat is defined under methodology Pileated woodpeckers were chosen as a MIS because they are the largest primary excavator on the forest. Also because they have the most restrictive requirements in terms of snag size of any cavity nester on the Forest and have feeding requirements for large snags and down logs, they were expected to be a good “old growth indicator. These structural components are not found exclusively in old growth and tend to be characteristic of late successional forests. Also the pileated woodpecker is not an old growth obligate species, as evidenced by documentation across the Forest in mid to late seral forest conditions. Forest pileated woodpeckers monitoring has included recorded observations since 1994, data provided by the Northern Region Landbird monitoring program and Birds and Burn surveys. Pileated woodpeckers are not common on the Forest and other portions of Region 1, particularly west-side Forests, which generally have between 5 and 10 percent occurrence rates compared to 1.5 percent on the HNF (USDA FS 2008d). See response to comment 12B related to maintenance of old growth structural conditions. Under the action alternatives; approximately 93 percent of existing pileated woodpecker habitat would be maintained, preferred structural conditions would be maintained across the landscape, and there is not expected to be a local or regional change in habitat quality or populations status.	Wildlife – pileated woodpecker
15A	The DEIS disclosed effects on northern goshawk (page 294-297, 325, 428-436). The DEIS page 291 through 293 discussed goshawk species biology, citing the applicable literature.	Wildlife - goshawk

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	Page 431 acknowledged: "Generally, small mammal habitat specialists such as red-backed vole, flying squirrels and shrews decrease, whereas increases occur in habitat generalists such as mice and chipmunks (Zwolak and Foresman 2007)." Goshawk is discussed under the management indicator species analysis in the wildlife section in chapter 3 of the FEIS. Methodology used to assess goshawk habitat section describes species, canopy and size class conditions that were used to identify nest and foraging habitat. The analysis presented looks at landscape conditions, including the amount and distribution of habitat and both action alternatives would maintain adequate habitat to support up to four nesting pairs of goshawk.	
15B	See response to comment 12A regarding old growth discussions in the DEIS. See response to comment 15A regarding goshawk analysis and foraging. Project design features are in place that would minimize the likelihood that nesting birds would be affected, maintain structural conditions around active nests and maintain conditions consistent with goshawk use and territory occupancy (Samson 2006a). See response to comment 15A.	Wildlife - goshawk
15C	Goshawk is discussed under the management indicator species analysis in the wildlife section in chapter 3 of the FEIS. The DEIS disclosed impacts at pages 293 and 291: "Competition from red-tailed hawks and great-horned owls confines goshawks to dense forest, but this applies primarily to nest sites and potential predation on young rather than to foraging by adults (Reynolds et al. 1992)." Other literature that was considered in the analysis includes: La Sorte, F.A.; Mannan, R.W.; Reynolds, R.T.Grubb, T.G.. 2004. Habitat associations of sympatric red-tailed hawks and northern goshawks on the Kaibab Plateau. Journal of Wildlife Management. 68: 307-317. Reynolds, R. T., R. T. Graham and M. H. Reiser. 1992. Management recommendations for the northern goshawk in the southwestern United States. General Technical Report RM-217. Ft. Collins, CO: U. S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 184 pp. Samson, Fred B. 2006a. A conservation assessment of the northern goshawk, black-backed woodpeckers, flammulated owl, and pileated woodpecker in the Northern Region. U.S. Department of Agriculture, Forest Service. Squires, J. R., and P. L. Kennedy. 2006. Northern goshawk ecology: an assessment of current knowledge and information needs for conservation management. Studies in Avian Biology 31: 8-62. United States Department of Interior, Fish and Wildlife Service. 1998. Northern Goshawk Finding. June 1998. Portland, Oregon. 129 pp.	Wildlife goshawk conversion of habitat to red-tailed hawk
15D	Forest-wide goshawk surveys are conducted annually according to the Goshawk Field Inventory Methods Helena National Forest 2009 and	Wildlife - goshawk

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	the Northern Goshawk Inventory and Monitoring Technical Guide (USDA FS 2006) and surveys have been conducted within the project area and Blackfoot landscape (USDA FS 2012h). Goshawk old growth surveys were also been conducted in polygons that had been established as part of the Northern Region Landbird Monitoring Program Birds in Old Growth 2007 (USDA FS 2011e). Samson (2006a) provides habitat estimates for maintaining viable populations of the Northern Goshawk and this information has been incorporated into the FEIS. Based on this information, adequate habitat exists to support forest populations of goshawk.	
16A	Comment regarding the DEIS disclosure of impacts on fisher noted.	Wildlife - fisher
16B	The DEIS disclosed anticipated effects on fisher under the Sensitive Species discussions in the wildlife section in chapter 3 (pages xix, 78, 247-249, 255, 257, 278-280, 304-305, 321, 354). Fisher analysis has been updated in the FEIS and is disclosed under Sensitive Species in the wildlife section in chapter 3.	Wildlife - fisher
16C	See response to comment 16B	Wildlife - fisher
16D	As described in response to comment 16B, much of the project area treatment is proposed in areas where fisher habitat has been recently reduced and is expected to be further reduced in the future. Fisher habitat is well distributed across the Forest and Region (Samson 2006b).	Wildlife - fisher
16E	The FEIS recognized that fishers avoid use of large openings and this is reflected in the post-treatment availability of suitable habitat. Also it is recognized that this would be a long-term reduction in suitable habitat. See response to comment 16B related to landscape level changes and use.	Wildlife - fisher
16F	This comment is noted and the FEIS recognized that treatment of stands affected by MPB mortality would result in a reduction in fisher habitat. Also effects include a long-term reduction in habitat associated with final harvest activities and a reduction in habitat quality resulting from treatments that reduce understory structure and downed woody debris.	Wildlife - fisher
17A	As described in the purpose and need section in chapter 1 of the FEIS, and in the project fuels report, project objectives include restoring fire to the landscape, while reducing fuels to a level that large catastrophic wildfires such as the 23,000 acres Snow Talon fire do not occur or are reduced in size. Objectives include reducing fuels and modifying fire behavior to enhance community protection while creating conditions that allow re-establishment of fire as a natural process on the landscape. Proposed activities would also help to restore historic levels and intensity of wildfire, reduce the risk of large stand replacing wildfire and help to maintain forested conditions that would facilitate long-term use by wolverine. All proposed thinning occurs at low elevations that lack the deep	Wildlife - wolverine

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	persistent snow required for wolverine denning or dispersal. Treatment would not modify wolverine use due to changes in snow conditions, as suggested. Effects analysis of proposed treatments on wolverine habitat is discussed under Forest Service sensitive species in the wildlife section in chapter 3 of the FEIS.	
17B	Effects of proposed treatments on the availability of wolverine prey, including changes in small mammals and the availability of big game carrion are discussed under Forest Service sensitive species in the wildlife section in chapter 3 of the FEIS. It is recognized that treatment would reduce habitat for species such as the red squirrel and snowshoe hare, whereas habitat for other small mammals would likely increase following treatment (Ruediger 2000, Woolf 2003). It was also recognized that in Montana big game carrion appears to be the major source of food for wolverine Banci 1994, Pasitschniak and Lariviere 1995). While big game use would change, considering that 90 percent of the analysis area would be unaffected, that big game security habitat would be maintained, and that the amount and quality of forage would be maintained or improved, adequate habitat would continue to be available both in the short and long term to support desired levels of elk. As a result wolverine foraging habitat would be maintained under both alternatives.	Wildlife - wolverine
17C	Effects on wolverine have been updated to incorporate additional information and is discussed under Forest Service sensitive species in the wildlife section in chapter 3 of the FEIS. While both action alternatives propose mixed severity burning in modeled natal denning habitat, because treatment would not occur during the denning period, there are no effects to wolverine denning anticipated. Also approximately 93 percent of the analysis area would be unaffected, and the availability of den habitat would be maintained across the landscape under both action alternatives.	Wildlife - wolverine
17D	The wolverine is identified as a Forest Service Sensitive species. The Wildlife Resource Report and Biological Evaluation includes the analysis of effects of proposed activities on sensitive species, including wolverine. The analysis is located under sensitive species in the wildlife section in chapter 3 of the FEIS.	Wildlife - wolverine
18	The DEIS disclosed the affected environment (page 256) and environmental effects (pages 355- 357) on mountain meadows and shrub habitats. Commenter incorrectly cited information disclosed in the DEIS. DEIS Page 256 discusses the affected environment: Mountain meadows and shrubs currently occur on approximately 700 acres or 3 percent of the project area, whereas shrub habitat exists on 138 acres. Approximately half of the existing habitat was created during the Keep Cool fire in 2006. The remainder is widely scattered at upper elevations in the headwaters of Keep Cool and Beaver Creeks. Due to	Silviculture/Wildlife – shrubs

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	conifer encroachment, this community has been declining. DEIS page 356 discloses the environmental effects of alternatives 2 and 3 and the benefits of treatment *[clarification added here]*: Alternatives 2 and 3 propose prescribed fire (mixed severity) on 75 acres of meadow habitat (11 percent *[of the meadow habitat present in the project area]*) and 18 acres of mountain shrub habitat (13 percent *[of the mountain shrub habitat in the project area]*). Effects of proposed burning include mortality and a reduction in shrubs, as well as a change in shrub density on the acres treated. Although there would be mortality in the decadent and mature size class, burning would result in development of a younger age class or rejuvenate decadent shrubs, as well as increase herbaceous vegetation (Peterson and Best 1987). As a result, treatment would improve the diversity and health of stands over the long term, as well as provide habitat for species such as the calliope hummingbird that utilize re-growth after a fire (PIF 2000). The mountain meadows and shrubs discussions and analysis is located in the wildlife sections in chapter 3 of the FEIS.	
19A	On July 19, 2011, the U.S. Fish and Wildlife Service (FWS) published in the Federal Register its 12-month status review finding on a petition to list whitebark pine under the Endangered Species Act. After a review of all available scientific and commercial information, the FWS concluded that listing the species as threatened or endangered is warranted, but precluded by higher priority actions. This finding results in whitebark pine being a FWS candidate for listing. Candidate species receive no statutory protection under the ESA. Therefore, the Forest Service is not required to formally consult with the FWS concerning whitebark pine. Whitebark pine is designated a R1 sensitive species by the Regional Forester, and the biological evaluation completed for this project reflects that designation. The effects to whitebark pine are included in the analysis with anticipation of the possible federal listing. The analysis disclosed the logging/burning proposed is expected to enhance habitat for Clark's nutcrackers due to the removal of shade-tolerant species and creation of caching sites. In addition, there is a resource protection measure designed to enhance the establishment of caching sites. At this time consultation with the FWS is not required. If it is required in the future it will occur then.	Plants - WBP
19B	The analysis of grizzly bear has been updated in the Threatened and Endangered Species discussions in the wildlife section in chapter 3 of the FEIS. Whitebark pine was discussed under plants in the DEIS (page 481), with additional information provided in appendix B of the DEIS (appendix C pages 101-104). Clark's nutcracker habitat was discussed under the upper sub-alpine forest habitat in the wildlife section in chapter 3 of the DEIS. As	Wildlife – Clark's nutcracker

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	described, proposed activities would promote white bark pine regeneration, establish nutcracker caching sites and result in the long-term maintenance of this important species (Cornell Lab of Ornithology 2012). Over the long-term both alternatives would also maintain or improve ponderosa pine and Douglas-fir, which are utilized by Clark's nutcrackers (MFWP 2013), and reduce insect and disease related mortality. Collectively for these reasons, both alternatives would be expected to improve habitat for the Clark's nutcracker.	
20A	The DEIS pages 282-284; 422-426 disclose the flammulated owl habitat analysis. Cumulative effects to flammulated owls was discussed on page 425 for the action alternatives, appendix C included past activities in the analysis area, reflected in the existing habitat condition discussed. This information is carried forward into the FEIS. Monitoring for flammulated owls has occurred on the Blackfoot landscape and flammulated owls have been documented at nine locations near the project area. While it is recognized that the project area does not provide high quality flammulated owl habitat, considering this documentation, the increased availability of large diameter snags, the predominance of ponderosa pine/Douglas-fir at lower elevations, and presence of suitable habitat, it is likely the project area is utilized for foraging if not nesting. Forest and regional availability of flammulated owl habitat is provided by Samson 2006b and implementation of proposed actions would not reduce habitat below viability thresholds, See Flammulated Owl Project Area Habitat discussion in the wildlife section in chapter 3 of the FEIS.	Wildlife – Flammulated owl
20B	See responjse to 20A regarding flammulated owl habitat analysis.	Wildlife – Flammulated owl
20C	See response to comment 20A related to project area documentation of flammulated owls. The FEIS recognized that nesting birds could be directly affected by treatment, although due to the retention of all snags greater than 20 inches dbh (unless they pose a safety risk) and the owls tolerance of human activities (Hayward and Verner 1994), the likelihood of mortality is low.	Wildlife – Flammulated owl
20D	See response to comment 20A related to project area documentation of flammulated owls. Snag methodology is discussed under Habitats of Special Concern in the DEIS (pages 215-240). Information under the methodology discussion of Dead Wood in the wildlife section in chapter 3 of the FEIS has been updated. As the commenter points out, the DEIS incorrectly implied the action alternatives would be consistent with this direction. The FEIS clarifies that the information provided in Bollenbacher et al. (2008) is more applicable and that this information is used to assess landscape level availability of snags. The compliance section of the FEIS under the	Wildlife – Flammulated owl

Comment #	Response	Topic
	flammulated owl clarifies that the action alternative would meet Forest Plan direction related to snags, ensure that large diameter snags are provided in the future on sites treated and provide landscape level snags characteristic of eastside forests (Bollenbacher et al. 2008).	
21A	Effects of proposed treatments on biophysical settings including shrub habitat and closed canopy forest is disclosed in the FEIS, which identifies changes in early seral, mid to late seral closed, and mid to late seral open habitat under all alternatives. Rationale, or the purpose and need for treatment is described in chapter 1 of the FEIS and includes promoting habitat conditions that more closely represent historic conditions, reducing fire risk, and promoting species diversity. See response to comment 4H related to burning in shrub habitat. Effects to closed canopy species, including the northern goshawk, pileated woodpecker, fisher, marten and lynx are discussed in the respective sections in chapter 3 of the FEIS. While the pine marten is a mature forest indicator, its need for closed canopy forest was recognized.	Wildlife - songbirds
21B	The migratory bird analysis described the methodology for analysis and discuss existing songbird habitat and environmental effects of the habitat conditions under the biophysical settings. The alternative effects analysis and analysis for species such as flammulated owl, pileated woodpecker, northern goshawk , lynx, grizzly and big game, discuss changes in vegetation composition and structure, old growth, seed production, changes in cover and forage and effects to species that prefer undisturbed forests. Based on the analysis provided, the action alternatives would help to restore declining habitats while maintaining diverse habitat conditions across the landscape. As a result, habitat for migratory birds would be maintained or improved and all alternatives are in compliance with the Migratory Bird Treaty Act (see migratory bird analysis in the wildlife section in chapter 3 of the FEIS).	Wildlife - songbirds
21C	Project area old growth was discussed under the Habitats of Special Concern section of the DEIS (pages 68-69, 215-219, 222-240). The DEIS disclosed at page 240 that the Forest Plan direction regarding old growth would be met. Migratory birds were discussed in the wildlife section of the DEIS (see especially pages 315-318, 327, 348-354, 474-475). These discussions are carried over into the FEIS, in their respective locations in chapter 3.	Wildlife - songbirds
21D	The landscape connectivity and fragmentation effects discussion in the wildlife section in chapter 3 of the FEIS has been updated to expand the discussion of effects of fragmentation and potential cowbird parasitism. References cited include: Cavitt and Martin 1993, Chalfoun et al. 2002, Hejl et al. 1995, Stevens et al. 2003, Tewksbury et al. 1998, and Young and Hutto 1999.	Wildlife - songbirds

Additional Literature Review from DEIS comments. (See also the full literature review for items previously submitted during the scoping comment period.)

Literature
Baeten et al 2008. Colorado Division of Wildlife Research Report. Post Release Lynx Monitoring. 38 pp. Review: This research Study documented lynx movements, reproduction and landscape habitat from animals released in 1997. Results indicated; 1) primary winter prey were snowshoe hare and red squirrel, 2) Engelmann spruce and subalpine fir stands with 42 to 62 percent canopy closure and 15 to 20 percent conifer understory were most commonly used, 3) den sites were more commonly located on steep north-facing slopes at higher elevations with a dense understory of coarse woody debris. Results indicated that while successful post-release long-term survival can be achieved, it has yet to be determined if the State can support sufficient recruitment to offset annual mortality over time and ensure viability. Lynx habitat conditions documented in this study are consistent with those described in the Stonewall DEIS/FEIS, including use of spruce-fir forest with a conifer understory, reliance on snowshoe hare, preference for red squirrel as an alternate prey, den site selection, and identification of suitable habitat (DEIS pp. 261-265). Effects to lynx have been updated in the FEIS to incorporate additional information.
Bull, E., et al 2001. Effects of Disturbance on Forest Carnivores of Conservation Concern in Eastern Oregon and Washington. Northwest Science. Vol 75, Special Issue 2001. Review: This document was identified during scoping and again at the review of the DEIS. This study and the importance of downed wood for forest carnivores are discussed in the DEIS and FEIS. Effects of proposed treatments on lynx, wolverine and other carnivores were discussed on pages 370- 396, 398-405, 408-410, 411-412, 414-417 and 446-448 of the DEIS. Discussions are located in the respective species discussions in the wildlife section of chapter 3 of the FEIS. The Canada lynx analysis was updated to incorporate additional information in the FEIS.
Drennan, J. and R. Beier. 2003. Forest structure and prey abundance in winter habitat for northern goshawks. Journal of Wildlife Management 67:177-185. Review: This document was identified during scoping and again at the review of the DEIS. The importance of forest structure and prey availability to goshawk were discussed in the DEIS on pages 291 to 293, whereas structural changes resulting from proposed action are discussed on pages 429 to 436 of the DEIS.
Ercelawn, A. 1999. End of the Road -- The Adverse Ecological Impacts of Roads and Logging: A Compilation of Independently Reviewed Research. 130 pp. Natural Resources Defense Council. New York. Review: This document was identified during scoping and again at the review of the DEIS. Road related effects to wildlife from this study are referenced on page 337 of the DEIS. General road related effects of proposed actions are discussed on pages 337 to 338, as well under the effects for the individual species analyzed
Ercelawn, A. 2000. **Wildlife Species and Their Habitat: The Adverse Impacts of Logging -- A Supplement to End of the Road.** 41 pp. Natural Resources Defense Council. New York. Available online at: http://www.nrdc.org/land/forests/eotrsupp.asp Review; This document was identified during scoping and again at the review of the DEIS. Road related effects to wildlife from this study are referenced on page 337 of the DEIS. General road related effects of proposed actions are discussed on pages 337 to 338, as well under the effects for the individual species analyzed.
Gabler, K., J. Laundre, and L. Heady. 2000. Predicting the suitability of habitat in southeast Idaho for pygmy rabbits. J. Wildlife Manage. 64:759 -764. and **Katzner, T., and K. Parker. 1997. Vegetative characteristics and size of home ranges used by pygmy rabbits (Brachylagus idahoensis) during winter. J. Mammology 78:1063-1072. and** **Montana Department of Fish, Wildlife and Parks. 1997. Status and distribution of the pygmy rabbit in Montana: final report. Montana Department of Fish, Wildlife and Parks. PO Box 173220, Bozeman, MT.** Review: These documents were during scoping and again at the review of the DEIS. The pygmy rabbit does not occur on the Helena NF (USDA FS 2011). Habitat for and effects to species dependent on sagebrush (such as the pygmy rabbit) are evaluated and discussed in the DEIS and FEIS.

Literature
Johnson, Sara Jane and Mike Garrity. 2007. Appeal of the Record of Decision for the Northern Rockies Lynx Management Direction National Forests in Montana, and parts of Idaho, Wyoming and Utah. 17 pp. Review: This appeal challenges the Northern Rockies Lynx Management Direction (NRLMD) on a number of points including: 1) The amendment is too vague to predict with reasonable accuracy as to how it would affect conservation and recovery of lynx, 2) Standards that are supposed to protect, conserve and recover the lynx are largely arbitrary without any scientific basis, including that provided by monitoring, 3) the Forest Service failed to provide adequate public involvement in the development of the Amendment, 4) there is an inadequate range of alternatives, 5) there was an inadequate analysis of cumulative effects of the proposed lynx management strategy on this threatened species, 6) the amendment promotes violation of management area direction in current Forest Plans without requiring a site-specific amendment, and NFMA direction regarding compliance with guidelines., and 7) the amendment violates the Endangered Species Act. The appeal is not site-specifically relevant to this project, however, Canada lynx is a species analyzed. The Helena Forest Plan was amended to incorporate NRLMD and habitat conditions and effects of treatment discussed in the Stonewall DEIS (pages 261-269 and pages 367-369) are based on NRLMD and the amended Forest Plan. The analysis for Canada lynx was updated to incorporate additional research information and disclosed in the FEIS. Consultation with the US Fish and Wildlife Service will be completed prior to issuance of the Record of Decision.
Lacy, Robert C and Tim W. Clark. 1993. Simulation Modeling of the American Marten (Martes Americana) Populations: Vulnerability to Extinction. Great Basin Naturalist. Vol 53 No. 3 pp. 282-292. Review: This paper summarized results from a population model (VORTEX) developed to estimate extinction probability for marten populations as a management tool. Various levels of timber harvest, commercial trapping and other factors can be used to estimate effects on marten populations This document was identified during scoping and again at the review of the DEIS. In order to use the model developed by the authors, information on population density, survival and demographics must be known or estimated. This level of information is not available for the Stonewall project area. As described on page 300 of the DEIS, analysis of marten habitat is based on information provided in Habitat Estimates for Maintaining Viable Populations of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, Pileated Woodpecker, American Marten and Fisher (Samson 2006b). The analysis presented includes an assessment of conditions that would affect marten use and survival including landscape considerations and connectivity, recent disturbances, predation and prey availability, and use of logged vs. unlogged forests. Effects of treatment on stand and landscape level marten habitat were considered and are discussed on pages 446 to 448 of the DEIS.
Marcot, Bruce G. & D. D. Murphy, 1992. Population viability analysis and management. In Szaro, R., ed. Biodiversity in Managed Landscapes: Theory and Practice. Proceedings of: Conference on Biodiversity in Managed Landscapes: Theory and Practice, 13-17 July, 1992, Sacramento, CA. Review; This document was identified during scoping and again at the review of the DEIS. This document provides no site specific information and is not relevant to the project.
McKelvey, K.S., S. Mills, J.J.Claar, K.L. Pilgrim and L.F. Ruggiero. 2002. National Lynx Survey. 5 pp. Review: This document includes a summary of the National Lynx Survey by the above authors, a map of lynx records from 1842 to 1998, and a map displaying National lynx survey hits. The National lynx survey identified documented both historical and current range of lynx. This information was considered for the project and is similar to other information used for analysis. Results from this survey clearly show that the Stonewall project area has both historic and current use by lynx, which was recognized in the DEIS.
Montgomery, A., G.MacFarlane and M. Garrity. 2007. Appeal of the Northern Rockies Lynx Management Decision. 12 pp. Review: Appellants outlined why the Record of Decision was arbitrary, capricious and illegal. Specific reasons included; 1) The Forest violated NEPA and Administrative Procedures Act by selection arbitrary criteria to determine whether habitat was occupied, 2) The FEIS and ROD failed to evaluate the importance of unoccupied habitat, analyze effects on connectivity, identify a desired future condition and did not contain adequate standards to protect and restore lynx habitat, 3) the selected alternative failed to utilize the best science, and did not remedy the reasons why lynx require ESA protection, 4) the FEIS failed to analyze effects on lynx denning, foraging and travel corridors and did not contain a comprehensive monitoring plan., and 5) the ROD effectively pre-approved future forest plan amendments without going through NEPA or NFMA. The Helena Forest Plan was amended to incorporate NRLMD and habitat conditions and effects of

Literature
treatment discussed in the Stonewall DEIS (pages 261-269 and pages 367-369) are based on NRLMD and the amended Forest Plan. Consequently the issues and concerns identified in this appeal are outside the scope of the Stonewall project.
Tomson, S. Personal Communication between Scott Tomson (Wildlife Biologist, Lolo National Forest, with Katrina Dixon (Biologist USFWS Region 6). 2011. Review**:** This is a response from Scott Tomson responding to a request from Katrina Dixon for information and questions on the Colt Summit project. Scott clarified when construction and use of proposed temporary roads would occur and the timeframes for proposed burning. Scott sent maps with lynx documentation and discussed that preliminary analysis indicted that higher concentrated use occurred in wetter subalpine fir and spruce types, whereas low elevations and west and south facing aspects were rarely used. Scott also documented effects to lynx primary constituent elements. This communication was considered for the updated Canada lynx analysis presented in the FEIS. Additional information related to habitat use, e.g., Squires et al. 2006, has been added to the FEIS.
Powers, L. A. Dale, P. Gaede, C. Rodes, L. Nelson, J. Dean, and J. May. 1996. Nesting and food habits of the flammulated owl (*Otus flammeolus*) in southcentral Idaho. J. Raptor Research 30:15-20. Review; This document was identified during scoping and again at the review of the DEIS. This document is not site specifically relevant to the project; however, the topic of flammulated owl is relevant to the project. The analysis for the Stonewall Vegetation Project used more locally relevant information from Samson (2006) estimated flammulated owl breeding habitat available in each national forest in R1 along with information from Wright (1992,1996): Samson, Fred B. 2006a. A conservation assessment of the northern goshawk, black-backed woodpeckers, flammulated owl, and pileated woodpecker in the Northern Region. U.S. Department of Agriculture, Forest Service. Samson, Fred B. 2006b. Habitat estimates for maintaining viable populations of the northern goshawk, black-backed woodpecker, flammulated owl, pileated woodpecker, American marten, and fisher. U.S. Department of Agriculture, Forest Service. Wright, Vita. 1992. Multi-scale analysis of flammulated owl habitat: Owl distribution, habitat, and conservation. M.S. thesis, University of Montana. Missoula, MT. Wright, V. 1996. Multi-scale analysis of flammulated owl habitat use: owl distribution, habitat management, and conservation. Master's thesis, University of Montana, Missoula, Montana, USA.
Ruggerio et al. 1994. Viability Analysis in Biological Evaluations: Concepts of Population Viability Analysis, Biological Population, and Ecological Scale. Rocky Mountain Forest and Range Experiment Station. Laramie, Wyoming. Review: The author points out that conducting a viability analysis for wildlife populations is difficult to achieve at the project level. The Stonewall Vegetation Project concerns are more habitat related than specific wildlife populations. This document was identified during scoping and again at the review of the DEIS. The authors relay environmental analysis of local management actions should assess the ecological responses of populations rather than the response of the entire population. The process used to assess viability is described on page 242 of the DEIS, which follows Regional direction (USDA Forest Service 1999).
Ruggiero, L.F., K.B. Aubry, S.W. Buskirk, G.M. Koehler, C.J. Krebs, K.S. McKelvey and J.R. Squires. 1999. Ecology and Conservation of Lynx in the United States. Rocky Mountain Research Station. General Technical Report. RMRS-GTR-30WWW. 485 pp. Review: This document was produced by a team of scientists that reviewed available scientific knowledge on the history, distribution and ecology o lynx. The relationship between lynx, its habitat and its prey are discussed in detail and the attributes of northern versus southern lynx populations are compared and contrasted. The authors discuss metapopulation and disturbance dynamics, habitat fragmentation and competition, the ecology of snowshoe hare, the historic and current distribution of lynx, the ecology of lynx in northern Canada and Alaska, Washington, Montana and Wyoming, ecological differences across the range of lynx including disturbance regimes and landscape patterns, climatic effects to lynx, and patterns of snowshoe hare and red squirrel abundance. The authors also provide insights into lynx ecology and management including habitat features, food habitats, prey population dynamics, dispersal and population dynamics, range-wide variation and human influences. Finally, the authors present a approach to research and management that would promote lynx conservation. This research is relevant to the project. Information provided in this document was considered throughout

Literature
the DEIS including the use of boreal and subalpine forest , the importance of snowshoe hare and red-squirrel, structural conditions characteristic of den and winter hare habitat, lynx movement and dispersal, mortality, competition with other predators, and suitable lynx habitat (pages 261 to 265). Further, information from this study, as well as more recent research has been incorporated into NRLMD, which established management direction to conserve and promote lynx recovery and was considered in the analysis of effects (DEIS p. 261 and 367). The Canada lynx analysis has been updated in the FEIS to incorporate additional information.
Squires, J. and L. Ruggiero. 1995. Winter movements of adult northern goshawks that nested in southcentral Wyoming. J. Raptor Research 29:5-9. Review: The topic of this paper is relevant to the project. Effects to northern goshawks from proposed actions are addressed in the wildlife report. Literature considered in the wildlife analysis includes: Samson, Fred B. 2006a. A conservation assessment of the northern goshawk, black-backed woodpeckers, flammulated owl, and pileated woodpecker in the Northern Region. U.S. Department of Agriculture, Forest Service. Samson, Fred B. 2006b. Habitat estimates for maintaining viable populations of the northern goshawk, black-backed woodpecker, flammulated owl, pileated woodpecker, American marten, and fisher. U.S. Department of Agriculture, Forest Service. Squires, J. R., and P. L. Kennedy. 2006. Northern goshawk ecology: an assessment of current knowledge and information needs for conservation management. Studies in Avian Biology 31: 8-62. United States Department of Agriculture, Forest Service 2009c. Northern Goshawk Northern Region Overview. Key Findings and Project Considerations. Available at: http://fsweb.r1.fs.fed.us/wildlife/wwfrp/TESnew.htm. This document was identified during scoping and again at the review of the DEIS. Goshawk nest site characteristics discussed on pages 291 to 293 of the DEIS are consistent with those described by the authors, as well as more recent research in western Montana (Clough 2000). .
Squires, L.F., J.A. Kolbe and N.J. DeCesare. 2006. Lynx Ecology in the Intermountain West. Rocky Mountain Research Station. Missoula, MT. 25 pp. Using radio telemetry data collected between 1998 and 2007, this paper documents winter and summer lynx habitat relationships. Results indicate that during winter, lynx preferentially forage in spruce-fir forests with high horizontal cover, abundant hares, deep snow and large diameter trees. It also found that lynx tend to avoid sparse, open forests and forest stands dominated by small diameter trees. Like winter, during the summer lynx selected habitat with high horizontal cover, although during the summer horizontal cover resulted from a high density of small diameter trees with shrub cover. This study also found that timber harvest and thinning clearly affected lynx distribution within their home range. Data collected documented denning habitat which included, north facing slopes, sites with large amounts of downed wood and high horizontal cover and in blowdown. Authors concluded that habitat features at the stand and landscape level need to be considered. Monitoring of summer and winter activity documented that snowshoe hare contributed to 69 percent of the kills and 96 percent of the biomass and that lynx depended exclusively on snowshoe are during the winter. Red squirrels were the second most common prey. Existing research indicated that compacted snowmobile trails might allow coyotes access to high elevation habitat used by lynx and coyotes were studied near Seeley Lake, Montana, to assess the degree of coyote and lynx symmetry during winter. Results suggested that the overall influence of snowmobile trails on coyote movements and foraging success was minimal and it was unlikely that compacted snow trails increased competitive interactions between coyotes and lynx during winter. Research quantified how lynx traverse landscapes and while subadults travel the longest distances, adults also exhibited movement between home ranges. Review: This research is relevant to the project and the information provided is consistent with that presented in the Stonewall DEIS/FEIS. Information from this study was used to describe winter foraging habitat preferences and the discussion of den habitat recognized the need provide coarse woody debris and the importance of stand structure. It was recognized that proposed thinning would reduce stand structure, lynx cover, winter hare and red-squirrel habitat. Stand level changes in habitat are discussed in the updated Canada lynx analysis in the threatened and endangered area of the wildlife section in chapter 3 of the FEIS. Information from this study related to selection of north-facing slopes for denning and effects to lynx movement have been considered in the updated analysis. The importance of snowshoe hare as the primary prey of lynx and red squirrel as alternate prey was

Literature
recognized and discussed in the DEIS and FEIS. Lynx movements were documented with GIS to produce a map that predicts suitable lynx habitat and rates available habitat on a continuum from low probability of use to high probability of use. Results show lynx documentation in the Stonewall project area. Results show project area lynx documentation and identify movement corridors between project LAU's and across the landscape. The Canada lynx effects analysis was updated between the DEIS and the FEIS to incorporate additional information.
Squires, John R. 2009. Letter from John Squires to Carly Walker responding to questions concerning Canada Lynx. June 29, 2009. Review: The author answered four questions including; 1) *What is the importance of the Seeley Lake area to lynx, especially in regards to the Northern Rockies* ?– Lynx in western Montana possibly represent the most viable population in the United States and should be a primary focus of conservation planning. The areas surrounding Seeley Lake are central to the conservation and management of lynx in Montana and in the contiguous U.S. Lynx are restricted to high elevation spruce-fir forests, and our research indicates that lynx avoid very steep topography, and select areas with more rolling topography. These landscapes are often most impacted by forest management. Review: The importance of maintaining lynx habitat in the stonewall project area was recognized and an alternative was developed that reduced treatments, maintained more den and winter hare habitat and reduced effects to lynx movement. Proposed treatments are in compliance with NRLMD and are expected to promote the long-term sustainability of lynx. 2) *How have lynx persisted in Seeley Lake despite extensive timber harvesting and recreation?* – Lynx occupy a very narrow habitat niche and are highly specialized for hunting snowshoe hare in deep snow. During winter they preferentially use mature multi-layer forest. In summer they broaden their home ranges to include young regenerating forest. Lynx are very sensitive to forest management, especially thinning. Thinning reduces habitat quality for lynx and effects can last for several decades. While they are sensitive to forest management, they do persist in managed landscapes provided a mosaic of suitable habitat is available, including an abundance of un-thinned forest. Although substantial forest thinning has occurred in the Seeley Lake area, lynx have been able to use un-thinned habitats, although there is likely a threshold of thinning below which lynx will not be able to persist. Preliminary analysis of population viability suggest that lynx in the Seeley area may be declining, so concerns for maintaining available habitat does have scientific basis. We do not think that recreation at current levels is detrimental to lynx at this time and found snow compaction from winter recreation had a negligible effect. Review: The specialized habitat conditions and use of mulit-story and young regenerating forest was recognized in the DEIS and FEIS. Effects of thinning, including a reduction in winter hare and den habitat was also recognized and an alternative was developed that reduced harvest and maintained greater levels of closed canopy forest. Proposed actions would provide a mosaic of habitat conditions and are in compliance with NRLMD. 3) *Does your work specifically address lynx population dynamics in relation to development densities. If not, is there information from your research that could be extrapolated to predict effects on lynx of different development densities?* – Our research did not occur in urbanized landscapes, but we have clues to potential impacts. Increased urbanization would raise the amount of thinned habitat around structures for fire prevention, may increase mortality through shooting, or reduce habitat through fragmentation. It is the authors opinion that increased urbanization around Seeley Lake would be detrimental to lynx. Review: This information is not relevant to the Stonewall project. 4) *How do lynx respond to increased road densities and habitat loss/fragmentation associated with increased development?* – We find no evidence that lynx avoid low volume, dirt roads in the Seeley Lake area either during winter (snowmobiling) or summer. Many of these roads are gated with only a few vehicles per season. Increased levels of road use could result in mortality due to road kill and lynx appear to avoid Highway 83. We do not know if this is due to traffic avoidance or to habitat characteristics along the highway. Habitat fragmentation has increased sharply in the Seeley Lake area due to natural fire and human causes. Consequently the Seeley area is disproportionally important due to its rolling topography and boreal forest cover and any efforts to slow habitat fragmentation would be beneficial to lynx conservation and management. Review: Effects of thinning on lynx were discussed in the DEIS, although the length of time treatment would reduce lynx habitat was underestimated. The lynx effects analysis has been updated in the FEIS to incorporate additional information and has been changed to more accurately

Literature
reflect research by the author. Discussion of fragmentation and connectivity has also been expanded n the FEIS. The importance of effects of roads and snowmobile use discussed by the author are consistent with those discussed in the updated analysis.
Squires, J.R., N.J.DeCesare, L.E. Olson, J.A. Kolbe, M Hebblewhite and S.A. Parks. 2013. Combining resource selection and movement behavior to predict corridors for Canada lynx at their southern periphery. Biological Conservation 157 (2013) 187-195. Review: This paper emphasizes the importance of maintaining connectivity between source populations of lynx in the north, with southern populations, which are at risk due to anthropogenic disturbances and climate change. Authors used telemetry data collected between 1998 and 2007 to model lynx movement corridors in the Northern Rocky Mountains. Their model indicated that lynx selected home ranges at mid-elevations with low surface roughness and high canopy cover. They found that connectivity between lynx habitat in Canada and the conterminous United States is facilitated by only a few putative corridors and that maintaining the integrity of these corridors is of primary importance to lynx conservation in the Northern Rockies. They evaluated winter and summer movements and found that winter corridors may best provide for local connectivity of neighboring breeding populations, whereas summer corridors facilitated long-distance dispersal, such as those from range core to periphery. Maps generated from this research show that the Stonewall project area is near the southern edge of primary north-south lynx movement corridor and that it contains patches of habitat capable of supporting lynx. While the DEIS recognized the need to maintain landscape linkages and discussed connectivity (p. 378), effects of thinning on landscape level movements were not discussed. This information, as well as effects of all proposed management on the corridors documented in this paper have been added to the FEIS.
USDA. 1998. Deer Creek Prescribed Burn Proposal, Effects on Neotropical Migratory Birds. October 13, 1998. Gallatin National Forest, Big Timber Ranger District. Review: This document was identified during scoping and again at the review of the DEIS. It is a site specific document and the commenter provided no context for this citation's relevance to the Stonewall Vegetation Project. Effects of burning on migratory birds are discussed in the DEIS and FEIS. **USDA. 1998. Deer Creeks Prescribed Burn Proposal and Predicted Effects on Upland Game birds. October 13, 1998**. Gallatin National Forest, Big Timber Ranger District. Review: The analysis document was identified during scoping and again at the review of the DEIS. It is a site specific document and the commenter provided no context for this citation's relevance to the Stonewall Vegetation Project. Effects of burning on birds, including upland gamebirds are discussed in the DEIS and FEIS. **USDA. 1998. Deer Creeks Prescribed Burn Proposal and Predicted Effects on Deer, Elk and Antelope.** October 13, 1998. Gallatin National Forest, Big Timber Ranger District. Review; The analysis document was identified during scoping and again at the review of the DEIS. It is a site specific document and the commenter provided no context for this citation's relevance to the Stonewall Vegetation Project. Effects of burning on big game are discussed in the DEIS and FEIS.
USDA Forest Service. 2005a. "Sheep Creek Fire Salvage Project Final Environmental Impact Statement." Beaverhead-Deerlodge National Forest. Review: The Sheep Creek Salvage FEIS site specific project analysis document was identified during scoping but could not be located. Comments provided at scoping regarding noxious weeds were reviewed. The anticipated effects of noxious weeds from proposed activities are analyzed and disclosed in the FEIS. This document was identified again at the review of the DEIS, however the document was not provided. The commenter provided no context from which to evaluate potential issues or project consistency.
USDA Forest Service. 2007. Sagebrush in western North America: habitats and species in jeopardy. Pacific Northwest Research Station. March, 2007 Review: This document is not site-specifically relevant to the Stonewall Vegetation project. The Stonewall Vegetation project analysis discusses effects on sagebrush communities and effected species. References considered for sagebrush include: Cornell Lab of Ornithology 2012 Birds of North America [online]. Grove, A.J., C.L. Wambolt, and M.R. Frisina. 2005. Douglas-fir's effect on mountaina big sagebrush wildlife habitats. Wildl. Soc. Bull. 33(1):74-80 Paige, Christine and Sharon A. Ritter. 1999. Managing sagebrush habitats for bird communities. Partners in Flight, Western Working Group. Van Dyke, F., and J.A. Darragh. 2006. Short and longer term effects of fire and herbivory on sagebrush communities in

Literature
South-Central Montana. Environmental Management Vol. 38, No. 3. Pp. 365-376. Van Dyke, F., and J.A Darragh. 2007. Short and long-term changes in elk use and forage production in sagebrush communities following prescribed burning. This document was identified during scoping and again at the review of the DEIS. This document was not site specific. Rationale for treatment of declining sagebrush habitat within the project area is described on page 256 of the DEIS, whereas effects to sagebrush communities from proposed actions can be found in the DEIS and FEIS.
USDI Fish and Wildlife Service. 2003 Range Map of the Canada Lynx in the Contiguous United States. Review: This 2003 map documented the Stonewall project area as being utilized by both resident and dispersing lynx. This document was identified at the review of the DEIS. This information is relevant to the project. The DEIS recognized that the Stonewall project area was occupied core lynx habitat as well as designated critical habitat (DEIS p. 261). More detailed information on lynx documentation within the project area was acquired (John Squires personal communication 2013) and has been incorporated into the FEIS.
United States District Court. 2013. Case 9:12-cv-00045-DLC. District of Montana, Missoula Division. Nolan Salix: Cottonwood Environmental Law Center vs. USDA Forest Service. May 16, 2012. 42 pp. Review: This document was identified at the review of the DEIS. This decision found that the Forest service failed to comply with the Endangered Species Act, by not reinitiating consultation when lynx critical habitat was designated on National Forest System Lands. While the Forest Service must now reinitiate consultation, the court did not enjoin any specific projects, as the plaintiffs did not demonstrate irreparable harm. Upon further consideration of additional information since release of the DEIS, the project analysis for lynx has been updated. The updated analysis resulted in a May effect – likely to adversely affect determination for lynx. The FS is conducting formal consultation with the United States Fish and Wildlife Service and the Biological Opinion will address lynx and lynx critical habitat.
Wright, V. 1992. **Multi-scale analysis of flammulated owl habitat use: owl distribution, habitat management, and conservation**. M.S. Thesis, University of Montana, Missoula. Review: Information from this study was considered in the DEIS and project area information is based on landscape conditions and documented flammulated owl use. Effects to flammulated owl are addressed in the DEIS and FEIS.
Wright, V. 1996. Multi-scale analysis of flammulated owl habitat use: owl distribution, habitat management, and conservation. M.S. Thesis, University of Montana, Missoula. Review : This document was identified during scoping and again at the review of the DEIS. Flammulated owl habitat is described on pages 284 to 285 of the DEIS and includes discussion of the fact that owls select for microhabitat features within the landscape context, as is pointed out by the author. A more detailed description of flammulated owl documentation in the vicinity of the Stonewall project area and implications to this research are presented in the FEIS.

Appendix B – Proposed Treatment Descriptions and Silviculture Summary

Treatment Type and Prescription Descriptions

Improvement Cut, Underburn - An improvement cut is an intermediate harvest that removes the less desirable trees of any species in a stand of poles or larger trees, primarily to improve the composition and quality. These treatments would generally be 'from below' to favor retaining larger trees over smaller trees, however, thinning regimes would favor retaining smaller trees of a more desirable species over larger trees of a less desirable species, and would favor keeping smaller, healthier trees over larger, damaged or diseased trees. The species preference for retention would be aspen, western larch, ponderosa pine, Douglas-fir, lodgepole pine, Engelmann spruce, and subalpine fir in descending order. Trees would be thinned to an average spacing of 20 to 40 feet (109 to 27 TPA), but spacing could vary widely. Thinning would be by hand and/or machine. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns (e.g., snag and downed large woody debris requirements) would be removed for utilization. Following thinning, the units would be underburned, which are "Prescribed burns of low intensity covering a majority of the burn unit consuming surface fuels, but not the overstory canopy."

Improvement Cut, Jackpot burn – The improvement cut would be as described previously. The thinning would be followed by a jackpot burn, which is "prescribed burning of fuels in scattered concentrations" and in addition does not cover a majority of the unit.

Precommercial Thin, Handpiling, Burn Piles – These treatments involve cutting small trees of little to no merchantable value to decrease stocking and reduce fuels. Trees would be thinned by hand or by machine. Post-thinning average tree spacing would range from 12 to 20 feet (109 to 303 TPA). Thinning debris in several units would be piled by hand and the handpiles would be burned to reduce fuels. See the fuels report for handpile and burning specifications.

Precommercial Thin – These treatments involve cutting small trees of little to no merchantable value to decrease stocking and reduce fuels. Trees would be thinned by hand or by machine. Post-thinning average tree spacing would range from 12 to 20 feet (109 to 303 TPA).

Shelterwood (Group) with Reserves, Site Prep Burn – These treatments involve removing all trees except for those needed for shelter and seed production. Leave trees would be grouped, and would be aspen, ponderosa pine, Douglas-fir, Engelmann spruce, or subalpine fir, in descending order of preference. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns may be removed for utilization. Following cutting and removal, the units would be burned to prepare sites for natural regeneration. Expected natural regeneration species are Douglas-fir and lodgepole pine. Areas may be planted with ponderosa pine and western larch to achieve the desired species composition. The leave trees would be retained following regeneration.

Low Severity Fire, Openings less than 5 acres – These treatments would involve cutting of small trees (slashing) to create fuel beds in areas less than 5 acres in size, and underburning to reduce fuels, cause additional mortality of undesirable trees, and prepare sites for natural regeneration. Desired natural regeneration species are Douglas-fir, ponderosa pine, and lodgepole pine depending upon the unit.

Low Severity Fire, Openings less than 10 acres – These treatments would involve cutting of small trees (slashing) to create fuel beds in areas less than 10 acres in size, and underburning to reduce fuels, cause additional mortality of undesirable trees, and prepare sites for natural regeneration. Desired natural regeneration species are Douglas-fir, whitebark pine, and lodgepole pine.

Seedtree with Reserves, Slashing, Handpiling, Burn Piles – These treatments involve removing all trees except for those needed for seed production. Seed trees are expected to be Douglas-fir. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns, may be

removed for utilization. Undesirable, damaged, or diseased small trees would be cut (slashed), handpiled and burned. Leave trees would be retained following regeneration. Regeneration is expected to be Douglas-fir and lodgepole pine.

Shelterwood (Group) with Reserves, Jackpot Burn – The shelterwood treatment would be as described previously. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns, may be removed for utilization. Following cutting and removal, concentrations of fuels involving less than a majority of the unit area would be burned. Expected regeneration would be some combination of Douglas-fir, lodgepole pine, Engelmann spruce, and aspen. Some combination of ponderosa pine, western larch, and Douglas-fir may be planted.

Seedtree with Reserves, Jackpot Burn - These treatments involve removing all trees except for those needed for seed production. Seed trees are expected to be mainly Douglas-fir with ponderosa pine, Engelmann spruce, and aspen depending on unit. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns, may be removed for utilization. Following cutting and removal, units would be jackpot burned. In some units, ponderosa pine and Douglas-fir may be planted.

Seedtree with Reserves, Broadcast Burn - These treatments involve removing all trees except for those needed for seed production. Seed trees are expected to be Douglas-fir. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns, may be removed for utilization. Following cutting and removal, units would be broadcast burned. Ponderosa pine and Douglas-fir may be planted.

Shelterwood with Reserves, Site Prep Burn - These treatments involve removing all trees except for those needed for shelter or seed production. Leave trees would be relatively uniformly spaced and would be Douglas-fir, western larch, ponderosa pine, and aspen at about 30-40 BA. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns, may be removed for utilization. Following removal, the area would be prescribe burned for site preparation. Expected regeneration would be Douglas-fir and lodgepole pine.

Shelterwood (Group) with Reserves, Slashing, Handpile/Burn – The shelterwood treatment would be as described previously for group shelterwoods with reserves. Leave trees are expected to be Douglas-fir. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns, may be removed for utilization. Following cutting and removal, undesirable small trees would be cut, handpiled and burned. Expected regeneration would be Douglas-fir and lodgepole pine.

Shelterwood (Group) with Reserves - The shelterwood treatment would be as described previously for group shelterwoods with reserves. Expected natural regeneration would be Douglas-fir and lodgepole pine. Ponderosa pine may be planted. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns, may be removed for utilization. These units do include some area of ponderosa pine plantation that would be thinned.

Clearcut with Reserves, Jackpot Burn – These treatments involve removing all trees except for scattered Douglas-fir and ponderosa pine. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns, may be removed for utilization. Natural regeneration of Douglas-fir and lodgepole pine is expected. Ponderosa pine may be planted. Following cutting and removal, units would be jackpot burned.

Clearcut with Reserves, Site Preparation Burn – These treatments involve removing all trees except for scattered clumps of Douglas-fir, ponderosa pine and western larch. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns, may be removed for utilization. Natural regeneration of Douglas-fir and lodgepole pine is expected. Ponderosa pine, Douglas-

fir, and western larch may be planted. Following cutting and removal, units would be prescribed burned to prepare sites for regeneration.

Clearcut with Reserves, Broadcast Burn - These treatments involve removing all trees except scattered clumps or individual Douglas-fir for structure. All dead and live cut trees considered merchantable, except as needed to meet other resource concerns, may be removed for utilization. Following cutting, the area would be broadcast burned for fuels reduction and site preparation. Natural regeneration of lodgepole pine is expected. Douglas-fir and western larch may be planted.

Sanitation, Slashing, Handpiling, Burn Piles – These treatments involve removing trees to improve stand health by stopping or reducing the actual or anticipated spread of insects and disease. In these units, all dead and dying trees considered merchantable would be cut and removed except as needed to meet other resource concerns. No additional live trees would be cut. Small, undesirable, damaged, or diseased trees would be cut, handpiled and burned. Following treatment, trees would average 10- to 15-foot spacing (194 to 436 TPA).

Mixed Severity Fire, Openings – These treatments would be burned with a mixed-severity fire, creating various sizes of openings depending upon forest type and site factors. Patches of trees may be cut in the units to facilitate burning as well as to enhance regeneration of whitebark pine and other species.

Proposed Treatments by Group and Unit

Table B- 1. Alternative 2 proposed treatments by group and unit

Group	Unit	Treatment Type	Prescription	Acres
1	6	Intermediate Harvest	Improvement Cut, Underburn	14
1	7	Intermediate Harvest	Improvement Cut, Underburn	17
1	8	Intermediate Harvest	Improvement Cut, Underburn	62
1	15	Intermediate Harvest	Improvement Cut, Underburn	15
1	23	Intermediate Harvest	Improvement Cut, Underburn	29
1	24	Intermediate Harvest	Improvement Cut, Underburn	5
1	26	Intermediate Harvest	Improvement Cut, Underburn	65
1	28	Intermediate Harvest	Improvement Cut, Underburn	22
1	30	Intermediate Harvest	Improvement Cut, Underburn	14
1	31	Intermediate Harvest	Improvement Cut, Underburn	16
1	32	Intermediate Harvest	Improvement Cut, Underburn	45
1	33	Intermediate Harvest	Improvement Cut, Jackpot Burn	17
1	44	Intermediate Harvest	Improvement Cut, Underburn	97
1	45	Intermediate Harvest	Improvement Cut, Underburn	38
1	46	Intermediate Harvest	Improvement Cut, Jackpot Burn	251
1	47	Intermediate Harvest	Improvement Cut, Jackpot Burn	220
1	54	Intermediate Harvest	Improvement Cut, Jackpot Burn	20
1	55	Intermediate Harvest	Improvement Cut, Underburn	29
2	3	Intermediate Harvest	Precommercial Thin, Handpiling, Burn Piles	37
2	14	Intermediate Harvest	Precommercial Thin, Handpiling, Burn Piles	11
2	16	Intermediate Harvest	Precommercial Thin, Handpiling, Burn Piles	3
2	18	Intermediate Harvest	Precommercial Thin, Handpiling, Burn Piles	21
2	21	Intermediate Harvest	Precommercial Thin, Handpiling, Burn Piles	6

Group	Unit	Treatment Type	Prescription	Acres
2	48	Intermediate Harvest	Precommercial Thin	141
2	49	Intermediate Harvest	Precommercial Thin	49
2	50	Intermediate Harvest	Precommercial Thin	49
2	51	Intermediate Harvest	Precommercial Thin	193
2	59	Intermediate Harvest	Precommercial Thin	16
2	60	Intermediate Harvest	Precommercial Thin	25
2	61	Intermediate Harvest	Precommercial Thin	34
2	62	Intermediate Harvest	Precommercial Thin	37
2	63	Intermediate Harvest	Precommercial Thin	17
2	64	Intermediate Harvest	Precommercial Thin	30
2	65	Intermediate Harvest	Precommercial Thin	25
2	66	Intermediate Harvest	Precommercial Thin	26
2	67	Intermediate Harvest	Precommercial Thin	20
2	68	Intermediate Harvest	Precommercial Thin	15
2	69	Intermediate Harvest	Precommercial Thin	31
2	70	Intermediate Harvest	Precommercial Thin	39
2	71	Intermediate Harvest	Precommercial Thin	40
2	72	Intermediate Harvest	Precommercial Thin	85
2	73	Intermediate Harvest	Precommercial Thin	33
2	75	Intermediate Harvest	Precommercial Thin	148
3	1	Regeneration Harvest	Shelterwood (Group) with Reserves, Site Prep Burn	96
3	2	Prescribed Fire	Low Severity Fire, Openings <5 Acres	146
3	9	Regeneration Harvest	Seedtree with Reserves, Slashing, Handpiling, Burn Piles	18
3	11	Regeneration Harvest	Shelterwood (Group) with Reserves, Jackpot Burn	23
3	12	Regeneration Harvest	Shelterwood (Group) with Reserves, Jackpot Burn	80
3	13	Regeneration Harvest	Seedtree with Reserves, Jackpot Burn	41
3	20	Regeneration Harvest	Seedtree with Reserves, Jackpot Burn	32
3	22	Regeneration Harvest	Shelterwood with Reserves, Site Prep Burn	30
3	25	Regeneration Harvest	Seedtree with Reserves, Broadcast Burn	29
3	29	Regeneration Harvest	Shelterwood (Group) with Reserves, Slashing, Handpile/Burn	25
3	34	Regeneration Harvest	Shelterwood (Group) with Reserves, Jackpot Burn	12
3	39	Regeneration Harvest	Seedtree with Reserves, Jackpot Burn	42
3	40	Regeneration Harvest	Seedtree with Reserves, Jackpot Burn	11
3	41	Regeneration Harvest	Shelterwood (Group) with Reserves, Jackpot Burn	12
3	42	Regeneration Harvest	Seedtree with Reserves, Jackpot Burn	65
3	43	Regeneration Harvest	Seedtree with Reserves, Jackpot Burn	104
3	53	Regeneration Harvest	Shelterwood (Group) with Reserves, Jackpot Burn	17
3	57	Regeneration Harvest	Shelterwood (Group) with Reserves	93
3	58	Regeneration Harvest	Shelterwood (Group) with Reserves	15
4	10	Regeneration Harvest	Clearcut with Reserves, Jackpot Burn	18
4	17	Regeneration Harvest	Clearcut with Reserves, Jackpot Burn	38

Group	Unit	Treatment Type	Prescription	Acres
4	19	Regeneration Harvest	Clearcut with Reserves, Jackpot Burn	15
4	27	Regeneration Harvest	Clearcut with Reserves, Site Prep Burn	31
4	35	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	24
4	36	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	20
4	37	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	8
4	38	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	7
4	52	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	22
4	56	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	17
4	74	Regeneration Harvest	Clearcut with Reserves, Site Prep Burn	23
5	4	Intermediate Harvest	Sanitation, Slashing, Handpiling, Burn Piles	7
5	5	Intermediate Harvest	Sanitation, Slashing, Handpiling, Burn Piles	18
6	76	Prescribed Fire	Low Severity Fire, Openings <10 acres	123
6	78	Prescribed Fire	Low Severity Fire, Openings <5 acres	38
6	85	Prescribed Fire	Low Severity Fire, Openings <5 acres	143
7	80	Prescribed Fire	Mixed Severity Fire, Openings <20 acres	326
7	86	Prescribed Fire	Mixed Severity Fire, Openings <10 acres	47
7	87	Prescribed Fire	Mixed Severity Fire, Openings <5 acres	36
8	77	Prescribed Fire	Mixed Severity Fire, Openings <30 acres	736
8	79	Prescribed Fire	Mixed Severity Fire, Openings <30 acres	337
8	81	Prescribed Fire	Mixed Severity Fire, Openings <30 acres	629
8	82	Prescribed Fire	Mixed Severity Fire, Openings <75 acres	776
8	83	Prescribed Fire	Mixed Severity Fire, Openings <75 acres	457
8	84	Prescribed Fire	Mixed Severity Fire, Openings <30 acres	831
8	88	Prescribed Fire	Mixed Severity Fire, Openings <30 acres	892

Table B- 2. Alternative 3 proposed treatments by group and unit

Group	Unit	Treatment Type	Prescription	Acres
1	15	Intermediate Harvest	Improvement Cut, Underburn	15
1	23	Intermediate Harvest	Improvement Cut, Underburn	29
1	24	Intermediate Harvest	Improvement Cut, Underburn	5
1	28	Intermediate Harvest	Improvement Cut, Underburn	22
1	46b	Intermediate Harvest	Improvement Cut, Jackpot Burn, Handpiling, Burn Piles	27
1	47b	Intermediate Harvest	Improvement Cut, Jackpot Burn, Handpiling, Burn Piles	9
1	47c	Intermediate Harvest	Improvement Cut, Jackpot Burn, Handpiling, Burn Piles	31
1	6	Intermediate Harvest	Improvement Cut, Underburn	14
1	7	Intermediate Harvest	Improvement Cut, Underburn	17
1	8	Intermediate Harvest	Improvement Cut, Underburn	62
2	14	Intermediate Harvest	Precommercial Thin, Handpiling, Burn Piles	11
2	16	Intermediate Harvest	Precommercial Thin, Handpiling, Burn Piles	3
2	3	Intermediate Harvest	Precommercial Thin, Handpiling, Burn Piles	37

Group	Unit	Treatment Type	Prescription	Acres
2	48	Intermediate Harvest	Precommercial Thin, Underburn	141
2	50	Intermediate Harvest	Precommercial Thin	49
2	51	Intermediate Harvest	Precommercial Thin, Underburn or Slash Treatment along PVT	193
2	59	Intermediate Harvest	Precommercial Thin	16
2	61a	Intermediate Harvest	Precommercial Thin, Handpile Underburn	9
2	62	Intermediate Harvest	Precommercial Thin	37
2	63	Intermediate Harvest	Precommercial Thin	17
2	66	Intermediate Harvest	Precommercial Thin	26
2	67	Intermediate Harvest	Precommercial Thin	20
2	68	Intermediate Harvest	Precommercial Thin	15
2	69	Intermediate Harvest	Precommercial Thin	31
2	70	Intermediate Harvest	Precommercial Thin	39
2	71	Intermediate Harvest	Precommercial Thin	40
2	72	Intermediate Harvest	Precommercial Thin	85
2	73	Intermediate Harvest	Precommercial Thin	33
2	75b	Intermediate Harvest	Precommercial Thin, Jackpot Burn, Handpiling, Burn Piles	20
3	1	Regeneration Harvest	Shelterwood (Group) with Reserves, Site Prep Burn	96
3	11	Regeneration Harvest	Shelterwood (Group) with Reserves, Underburn	23
3	12	Regeneration Harvest	Shelterwood (Group) with Reserves, Underburn	80
3	13	Regeneration Harvest	Seedtree with Reserves, Jackpot Burn	41
3	22a	Regeneration Harvest	Shelterwood with Reserves, Site Prep Burn	22
3	25	Regeneration Harvest	Seedtree with Reserves, Broadcast Burn	29
3	34	Regeneration Harvest	Shelterwood (Group) with Reserves, Jackpot Burn	12
3	39	Regeneration Harvest	Seedtree with Reserves, Underburn	26
3	40	Regeneration Harvest	Seedtree with Reserves, Underburn	11
3	41	Regeneration Harvest	Shelterwood (Group) with Reserves, Underburn	12
3	42	Regeneration Harvest	Seedtree with Reserves, Underburn	65
3	43	Regeneration Harvest	Seedtree with Reserves, Underburn	104
3	53	Regeneration Harvest	Shelterwood (Group) with Reserves, Jackpot Burn	17
3	57	Regeneration Harvest	Shelterwood (Group) with Reserves, Jackpot Burn	93
3	58	Regeneration Harvest	Shelterwood (Group) with Reserves, Jackpot Burn	15
3	9	Regeneration Harvest	Seedtree with Reserves, Slashing, Handpiling, Burn Piles	18
4	10	Regeneration Harvest	Clearcut with Reserves, Underburn	18
4	27	Regeneration Harvest	Clearcut with Reserves, Site Prep Burn	31
4	35	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	24
4	36	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	20
4	37	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	8
4	38	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	7
4	52	Regeneration Harvest	Clearcut with Reserves, Broadcast Burn	22

Group	Unit	Treatment Type	Prescription	Acres
4	74	Regeneration Harvest	Clearcut with Reserves, Site Prep Burn	23
5	4	Intermediate Harvest	Sanitation, Slashing, Handpiling, Burn Piles	7
5	5	Intermediate Harvest	Sanitation, Slashing, Handpiling, Burn Piles	18
6	2	Prescribed Fire	Low Severity Fire, Openings <5 acres	146
6	78	Prescribed Fire	Low Severity Fire, Openings <5 acres	38
6	85	Prescribed Fire	Low Severity Fire, Openings <5 acres	143
7	87	Prescribed Fire	Mixed Severity Fire, Openings <5 acres	36
8	79	Prescribed Fire	Mixed Severity Fire, Openings <30 acres	337
8	82	Prescribed Fire	Mixed Severity Fire, Openings <75 acres	776
8	83	Prescribed Fire	Mixed Severity Fire, Openings <75 acres	457
8	84	Prescribed Fire	Mixed Severity Fire, Openings <30 acres	831
8	88	Prescribed Fire	Mixed Severity Fire, Openings <30 acres	865
9	17a	Prescribed Fire	Underburn	38
9	19a	Prescribed Fire	Underburn	15
9	20a	Prescribed Fire	Underburn	24
9	29a	Prescribed Fire	Underburn	25
9	30a	Prescribed Fire	Underburn	14
9	31a	Prescribed Fire	Underburn	16
9	32a	Prescribed Fire	Underburn	45
9	44a	Prescribed Fire	Underburn	97
9	45a	Prescribed Fire	Underburn	38
9	80a	Prescribed Fire	Jackpot Burn	326
10	46a	Intermediate Harvest	Improvement Cut, Jackpot Burn, Handpiling, Burn Piles	223
10	47a	Intermediate Harvest	Improvement Cut, Jackpot Burn, Handpiling, Burn Piles	180

Table B- 3. Treatment unit management area acreages

Unit	MA	Acres	Unit	MA	Acres	Unit	MA	Acres
1	T4	96	37	T3	8	63	T3	17
2	T4	146	38	T3	7	64	T3	30
3	T4	37	39	T3	42	65	T3	25
4	T4	7	40	T3	11	66	T3	26
5	T4	18	41	T3	11	67	T3	20
6	T4	14	42	T2	39	68	T3	15
7	T4	17	42	T3	26	69	T3	31
8	T4	62	43	T2	104	70	T3	39
9	T4	18	44	T1	93	71	T3	40
10	T1	1	44	T3	4	72	T2	85
10	T3	5	45	T1	26	73	T4	33
10	T4	12	45	T3	12	74	T3	23

Unit	MA	Acres	Unit	MA	Acres	Unit	MA	Acres
11	T1	22	46	T2	248	75	T2	148
12	T1	80	46	T3	3	76	T3	99
13	T1	7	47	M1	2	76	W1	24
13	T3	34	47	T2	218	77	T1	90
14	T1	10	48	M1	56	77	T3	619
15	T1	15	48	T2	85	78	T1	38
16	T1	3	49	M1	13	79	M1	267
17	T1	38	49	T2	37	79	T1	59
18	T1	21	50	M1	48	79	T3	7
19	T1	15	51	M1	19	79	W1	3
20	T1	32	51	T1	173	80	M1	318
21	T1	6	52	T3	22	80	W1	8
22	T3	30	53	T3	17	81	M1	583
23	T3	29	54	T3	20	81	T1	6
24	T3	5	55	T3	29	81	W1	40
25	T3	29	56	T3	17	82	M1	13
26	T3	65	57	T1	92	82	W1	763
27	T3	31	58	M1	6	83	M1	201
28	T3	17	58	T1	9	83	W1	256
28	T4	5	59	T3	16	84	M1	795
29	T4	25	60	T1	1	84	T1	28
30	T4	14	60	T3	22	84	T2	7
31	T4	16	60	T4	2	85	M1	143
32	T4	45	61	T3	21	86	M1	47
33	T3	17	61	T4	12	87	M1	25
34	T3	12	62	T3	21	87	T1	12
35	T3	24	62	T4	16	88	M1	740
36	T3	20				88	W1	124

Fuels Treatments

The MRFC discusses Forest Types and Fire Regimes and is quoted below:

The following briefly describes major forest ecotypes in Montana and ascribes to each an approximate historical fire regime and a very general picture of historical stand structure. Because there is overlap between each ecotype and no black and white distinctions in historical fire regimes or stand structures, these elements should be considered in the planning and design of restoration projects.

Restoration by Forest Type

Low-to-mid elevation ponderosa pine, Douglas-fir, and western larch forests typify the low- and mixed-severity fire regime with average fire return intervals of 5 to 30 years.

- Pure ponderosa pine experienced frequent, low-severity fires and primarily exhibited an open stand structure across the landscape.

- Mixed ponderosa pine/Douglas-fir/western Larch (in all combinations) forests exhibited less frequent fire, more variable stand structures across the landscape, and variable fire intensity and severity.
- Historically, these low elevation forests were subject to the greatest amount of timber management and fire suppression activities and thus are likely the furthest from their natural range of variability.
- These forest types are the most likely and appropriate candidates for restoration activities to re-establish natural fire return intervals, but especially in the case of mid-elevation mixed-fire severity forests, restoration activities should be taken on a case-by-case basis.

Mid-elevation lodgepole pine, Douglas-fir, and subalpine fir forests exhibit dense stand structures and historically experienced mixed and stand replacing fire regimes.

- Mixed fire regimes may be more widespread than stand replacement regimes in the Inland Northwest and have fire intervals averaging between 30 and 100 years. Stand replacement regimes have average natural return intervals of about 100 – 200 years.
- Mixed severity forest types were likely historically dominant and may not require any specific management activity to allow them to maintain function within their historic range of variability, but again they would have to be considered on a case by case basis.

High-elevation subalpine fir, lodgepole pine and Engelmann spruce forests historically experienced fire on a 200- to 300- year fire return interval where subalpine forests of whitebark pine historically experienced fire on a mean fire return interval of 50 – 300 years. These forest ecotypes are likely the closest to their natural range of variability and likely require minimal restoration efforts.

The treatment groups include both timber management and fuels management treatments. Treatment descriptions for the fuels management treatments are as follows:

Low-Severity Fire- is applied to meet fuel reduction objectives and reintroduce fire to the landscape. Low severity fire would topkill some of the understory vegetation, effects to soils would be minimal. Some over story canopy openings of less than 5 acres may be created with this treatment. Small diameter trees may be cut in areas to create a continuous fuel bed to carry the fire (included in treatment groups 6 and 9).

Mixed Severity Fire- is applied to meet fuel reduction objectives and reintroduce fire to the landscape. Mixed severity fire would exhibit a wide range of effects on the vegetation. Some areas would result in low severity fire effects; other areas would exhibit moderate fire severity with some over story mortality but not complete replacement; and yet other areas would result in higher severity fire resulting in complete over story mortality. Overstory canopy openings of various sizes would be created with this treatment. Small diameter trees may be cut in areas to create a continuous fuel bed to carry the fire (included in treatment group 8).

Hand pile/pile burning—fuels would be piled by hand and piles would be burned when burning conditions are favorable (included in treatment groups 2, 3, 5, 9, and 10).

Jackpot Burning—burning of concentrations of fuels within the unit. These concentrations occur from harvest operations, insect and disease activity or natural forest succession. This does not include burning of hand and machine piles included in treatment groups 1, 3, 4, 9, and 10).

Machine pile/pile burning—natural and residual activity generated fuels are piled using equipment to reduce fuel accumulations and prepare sites for planting (where necessary). Piles are generally burned during the fall/winter when burning conditions are favorable and risk of escape is low. Sufficient down

woody material is retained onsite to meet objectives for soil nutrient and habitat needs included in treatment groups 2, 3, and 5).

Prescribed Under Burning- consists of controlled burning with flame lengths generally 3 feet or less and would be utilized as a stand-alone treatment or following thinning. Underburning would be used to reduce natural and activity fuels and shrubs and prepare sites for planting. Cutting and piling of ladder fuels may occur to reduce potential fire behavior and scorch to residual trees (included in treatment groups 1, 3, 4, and 9).

Site Prep Burn – Following harvest activity designated units would be under burned prior to tree planting (included in treatment groups 3 and 4).

Slashing—Cutting of small diameter conifers (less than 6 inches d.b.h.) using chainsaws. The treatment is conducted prior to burning to ensure there are sufficient surface fuels to carry the fire (included in treatment groups 3, 6, 7, and 8).

Silviculture Summary

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

Alternative 1

Compliance of alternative 1 (no action) with Forest Plan forestwide standards pertinent to this discussion is displayed in Table B- 4. Note that forestwide standard statements refer to appendices in the Forest Plan and not of this document.

Table B- 4. Alternative 1 compliance with Forest Plan forestwide standards

FORESTWIDE STANDARDS		COMPLIANCE
Timber	1. Silvicultural examinations and prescriptions will be required before any timber manipulation or silvicultural treatment takes place. Exceptions include cutting of trees that block vision along roads, cutting hazard trees, clearing right-of-way, clearing for mineral development, minor and incidental amounts of free use, and cutting personal firewood. Final determination of what silvicultural system will be used for a particular project will be made by a certified silviculturist after an on-the-ground site analysis. This site-specific analysis will determine the appropriate even or uneven age silvicultural system that best meets the goals and objectives of the management area. Standards for applying all silvicultural systems, as well as supporting research references are in the Northern Region guide (June 10, 1983). In addition, broad guidelines are found in Appendix H and M. Even aged management methods will be used only where it is determined to be appropriate to meet objectives. Clearcutting will be used only where it is the optimum method.	No timber manipulation or silvicultural treatment other than ongoing activities would take place under this alternative.
	2. Tree improvement will be conducted in accordance with the current Regional and Forest level tree improvement plans.	No tree improvement activities would be conducted under this alternative.
	4. Timber stand openings created by even-aged silvicultural systems will normally be 40 acres or less. Creation of larger openings will require a 60-day public	No timber stand openings would be created by even-aged silvicultural systems under this alternative.

FORESTWIDE STANDARDS		COMPLIANCE
	review and Regional Forester approval. Exceptions are listed in the Northern Regional Guide.	
Protection Insect and Disease	1. Silvicultural systems will be the primary tool for preventative pest management. Use silvicultural systems to: (1) improve species diversity, growth, and vigor for stands and (2) increase the size diversity and class diversity between stands.	No silvicultural systems would be proposed under this alternative.
	2. During ongoing infestations, control insects and disease through silvicultural and biological practices. Chemical controls will be limited to high value areas or used on a broader scale only when all other measures have failed and other resource values can be protected. Emphasize cooperative control measures between Federal, State, and private landowners.	No activities would be proposed under this alternative.
	3. Biological practices will be considered in controlling insect and disease infestations.	No activities would be proposed under this alternative.
	4. If possible, harvest stands which are a high risk for mountain pine beetle attack before harvesting moderate or low risk stands.	No activities would be proposed under this alternative.
Wildfire	2. Locate timber sales, or cutting units within a sale, to break-up contiguous natural fuel.	No timber sales would be proposed under this alternative.
Wildlife/Snags	Larch, ponderosa pine, Douglas-fir, spruce, and subalpine fir, in that priority, are the preferred species for snags and replacement trees (live trees left to replace existing snags).	Tree mortality and potential snag tree species would continue as is under this alternative.

Compliance of alternative 1 (no action) with Forest Plan management area standards pertinent to this discussion are displayed in Table B- 5.

Table B- 5. Alternative 1 compliance with management area standards

MANAGEMENT AREA STANDARDS		COMPLIANCE
M-1	**Timber** - Timber harvest, such as salvage and firewood removal, may occur where access exists. Slash created by any management practice will be disposed of in a manner consistent with the management area goals. Forested lands are classified as unsuitable for timber management.	No timber harvest is proposed.
	Protection - Salvage of dead, dying, or high-hazard trees is permitted to prevent disease and insect population build-up. - Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources. - Prescribed fire with unplanned ignitions may be used in this management area, for the enhancement and maintenance of resources, when within pre-established prescribed fire criteria. These criteria are stated in the Fire Management Direction in Appendix R. -Evaluate areas periodically for significant insect and disease problems. Endemic levels will be accepted as normal. If epidemic levels develop and control is necessary, the control method should minimize impacts on watershed and other resource values.	No actions are taken to prevent disease and insect population build-up. No prescribed fire is proposed for the enhancement and maintenance of resources. No areas are evaluated for insect and disease problems.
T-1	**Timber** - This management area is suitable for timber management activities. - Timber harvest practices include clearcut, group selection, and shelterwood harvest, depending on habitat group, physical site conditions, and silvicultural	No timber harvest activities are proposed.

MANAGEMENT AREA STANDARDS		COMPLIANCE
	objectives. Precommercial thinning and intermediate harvest may occur where needed as determined by silvicultural objectives and project planning. (Appendices H and M of the Forest Plan provide broad guidelines for various habitat groups.) - As a minimum, a cutover area will not be considered an opening when: (1) a new forest stand is established and certified as stocked, and (2) vegetative conditions reach the point where harvest of additional timber can occur and the combined area can still meet watershed management objectives. - Prescribed burning or other techniques may be used for slash disposal, site preparation, silvicultural, and livestock objectives. In habitat groups where fire is not a useful treatment tool, lopping and scattering, yarding unmerchantable material (YUM), or other methods will be used to reduce fuel accumulations and prepare sites for regeneration. - Project level planning will provide for stand regeneration within five years of final harvest. - Even-aged stands will be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include thinning or other stand improvement measures, salvage or sanitation harvest, management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Appendix H.	
	Protection - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times. - Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources. - Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling.	No forest protection measures are proposed.
T-2	**Timber** - This management area is suitable for timber management activities. - Timber harvest methods and volumes will be adjusted as necessary to meet big game winter range needs. Even- or uneven-aged silvicultural systems may be used. (Appendix M provides guidance for vegetative management practices by habitat groups.) - Openings created by timber harvest should meet hiding cover requirements of big game before adjacent areas can be harvested. - Schedule sale activities outside winter periods (December 1 to May 15). - No more than 25 percent of the timber-perimeter around natural or artificial parks should be nonthermal cover at one time. - Even-aged stands will be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include thinning or other stand improvement measures, salvage or sanitation harvest, and management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Appendix H.	No timber harvest activities are proposed.
	Protection - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times. - Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources. - Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling. Disposal activities will meet visual quality objectives.	No forest protection measures are proposed.
T-3	**Timber** - This management area is suitable for timber management activities. - Timber harvest methods and volumes may be modified as necessary to achieve the management area goals.	No timber harvest activities are proposed.

MANAGEMENT AREA STANDARDS		COMPLIANCE
	- Even-aged stands will be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include salvage or sanitation harvest and management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Appendix H. Appendix M provides guidance for various vegetative management practices by habitat group. - Stocking control may be maintained through precommercial and commercial thinnings. The timing and planning of thinning operations will be coordinated with a wildlife biologist. - Vegetative diversity will be encouraged. - Openings created by timber harvest will be reforested to the extent necessary to meet the hiding cover requirements of big game before harvesting adjacent areas.	
	Protection - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times. - Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources. - Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling. Disposal activities will meet visual quality objectives.	No forest protection measures are proposed.
T-4	**Timber** - This management area is suitable for timber management activities. - Even-aged stands may be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include thinning or other stand improvement measures, salvage or sanitation harvest, and management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Appendix H. - Timber harvest practices include clearcutting, group selection, and shelterwood harvest, depending on habitat group, physical site conditions, and visual quality objectives. Precommercial thinnings and intermediate harvest will occur where needed as determined by silvicultural objectives, project planning, and visual quality objective. (Appendices H and M provide broad guidelines for various habitat groups.) - Openings created by timber harvest will be reforested to the point where harvest of adjacent timber can occur and the combined area can still meet the VQOs of the area. - Use timber harvest to rehabilitate existing harvest units, to improve the VQO. - Prescribed burning will be used to accomplish slash disposal, site preparation, and silvicultural objectives. In habitat groups where fire is not a useful treatment tool, loping and scattering, YUM yarding, or other methods will be used to reduce fuel accumulations and prepare sites for regeneration provided the area goals are met.	No timber harvest activities are proposed.
	Protection - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times. - Prescribed fire with planned ignitions will be used in this management area, for the enhancement and maintenance of resources. - Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling. Disposal activities will meet visual quality objectives.	No forest protection measures are proposed.
W-1	**Timber** - Timber will be harvested only if it can be used as a tool to maintain or enhance wildlife habitat values. Productive forest land is classified as unsuitable for timber management	No timber harvest activities are proposed.

MANAGEMENT AREA STANDARDS		COMPLIANCE
	Protection - Areas will be evaluated periodically for significant insect and disease problems. Endemic levels will be accepted as normal. If epidemic levels develop and control is necessary, the control method should minimize impacts on big game and other wildlife values. - Prescribed fire with planned ignitions will be used in this management area, for the enhancement and maintenance of resources. - Prescribed fire with unplanned ignitions may be used in this management area, for the enhancement and maintenance of resources, when within pre-established prescribed fire criteria. These criteria are detailed in the Fire Management Direction in Forest Plan Appendix R. - Prescribed fire may be used as a tool to reduce natural fuels and improve quantity and quality of wildlife forage.	No forest protection measures are proposed.

Table B- 6 below displays this alternatives compliance with Forest Service management direction for regeneration harvest.

Table B- 6. Alternative 1 compliance with other Forest Service management direction

Management Direction	Compliance
Suitability for timber production. No timber harvest, other than salvage sales or sales to protect other multiple-use values, shall occur on lands not suited for timber production (16 USC 1604 (k)).	No timber harvests are proposed.
Prior to regeneration harvest, stands of trees must have generally reached CMAI of growth (FSH 1909.12, ch. 60; 16 U.S.C. 1604 (m)(1); FSM 1921.12f).	No regeneration harvest is proposed.
The size of harvest openings created by even-aged silviculture in the Northern Region will be normally 40 acres or less with some exceptions. Creation of large openings will require 60-day public review and Regional Forester approval, with several exceptions including: "Where natural catastrophic events such as fire, windstorms, or insect and disease attacks have occurred" (FSM 1900-2006-2; FSM R1 Supplement 2400-2001-2).	No regeneration harvest is proposed.
Clearcutting and Even-aged Management 916 USC 1604(g)(3)(F)): Insure that clearcutting ... and other cuts designed to regenerate an even-aged stand of timber will be used as a cutting method on National Forest System lands only where for clearcutting, it is determined to be the optimum method ... to meet the objectives and requirements of the relevant land management plan." "Clearcutting will be used only where it is the optimum method" (Helena Forest Plan, USDA Forest Service 1986).	No regeneration harvest is proposed.

Alternative 2

Compliance of alternative 2 with Forest Plan forestwide standards pertinent to this discussion are displayed in Table B- 7. Note that the forestwide standard statements refer to appendices in the Forest Plan and not in this document.

Table B- 7. Alternative 2 compliance with Forest Plan forestwide standards

Forestwide Standards		Compliance
Timber	1. Silvicultural examinations and prescriptions will be required before any timber manipulation or silvicultural treatment takes place. Exceptions include cutting of trees that block vision along roads, cutting hazard trees, clearing right-of-way, clearing for mineral development, minor and incidental amounts of free use, and cutting personal firewood. Final determination of what silvicultural system will be used for a particular project will be made by a certified silviculturist after an on-the-	Silvicultural exams and prescriptions would have been done and approved by a certified silviculturist. Site-specific analysis has been done to determine the optimum method of treatment. Clearcutting is being used where it is the optimum method. See project records.

Forestwide Standards		Compliance
	ground site analysis. This site-specific analysis will determine the appropriate even or uneven-age silvicultural system that best meets the goals and objectives of the management area. Standards for applying all silvicultural systems, as well as supporting research references are in the Northern Region guide (June 10, 1983). In addition, broad guidelines are found in Appendix H and M. Even-aged management methods will be used only where it is determined to be appropriate to meet objectives. Clearcutting will be used only where it is the optimum method.	
	2. Tree improvement will be conducted in accordance with the current Regional and Forest level tree improvement plans.	Tree improvement would be conducted following the applicable Regional and Forest direction.
	4. Timber stand openings created by even-aged silvicultural systems will normally be 40 acres or less. Creation of larger openings will require a 60-day public review and Regional Forester approval. Exceptions are listed in the Northern Regional Guide.	Proposed regeneration harvest units exceed 40 acres in seven units (Table B-1). All of the units have been severely impacted by recent mountain pine beetle mortality and can be excepted from 60-day review and Regional Forester approval. The Stonewall Vegetation Project EIS process serves to notify the public and document the need for the unit size.
Protection Insect and Disease	1. Silvicultural systems will be the primary tool for preventative pest management. Use silvicultural systems to: (1) improve species diversity, growth, and vigor for stands and (2) increase the size diversity and class diversity between stands.	Silvicultural systems are proposed in this alternative to meet the project purpose and need which includes species diversity, growth, and vigor for stands and size diversity and class diversity between stands.
	2. During ongoing infestations, control insects and disease through silvicultural and biological practices. Chemical controls will be limited to high value areas or used on a broader scale only when all other measures have failed and other resource values can be protected. Emphasize cooperative control measures between Federal, State, and private landowners.	Silvicultural practices are proposed to address recent past, ongoing, and future insect and disease concerns. No insect and disease chemical controls are proposed.
	3. Biological practices will be considered in controlling insect and disease infestations.	No biological practices are being considered beyond vegetation management.
	4. If possible, harvest stands which are a high risk for mountain pine beetle attack before harvesting moderate or low risk stands.	Proposed timber harvests addressed recently impacted and high risk stands as well as those where treatment was considered necessary to meet the purpose and need for the project.
Wildfire	2. Locate timber sales, or cutting units within a sale, to break-up contiguous natural fuel.	Cutting units were located to reduce current and potential fuels created as a result of the MPB epidemic and modify fuels to meet the purpose and need to modify fire behavior for community protection and to allow for the reestablishment of fire as a natural process on the landscape

Forestwide Standards		Compliance
Wildlife/Snags	Larch, ponderosa pine, Douglas-fir, spruce, and subalpine fir, in that priority, are the preferred species for snags and replacement trees (live trees left to replace existing snags).	Treatment design includes artificial and natural regeneration of ponderosa pine and western larch as well as retaining these species over several others in thinning operations. Larch and ponderosa pine would increase due to the treatments.

Compliance of alternative 2 with Forest Plan Management Area standards pertinent to this discussion are displayed in Table B- 8.

Table B- 8. Alternative 2 compliance with management area standards

Management Area Standards		Compliance
M-1	**Timber** - Timber harvest, such as salvage and firewood removal, may occur where access exists. Slash created by any management practice will be disposed of in a manner consistent with the management area goals. Forested lands are classified as unsuitable for timber management.	Six acres of Unit 58 is proposed for a regeneration harvest due to high mortality. Slash would be treated through jackpot burning.
	Protection - Salvage of dead, dying, or high-hazard trees is permitted to prevent disease and insect population build-up. - Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources. - Prescribed fire with unplanned ignitions may be used in this management area, for the enhancement and maintenance of resources, when within pre-established prescribed fire criteria. These criteria are stated in the Fire Management Direction in Appendix R. -Evaluate areas periodically for significant insect and disease problems. Endemic levels will be accepted as normal. If epidemic levels develop and control is necessary, the control method should minimize impacts on watershed and other resource values.	The proposed regeneration harvest and jackpot burning is consistent with the removal of dead, dying or high-hazard trees and prescribed burning.
T-1	**Timber** - This management area is suitable for timber management activities. - Timber harvest practices include clearcut, group selection, and shelterwood harvest, depending on habitat group, physical site conditions, and silvicultural objectives. Precommercial thinning and intermediate harvest may occur where needed as determined by silvicultural objectives and project planning. (Appendices H and M of the Forest Plan provide broad guidelines for various habitat groups.) - As a minimum, a cutover area will not be considered an opening when: (1) a new forest stand is established and certified as stocked, and (2) vegetative conditions reach the point where harvest of additional timber can occur and the combined area can still meet watershed management objectives. - Prescribed burning or other techniques may be used for slash disposal, site preparation, silvicultural, and livestock objectives. In habitat groups where fire is not a useful treatment tool, lopping and scattering, yarding unmerchantable material (YUM), or other methods will be used to reduce fuel accumulations and prepare sites for regeneration. - Project level planning will provide for stand regeneration within five years of final harvest. - Even-aged stands will be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include thinning or other stand improvement measures, salvage or sanitation harvest, management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Appendix H.	Proposed treatments are consistent with timber harvest practices, are determined by silvicultural objectives and project planning to meet the purpose and need. Prescribed burning is proposed where necessary for fuels reduction and site preparation. See table 25 below for regeneration and CMAI consistency.

Management Area Standards		Compliance
	Protection - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times. - - Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources. - Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling.	The project purpose and need and proposed treatments address creating a landscape that is diverse, resilient and sustainable to wildfire and insects.
T-2	**Timber** - This management area is suitable for timber management activities. - Timber harvest methods and volumes will be adjusted as necessary to meet big game winter range needs. Even- or uneven-aged silvicultural systems may be used. (Appendix M provides guidance for vegetative management practices by habitat groups.) - Openings created by timber harvest should meet hiding cover requirements of big game before adjacent areas can be harvested. - Schedule sale activities outside winter periods (December 1 to May 15). - No more than 25 percent of the timber-perimeter around natural or artificial parks should be nonthermal cover at one time. - Even-aged stands will be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include thinning or other stand improvement measures, salvage or sanitation harvest, and management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Appendix H.	Treatments would be adjusted to meet wildlife needs see wildlife design criteria (appendix P), and wildlife report.
	Protection - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times. -- Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources. - Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling. Disposal activities will meet visual quality objectives.	See T-1 above.
T-3	**Timber** - This management area is suitable for timber management activities. - Timber harvest methods and volumes may be modified as necessary to achieve the management area goals. - Even-aged stands will be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include salvage or sanitation harvest and management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Appendix H of the Forest Plan. Forest Plan Appendix M provides guidance for various vegetative management practices by habitat group. - Stocking control may be maintained through precommercial and commercial thinnings. The timing and planning of thinning operations will be coordinated with a wildlife biologist. - Vegetative diversity will be encouraged. - Openings created by timber harvest will be reforested to the extent necessary to meet the hiding cover requirements of big game before harvesting adjacent areas.	Proposed treatments are modified to meet wildlife needs. See the see wildlife design criteria (appendix P), and wildlife report. The project purpose and need and proposed treatments address increasing vegetative diversity. See below for CMAI consistency.
	Protection - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times. - Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources. - Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling. Disposal activities will meet visual quality objectives.	See T-1 above.

Management Area Standards		Compliance
T-4	**Timber** - This management area is suitable for timber management activities. - Even-aged stands may be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include thinning or other stand improvement measures, salvage or sanitation harvest, and management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Forest Plan Appendix H. - Timber harvest practices include clearcutting, group selection, and shelterwood harvest, depending on habitat group, physical site conditions, and visual quality objectives. Precommercial thinnings and intermediate harvest will occur where needed as determined by silvicultural objectives, project planning, and visual quality objective. (Forest Plan Appendices H and M provide broad guidelines for various habitat groups.) - Openings created by timber harvest will be reforested to the point where harvest of adjacent timber can occur and the combined area can still meet the VQOs of the area. - Use timber harvest to rehabilitate existing harvest units, to improve the VQO. - Prescribed burning will be used to accomplish slash disposal, site preparation, and silvicultural objectives. In habitat groups where fire is not a useful treatment tool, loping and scattering, YUM yarding, or other methods will be used to reduce fuel accumulations and prepare sites for regeneration provided the area goals are met.	Proposed treatments are consistent with timber harvest practices, are determined by silvicultural objectives and project planning to meet the purpose and need. Prescribed burning is proposed where necessary for fuels reduction and site preparation.
	Protection - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times. - Prescribed fire with planned ignitions will be used in this management area, for the enhancement and maintenance of resources. - Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling. Disposal activities will meet visual quality objectives.	See T-1 above.
W-1	**Timber** - Timber will be harvested only if it can be used as a tool to maintain or enhance wildlife habitat values. Productive forest land is classified as unsuitable for timber management	No timber harvest is proposed in W-1.
	Protection - Areas will be evaluated periodically for significant insect and disease problems. Endemic levels will be accepted as normal. If epidemic levels develop and control is necessary, the control method should minimize impacts on big game and other wildlife values. - Prescribed fire with planned ignitions will be used in this management area, for the enhancement and maintenance of resources. - Prescribed fire with unplanned ignitions may be used in this management area, for the enhancement and maintenance of resources, when within pre-established prescribed fire criteria. These criteria are detailed in the Fire Management Direction in Forest Plan Appendix R. - Prescribed fire may be used as a tool to reduce natural fuels and improve quantity and quality of wildlife forage.	Prescribed fire is proposed to meet purpose and need to increase species and structural diversity and landscape resilience to wildfire and insects. See wildlife design criteria in table 9, chapter 2 for additional information.

Table B- 9 that follows displays compliance with Forest Service management direction for regeneration harvest for alternative 2.

Table B- 9. Alternative 2 compliance with Forest Service regeneration harvest direction

Management Direction	Compliance
Suitability for timber production. No timber harvest, other than salvage sales or sales to protect other multiple-use values, shall occur on lands not suited for timber production (16 USC 1604 (k)).	All timber harvest would take place in land classified as suitable for timber harvest under the Helena Forest Plan (MA T-1, T-2, T-3, T-4) with the exception of six acres in Unit 58 which is in MA M-1 (appendix J). All proposed treatments involving timber harvest are designed to meet the project purpose and need (stated above) and are not designed for timber production other than salvage. Timber harvest may occur in M-1 where access exists.
Prior to regeneration harvest, stands of trees must have generally reached CMAI of growth (FSH 1909.12, ch. 60; 16 U.S.C. 1604 (m)(1); FSM 1921.12f).	Average CMAI for forests in the area ranges from 100 to 120 years (USDA Forest Service 1986 appendix H). Trees in most of the suitable units are of an age where they probably had reached CMAI (appendix K) however, the question of culmination of mean annual increment of growth in these units has been rendered moot by the severe levels of mortality. The units are not proposed for treatment for timber production purposes, but to restore the forests, modify fire behavior, and capture economic value of timber and so the CMAI growth requirement would not apply as stated above.
The size of harvest openings created by even-aged silviculture in the Northern Region will be normally 40 acres or less with some exceptions. Creation of large openings will require 60-day public review and Regional Forester approval, with several exceptions including: “Where natural catastrophic events such as fire, windstorms, or insect and disease attacks have occurred” (FSM 1900-2006-2; FSM R1 Supplement 2400-2001-2).	Proposed regeneration harvest units exceed 40 acres in seven units (Table B- 1). All of the units have been severely impacted by recent mountain pine beetle mortality and are exempt from 60-day review and Regional Forester approval as described in FSM 1900-2006-2. FSM R1 Supplement 2400-2001-2. The Stonewall Vegetation Project EIS 45-day comment period serves to notify the public and is sufficient in documenting the need for the unit size.
Clearcutting and Even-aged Management 916 USC 1604(g)(3)(F)): Insure that clearcutting ... and other cuts designed to regenerate an even-aged stand of timber will be used as a cutting method on National Forest System lands only where for clearcutting, it is determined to be the optimum method ... to meet the objectives and requirements of the relevant land management plan.” “Clearcutting will be used only where it is the optimum method” (Helena Forest Plan, USDA Forest Service 1986).	Proposed regeneration treatments utilize clearcutting with reserve trees in 11 units with severe mortality and few remaining live trees. Clearcutting has been determined to be the optimal method for regenerating these units to the desired seral species in order to meet the project purpose and need as documented in project records.
There is assurance that the lands can be adequately restocked within five years after final regeneration harvest (16 USC 1604(g)(3)(E)(ii); FSM 1921.12g).	Each regeneration harvest treatment area has been field reviewed by a certified silviculturist and treatment designed to ensure that the stands can be adequately stocked following final harvest. Restocking would be through natural and artificial methods to levels established for each unit. As displayed in appendix G table 35, 3,842 acres of regeneration harvest are recorded to have taken place in the project area. Examination of past regeneration harvest units shows that regeneration success in the project area is very good. Stocking criteria would be established for each unit based upon site conditions, treatment objectives, and Forest Plan direction and documented in silvicultural prescriptions developed for the project. Regeneration treatments would be monitored (FSM 2472.4) to access treatment success and schedule additional corrective work if the units are not adequately proceeding toward desired stocking guidelines.

Compliance of alternative 3 with Forest Plan Forestwide standards pertinent to this discussion is displayed in Table B- 10.

Table B- 10. Alternative 3 compliance with Forest Plan forestwide standards

Forestwide Standards		Compliance
Timber	1. Silvicultural examinations and prescriptions will be required before any timber manipulation or silvicultural treatment takes place. Exceptions include cutting of trees that block vision along roads, cutting hazard trees, clearing right-of-way, clearing for mineral development, minor and incidental amounts of free use, and cutting personal firewood. Final determination of what silvicultural system will be used for a particular project will be made by a certified silviculturist after an on-the-ground site analysis. This site-specific analysis will determine the appropriate even or uneven-age silvicultural system that best meets the goals and objectives of the management area. Standards for applying all silvicultural systems, as well as supporting research references are in the Northern Region guide (June 10, 1983). In addition, broad guidelines are found in Appendix H and M. Even-aged management methods will be used only where it is determined to be appropriate to meet objectives. Clearcutting will be used only where it is the optimum method.	Silvicultural exams and prescriptions would have been done and approved by a certified silviculturist. Site-specific analysis has been done to determine the optimum method of treatment. Clearcutting is being used where it is the optimum method. See project records.
	2. Tree improvement will be conducted in accordance with the current Regional and Forest level tree improvement plans.	Tree improvement would be conducted following the applicable Regional and Forest direction.
	4. Timber stand openings created by even-aged silvicultural systems will normally be 40 acres or less. Creation of larger openings will require a 60-day public review and Regional Forester approval. Exceptions are listed in the Northern Regional Guide.	Proposed regeneration harvest units exceed 40 acres in six units (Table B- 2). All of the units have been severely impacted by recent mountain pine beetle mortality and can be excepted from 60-day review and Regional Forester approval. The Stonewall Vegetation Project EIS process serves to notify the public and document the need for the unit size.
Protection Insect and Disease	1. Silvicultural systems will be the primary tool for preventative pest management. Use silvicultural systems to: (1) improve species diversity, growth, and vigor for stands and (2) increase the size diversity and class diversity between stands.	Silvicultural systems are proposed in this alternative to meet the project purpose and need which includes species diversity, growth, and vigor for stands and size diversity and class diversity between stands.
	2. During ongoing infestations, control insects and disease through silvicultural and biological practices. Chemical controls will be limited to high value areas or used on a broader scale only when all other measures have failed and other resource values can be protected. Emphasize cooperative control measures between Federal, State, and private landowners.	Silvicultural practices are proposed to address recent past, ongoing, and future insect and disease concerns. No insect and disease chemical controls are proposed.
	3. Biological practices will be considered in controlling insect and disease infestations.	No biological practices are being considered beyond vegetation management.
	4. If possible, harvest stands which are a high risk for mountain pine beetle attack before harvesting moderate or low risk stands.	Proposed timber harvests addressed recently impacted and high risk stands as well as those where treatment was

Forestwide Standards		Compliance
		considered necessary to meet the purpose and need for the project.
Wildfire	2. Locate timber sales, or cutting units within a sale, to break-up contiguous natural fuel.	Cutting units were located to reduce current and potential fuels created as a result of the MPB epidemic and modify fuels to meet the purpose and need to modify fire behavior for community protection and to allow for the reestablishment of fire as a natural process on the landscape
Wildlife/Snags	Larch, ponderosa pine, Douglas-fir, spruce, and subalpine fir, in that priority, are the preferred species for snags and replacement trees (live trees left to replace existing snags).	Treatment design includes artificial and natural regeneration of ponderosa pine and western larch as well as retaining these species over several others in thinning operations. Larch and ponderosa pine would increase due to the treatments.

Compliance of alternative 3 with Forest Plan management area standards pertinent to this discussion are displayed in Table B- 11.

Table B- 11. Alternative 3 compliance with management area standards

Management Area Standards		Compliance
M-1	**Timber** - Timber harvest, such as salvage and firewood removal, may occur where access exists. Slash created by any management practice will be disposed of in a manner consistent with the management area goals. Forested lands are classified as unsuitable for timber management.	Six acres of Unit 58 is proposed for a regeneration harvest due to high mortality. Slash would be treated through jackpot burning.
	Protection - Salvage of dead, dying, or high-hazard trees is permitted to prevent disease and insect population build-up. - Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources. - Prescribed fire with unplanned ignitions may be used in this management area, for the enhancement and maintenance of resources, when within pre-established prescribed fire criteria. These criteria are stated in the Fire Management Direction in Appendix R. -Evaluate areas periodically for significant insect and disease problems. Endemic levels will be accepted as normal. If epidemic levels develop and control is necessary, the control method should minimize impacts on watershed and other resource values.	The proposed regeneration harvest and jackpot burning is consistent with the removal of dead, dying or high-hazard trees and prescribed burning.
T-1	**Timber** - This management area is suitable for timber management activities. - Timber harvest practices include clearcut, group selection, and shelterwood harvest, depending on habitat group, physical site conditions, and silvicultural objectives. Precommercial thinning and intermediate harvest may occur where needed as determined by silvicultural objectives and project planning. (Appendices H and M of the Forest Plan provide broad guidelines for various habitat groups.) - As a minimum, a cutover area will not be considered an opening when: (1) a new forest stand is established and certified as stocked, and (2) vegetative conditions reach the point where harvest of additional timber can occur and the combined area can still meet watershed management objectives. - Prescribed burning or other techniques may be used for slash disposal, site preparation, silvicultural, and livestock objectives. In habitat groups where fire is not a useful treatment tool, lopping and scattering, yarding unmerchantable	Proposed treatments are consistent with timber harvest practices, are determined by silvicultural objectives and project planning to meet the purpose and need. Prescribed burning is proposed where

Management Area Standards		Compliance
	material (YUM), or other methods will be used to reduce fuel accumulations and prepare sites for regeneration. - Project level planning will provide for stand regeneration within five years of final harvest. - Even-aged stands will be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include thinning or other stand improvement measures, salvage or sanitation harvest, management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Appendix H.	necessary for fuels reduction and site preparation.
	Protection - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times. - - Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources. - Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling.	The project purpose and need and proposed treatments address creating a landscape that is diverse, resilient and sustainable to wildfire and insects.
T-2	**Timber** - This management area is suitable for timber management activities. - Timber harvest methods and volumes will be adjusted as necessary to meet big game winter range needs. Even- or uneven-aged silvicultural systems may be used. (Appendix M provides guidance for vegetative management practices by habitat groups.) - Openings created by timber harvest should meet hiding cover requirements of big game before adjacent areas can be harvested. - Schedule sale activities outside winter periods (December 1 to May 15). - No more than 25 percent of the timber-perimeter around natural or artificial parks should be nonthermal cover at one time. - Even-aged stands will be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include thinning or other stand improvement measures, salvage or sanitation harvest, and management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Forest Plan Appendix H.	Treatments would be adjusted to meet wildlife needs see wildlife design criteria in table 9, chapter 2.
	Protection - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times. -- Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources. - Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling. Disposal activities will meet visual quality objectives.	See T-1 above.
T-3	**Timber** - This management area is suitable for timber management activities. - Timber harvest methods and volumes may be modified as necessary to achieve the management area goals. - Even-aged stands will be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include salvage or sanitation harvest and management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Appendix H of the Forest Plan. Forest Plan Appendix M provides guidance for various vegetative management practices by habitat group. - Stocking control may be maintained through precommercial and commercial thinnings. The timing and planning of thinning operations will be coordinated with a wildlife biologist. - Vegetative diversity will be encouraged.	Proposed treatments are modified to meet wildlife needs. See the see wildlife design criteria in table 9, chapter 2. The project purpose and need and proposed treatments address increasing vegetative diversity. See below for CMAI consistency.

Management Area Standards		Compliance
	- Openings created by timber harvest will be reforested to the extent necessary to meet the hiding cover requirements of big game before harvesting adjacent areas.	
	Protection - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times. - Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources. - Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling. Disposal activities will meet visual quality objectives.	See T-1 above.
T-4	**Timber** - This management area is suitable for timber management activities. - Even-aged stands may be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include thinning or other stand improvement measures, salvage or sanitation harvest, and management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Forest Plan Appendix H. - Timber harvest practices include clearcutting, group selection, and shelterwood harvest, depending on habitat group, physical site conditions, and visual quality objectives. Precommercial thinnings and intermediate harvest will occur where needed as determined by silvicultural objectives, project planning, and visual quality objective. (Forest Plan Appendices H and M provide broad guidelines for various habitat groups.) - Openings created by timber harvest will be reforested to the point where harvest of adjacent timber can occur and the combined area can still meet the VQOs of the area. - Use timber harvest to rehabilitate existing harvest units, to improve the VQO. - Prescribed burning will be used to accomplish slash disposal, site preparation, and silvicultural objectives. In habitat groups where fire is not a useful treatment tool, loping and scattering, YUM yarding, or other methods will be used to reduce fuel accumulations and prepare sites for regeneration provided the area goals are met.	Proposed treatments are consistent with timber harvest practices, are determined by silvicultural objectives and project planning to meet the purpose and need. Prescribed burning is proposed where necessary for fuels reduction and site preparation.
	Protection - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times. - Prescribed fire with planned ignitions will be used in this management area, for the enhancement and maintenance of resources. - Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling. Disposal activities will meet visual quality objectives.	See T-1 above.
W-1	**Timber** - Timber will be harvested only if it can be used as a tool to maintain or enhance wildlife habitat values. Productive forest land is classified as unsuitable for timber management	No timber harvest is proposed in W-1.
	Protection - Areas will be evaluated periodically for significant insect and disease problems. Endemic levels will be accepted as normal. If epidemic levels develop and control is necessary, the control method should minimize impacts on big game and other wildlife values. - Prescribed fire with planned ignitions will be used in this management area, for the enhancement and maintenance of resources. - Prescribed fire with unplanned ignitions may be used in this management area, for the enhancement and maintenance of resources, when within pre-established prescribed fire criteria. These criteria are detailed in the Fire Management Direction in Forest Plan Appendix R. - Prescribed fire may be used as a tool to reduce natural fuels and improve quantity and quality of wildlife forage.	Prescribed fire is proposed to meet purpose and need to increase species and structural diversity and landscape resilience to wildfire and insects. See wildlife design criteria in table 9, chapter 2 for additional information.

Table B- 12 below displays compliance with Forest Service management direction for regeneration harvest for alternative 3.

Table B- 12. Alternative 3 compliance with Forest Service regeneration harvest direction

Management Direction	Compliance
Suitability for timber production. No timber harvest, other than salvage sales or sales to protect other multiple-use values, shall occur on lands not suited for timber production (16 USC 1604 (k)).	All timber harvest would take place in land classified as suitable for timber harvest under the Helena Forest Plan (MA T-1, T-2, T-3, T-4) with the exception of six acres in Unit 58 which is in MA M-1 (appendix J). All proposed treatments involving timber harvest are designed to meet the project purpose and need (stated above) and are not designed for timber production other than salvage. Timber harvest may occur in M-1 where access exists.
Prior to regeneration harvest, stands of trees must have generally reached CMAI of growth (FSH 1909.12, ch. 60; 16 U.S.C. 1604 (m)(1); FSM 1921.12f).	Average CMAI for forests in the area ranges from 100 to 120 years (USDA Forest Service 1986 appendix H). Trees in most of the suitable units are of an age where they probably had reached CMAI (appendix K) however, the question of culmination of mean annual increment of growth in these units has been rendered moot by the severe levels of mortality. The units are not proposed for treatment for timber production purposes, but to restore the forests, modify fire behavior, and capture economic value of timber and so the CMAI growth requirement would not apply as stated above.
The size of harvest openings created by even-aged silviculture in the Northern Region will normally be 40 acres or less with some exceptions. Creation of large openings will require 60-day public review and Regional Forester approval, with several exceptions including: “Where natural catastrophic events such as fire, windstorms, or insect and disease attacks have occurred” (FSM 1900-2006-2; FSM R1 Supplement 2400-2001-2).	Proposed regeneration harvest units exceed 40 acres in seven units. All of the units have been severely impacted by recent mountain pine beetle mortality and are exempt from 60-day review and Regional Forester approval as described in FSM 1900-2006-2. FSM R1 Supplement 2400-2001-2. The Stonewall Vegetation Project EIS 45-day comment period serves to notify the public and is suffice in documenting the need for the unit size.
Clearcutting and Even-aged Management 916 USC 1604(g)(3)(F)): Insure that clearcutting ... and other cuts designed to regenerate an even-aged stand of timber will be used as a cutting method on National Forest System lands only where for clearcutting, it is determined to be the optimum method ... to meet the objectives and requirements of the relevant land management plan.” “Clearcutting will be used only where it is the optimum method” (Helena Forest Plan, USDA Forest Service 1986).	Proposed regeneration treatments utilize clearcutting with reserve trees in 8 units with severe mortality and few remaining live trees. Clearcutting has been determined to be the optimal method for regenerating these units to the desired seral species in order to meet the project purpose and need as documented in project records.
There is assurance that the lands can be adequately restocked within five years after final regeneration harvest (16 USC 1604(g)(3)(E)(ii); FSM 1921.12g).	Each regeneration harvest treatment area has been field reviewed by a certified silviculturist and treatment designed to ensure that the stands can be adequately stocked following final harvest. Restocking would be through natural and artificial methods to levels established for each unit. As displayed, 3,842 acres of regeneration harvest is recorded to have taken place in the project area. Examination of these past regeneration harvest units shows that regeneration success in the project area is very good. Stocking criteria would be established for each unit based upon site conditions, treatment objectives, and Forest Plan direction and would be documented in silvicultural prescriptions developed for the project. Regeneration treatments would be monitored (FSM 2472.4) to access treatment success and schedule additional corrective work if the units are not adequately proceeding toward desired stocking guidelines

Data Sources

The following are short discussions of data sources used for this analysis.

Aerial Insect and Disease Detection Survey (ADS)

Aerial Insect and Disease Detection Survey (ADS) data for Region 1 is collected annually by the USDA Forest Service Region 1 and 4 Forest Health Protection Aviation Program (USDA Forest Service 2011). The purpose of the ADS program is to:

Detect new outbreaks or identify previously undetected outbreaks of forest pests

- Monitor existing outbreaks
- Provide timely information for management planning
- Provide information for forest health assessments and project plans.

The surveys are conducted primarily using fixed-wing aircraft that fly patterns over survey areas beginning in the first part of July and continue through the end of September and often into October. During the flights, personnel sketches the observed insect and disease damage and mortality spatial locations and estimates the degree of the damage (trees per acre affected), the insect or disease causing the damage or mortality, and the tree species being affected.

The ADS is conducted according to well-established and documented survey standards (USDA Forest Service 1999). The results of the survey are digitized into GIS layers following established procedures (USDA Forest Service 2005). The GIS layers produced from the surveys are used in this analysis.

Because the ADS data relies on ocularly estimated insect and disease damaging agent, degree of damage or mortality, and spatial location, the information is useful for detecting, describing and analyzing insect and disease damage and establishing trends on a landscape over time. However, due to limitations in the ocular estimation process, care should be taken in applying the ADS at a stand, or smaller, degree of resolution.

Northern Region Vegetation Map (R1 VMap)

Region 1, Northern Region Vegetation Map (R1 VMap) data is derived from satellite imagery, and provides consistent and continuous data at several levels of accuracy and utility as part of the R1 Multi-level Vegetation Classification, Mapping, Inventory, and Analysis System (R1-CMIA, Berglund et al. 2009). The R1-CMIA data collection program meets the requirements of the Existing Vegetation Classification and Mapping Technical Guide, which describes agency data needs, vegetation classification standards, and mapping standards (Brohman and Bryant 2005). Levels of accuracy in the VMap data include: (1) broad-level data used for forest, multi-forest, and regional-level assessments, (2) mid-level data which is intended to support forest and district integrated vegetation treatment plans, and (3) base-level data which is meant to be used for stand-level analysis purposes (Berglund et al. 2009). The VMap data used in the Stone-Dry EWAS (Milburn et al. 2006) and the Stonewall project is mid-level data that has been edited in 2010 and 2011 to reflect changes in vegetation attributes due to (1) recent wildfires, (2) site- and stand-specific data, and (3) the recent bark beetle epidemic (USDA Forest Service 2011). Attributes in the VMap data used in this analysis includes tree dominance type, tree canopy cover class, tree size class.

National Agriculture Imagery Program (NAIP)

The National Agriculture Imagery Program (NAIP) acquires aerial imagery during the agricultural growing seasons in the continental U.S. NAIP imagery used in the Stonewall Vegetation Project was acquired in 2009, and is 1-meter resolution available in color or infrared.

Fire Regime Condition Class (FRCC)

Fire Regime Condition Class (FRCC) is an interagency, standardized tool for determining the degree of departure from reference condition vegetation, fuels and disturbance regimes (FRCC 2005). Helena NF personnel classified vegetation and analyzed FRCC for the Stone Dry EWAS (Milburn et al. 2006, 2009). VMap data served as the spatial database for the FRCC analysis. The spatial data and FRCC analysis was updated for the Stonewall project analysis (Olsen 2010). For the Stonewall Vegetation Project, we used attributes from the updated FRCC analysis spatial data for biophysical setting.

Stand Data and Silvicultural Diagnoses

Individual stand attributes and detailed silvicultural diagnoses were done in the field in 2008, and updated in 2009 for proposed treatment units. Information collected for each includes: tree species composition, tree stocking levels, understory species compositions and coverage, insect activity, disease presence, vigor, mortality, past harvest, snag availability, and other pertinent information. Personnel measured and recorded selected stand attributes in informal plots (non-statistical). The Forest silviculturist performed most diagnoses in person, although several were done by another certified silviculturist and a forester, under the direction of the Forest silviculturist. Diagnoses represent the most current on-the-ground assessment of all proposed units.

Forest Inventory and Analysis (FIA) and FIA Intensification Plots

The Forest Inventory and Analysis (FIA) Program of the USDA Forest Service serves as the Nation's continuous forest census (USDA Forest Service 2011b). The program has established a set of permanent plots on a national grid that can be measured to characterize changes in forest attributes over time. Forest Inventory and Analysis plots are used at the Forest and landscape scales to set the context for forest conditions and effects, and assessments of insect hazard. Forest Inventory and Analysis plots are maintained at the National level on a periodic remeasurement schedule. In Region 1, FIA plots have been used to estimate the amount of old growth forest and snag density (Czaplewski 2004). The R1 Summary Database, using the NRIS Access Tool, was used to summarize Forest and landscape FIA and grid intensification data. This database is continually updated and was used to derive estimates of snags, old growth habitat types, and insect hazard ratings and forest structure characteristics. The use and limitations of this database is documented (USDA Forest Service 2008).

Models and Assumptions

Forest Vegetative Simulator

The Forest Vegetation Simulator (FVS) was developed in the early 1970's as the "Prognosis" model (Stage 1973). Since that time, FVS has undergone continual and continuing research and development efforts to expand FVS's range and capabilities, validate, update, and modify FVS's predictions, and increase the FVS program's usefulness and usability. Over the last three decades, the USDA Forest Service has invested a substantial amount annually on research and development of FVS, and are continuing to do so within the Forest Service and through partnerships with educational institutions, other government agencies, and other countries (USDA 2011c).

Currently, the FVS is used almost exclusively by the USDA Forest Service, and is used heavily by other US government agencies such as the Bureau of Land Management, Bureau of Indian Affairs, National Park Service, Natural Resource Conservation Service, Army Corps of Engineers, Fish and Wildlife Service, Department of Defense, and Department of Energy. At least five state forestry agencies utilize FVS and it is heavily used in the private forestry sector. Most major university forestry programs in the US teach the use of FVS.

International use of FVS includes use in the Canadian provinces of British Columbia, Ontario, Alberta and Nova Scotia. FVS is also being used, or variants are being developed for use in Russia, China,

Austria, South Korea, Japan, Costa Rica, Portugal, Indonesia, and the United Kingdom as well as other European countries.

Over the last several decades, the Forest Vegetation Simulator has become the most used forest vegetation modeling program in the United States and the world.

The Forest Vegetation Simulator is the product of hundreds of contributors over the past three decades (Dixon 2010). It is not a single growth and yield "model" but consists of a number in integrated models including those for predicting large-tree height and diameter increment, small-tree height and diameter increment, tree mortality, crown change, tree regeneration establishment, shrub development, shrub and tree vertical canopy distribution, mountain pine beetle risk, Douglas-fir tussock moth hazard and impacts, economic analysis, western spruce budworm hazard and impacts, western root disease impacts, dwarf mistletoe impacts, white pine blister rust impacts, and fire effects.

The Forest Vegetation Simulator has expanded its range of applicability from its original Northwest US roots through the creation of "geographic variants" that utilize research from various geographic regions of the US to tailor equations such as those for tree growth, mortality and volume to those regions. There are currently over 20 variants representing forests within the US. In developing some the variants, the Forest Vegetation Simulator has evolved from a growth and yield model into a framework supporting regional models such as TWIGS (Miner et al. 1988) and GENGYM (Edminster et al.1991) further incorporating the extensive research undertaken in developing these models into FVS.

Since FVS uses stand exam data, geographical variant equations for growth are further calibrated using the stand data. This calibration process, coupled with the use of site variables such as slope, aspect, elevation, habitat type, plant association or ecoclass code, location (nearest National Forest, and in some cases Ranger District), site index, and stand density index maximums or basal area maximums, and tree measurements such as species, diameter-at-breast-height, total tree height, tree height to a dead or broken top, diameter increment, age, crown ratio, and damages or diseases, enables FVS to make very accurate individual tree and stand-level growth and yield predictions.
Dixon (2010) describes FVS as "a semi-distant-independent individual tree growth and yield model". He considers it semi-distant-independent because certain parts of FVS localize competition and site variables to a plot (or point) basis within a stand where other parts do not. Because FVS uses stand exam data, it keeps track of the plot on which trees are located enabling the user to simulate group selection or differentially treat a stand based on density within a stand. One must realize when one is modeling treatment simulations based upon plots that although the plots may be modeled independently in FVS, the FVS outputs will still be showing the *average of all trees on all plots.* Portions of the FVS that do not model on a plot basis are the VSS classification module and the Fire and Fuels Extension.

Fire Fuels Extension

Fire behavior and effects are modeled in FVS through the Fire and Fuels Extension (FFE) which simulates fuel dynamics and potential fire behavior over time in the context of stand development and management (Reinhardt and Crookston 2003). The Fire and Fuels Extension models changes to surface and crown fuels over time due to treatments. Surface fuels attributes include tons-per-acre of fuels by fuels size class. Crown fuels attributes modeled include crown bulk density (CBD) and canopy base height (CBH). The FFE uses existing fire fuel models for fire behavior and effects and adds new submodels for snag and fuel dynamics. The FFE uses Rothermel's (1972) fire behavior model as implemented by Albini (1976) in FIREMOD and subsequently by Andrews (1986) in Behave to predict fire intensity, approaches developed by Van Wagner (1973, 1977) and Scott and Reinhardt (2001) to predict the onset of crowning, and methods from FOFEM (Reinhardt et al. 1997) for predicting tree mortality, fuel consumption and smoke production.

Limitations of the Models

"It should be noted a model is a simplification or approximation of reality and hence will not reflect all of reality" (Stratton 2006). The use of models such as FVS depends upon sample data, validity of the model itself and assumptions made by the modeler. All three affect the results. The use of FVS in this analysis is to generally characterize and display existing conditions and the nature and magnitude of treatment effects to inform decisions to be made. The modeling results are not to be taken as reality.

Historic Stand Conditions

Historic stand structures and species compositions were shaped by a number of factors including climate/weather, site conditions, and the historic fire regime. These factors determined whether any one fire, whether naturally or artificially ignited, would burn any particular forested patch and how severe the fire would be when it burned the patch. Dryer sites such as south-facing slopes tended to burn more frequently which resulted in lower downed woody fuel loads, a higher occurrence of herbaceous understory vegetation, and forests dominated by trees that are relatively resistant to fire, such as ponderosa pine and larger Douglas-fir (Wright and Bailey 1982, Agee 1993, Arno 2000, Beaty and Taylor 2001, Beaty and Taylor 2007). Moister sites tended to burn less frequently in what can be called "mixed-severity" fire regimes which may consist of a combination of understory and stand-replacement fires such as the seral ponderosa pine-western larch forests in western Montana that were burned with stand-replacement fires at long intervals (150+ years) with nonlethal fires at short intervals (20 to 30 years average (Arno 2000) or mixed-severity fire regimes could consist of fires that tended to burn with a fine-grained pattern, killing a large portion of the fire-susceptible species but sparing many of the fire-resistant trees (Arno 2000). The coolest and moistest sites tended to burn with stand-replacing fire regimes.

A number of studies have displayed stand structures and species compositions in terms of diameter distribution charts. Available studies include:

- In western Montana, Arno et al. (1995) found that most old growth ponderosa pine/Douglas-fir plots sampled had burned with frequent (13 to 50 year intervals) non-lethal underburns prior to 1900. They attributed the fire regime to having maintained open, nearly all-aged stands (Arno et al. 1995). Tree species composition and diameter distribution charts for these plots show mixed-species stands dominated by ponderosa pine with western larch and Douglas-fir as a co-dominant in lesser and varying presence, and lodgepole as a minor species with stand diameter distributions being very flat except for the smaller size classes which displayed increased tree numbers due to fire exclusion. They did find one plot containing even-aged ponderosa pine and western larch which they related to a pre-1900 fire history characterized by patchy stand-replacing events at intervals of 150 or more years. Tree species composition and diameter distribution chart for this plot shows a mixed-species stand dominated by ponderosa pine with western larch and Douglas-fir as co-dominants, and lodgepole as a minor species with a diameter distributions having a prominent "peak" at 16-18 inches d.b.h., characteristic of an even-aged stand. Arno et al. (1995) in their western Montana study found that in recent years, all stands had developed an understory of Douglas-fir which they related to fire exclusion.
- Holden et al. (2007) in studying tree density, diameter-class distribution, and stocking levels among areas that had burned under two different fire frequencies since 1972 in New Mexico stands found that more frequent burns resulted in more open stands with fewer small trees. They display tree diameter distributions that are almost flat compared to the unburned control stand diameter distributions in which TPA increases greatly with decreasing tree diameter.
- Fulé and Covington (1997) studied fires regimes and forest structures in the Sierra Madre occidental and displayed diameter distributions showing almost flat distributions for burned sites as opposed to increasing numbers of small trees and increases in fire-susceptible species at unburned sites.

- Minnich et al. (2000) displays diameter distributions for six forest types in the Sierra San Pedro Martir under un-managed fire regimes, showing flat diameter distributions for all forest types and dominance by fire-resistant species.
- Minnich et al. (1995) studied forest stem densities from data collected on plots in 1932 and 1992 and displayed diameter distributions for the historic measurements to be relatively flat and from the 1992 measurements to have substantial numbers of small trees, which he attributed to forest densification due to fire exclusion. They also displayed increases in understory shade tolerant and fire-susceptible trees over time.

As the studies above indicate, for any combination of fire-resistant and fire-susceptible tree species, frequent fire regimes will result in stands that tend to be uneven-aged, multi-story with open understories and slightly sloping to flat diameter distributions.

Bark Beetles and Fires

Work in a variety of forest systems has generally shown that measures of fire intensity and severity are positively associated with tree susceptibility to bark beetle attack (Ryan and Amman 1996, Bradley and Tueller 2001, Sullivan et al. 2003, McHugh et al 2003, Wallin et al. 2003, Six and Skov 2009). Factors most mentioned in these studies include: crown scorch volume, cambial damage (bole char), root damage, stocking level, and tree size.

Fire damage to trees is determined by characteristics of the fire and of the trees. The height of crown scorch is determined by fire-line intensity, wind speed, and air temperature (Van Wagner 1973) as well as tree characteristics such as needle size, bud mass, and crown volume. Tree bole cambial and root damage by fires is related to the intensity and duration of heat on tree bases and roots and tree bark thickness and root depth (Ryan and Reinhardt 1988). Tree characteristics tend to be linked, with shallow-rooted conifers tending to have thin bark and conversely deeper-rooted trees tending to have thicker bark. Younger trees tend to have both thinner bark, and lower crowns. Young Douglas-fir tend to have relatively thin bark and small thin needles with compact crowns that are heated quickly and so are less fire-tolerant than small ponderosa pine with their thicker, platy bark, thicker, linger needles and open crown structures. Larger Douglas-fir are relatively fire resistant with thick bark.

In this discussion, we will address the effects of burning by wildfires and controlled prescribed burns on Douglas-fir beetle (DFB) and mountain pine beetle (MPB) mortality.

Mountain Pine Beetle

Elkin and Reid (2004) studied attack and reproductive success of MPB in fire-damaged lodgepole pines and found that beetle attack preference or reproductive success was not affected by fire damage. They suggested that fire damage only affects mountain pine beetle reproduction and population growth in areas where attack densities are low otherwise fire damage will have negligible effects on beetle attack and reproductive success.

In western Montana, Six and Skov (2009) studied the response of bark beetles and their natural enemies to prescribed burning-only, thinning-only, and thinning-and-prescribed-burning treatments in mixed-conifer forests in western Montana. They observed no increase in MPB due to the treatments. They attributed that to mountain pine beetles preference for relatively vigorous trees and its ability to maintain outbreaks in such, reflected in avoidance of burned trees

Douglas-fir Beetle

The link between fire damage and Douglas-fir beetle attack has been identified for many years, and there are a number of studies concerning DFB increases following wildfires but the number concerning DFB increases following low-intensity and severity prescribed burns is limited.

Furniss (1965) examined the susceptibility of fire-injured Douglas-fir to bark beetle attack in Southern Idaho following the Poverty Flat Fire (920 acres). The Poverty Flat Fire burned as a relatively intense fire during dry weather on steep slopes. He found that 70 percent of the trees in his plots had been attacked by the Douglas-fir beetle one year after the fire. Even small or lightly burned trees were being attacked and the incidence of attack increased with the size of tree and severity of crown and cambium fire injury. He mentioned that due to the nature of the burn the number attractive, fire-damaged trees were plentiful.

Ryan and Amman (1996) found that the relationship between bark beetle attack and tree damage in areas affected by the 1988 Yellowstone Fire indicated that stress resulting from fire injury led to increased bark beetle activity. They observed that bark beetle populations appeared to have increased in fire-injured trees and then infested uninjured trees. The 1988 Yellowstone fire was a fall wildfire that burned under relatively severe fire conditions, the result being a large fire and an abundance of fire-injured trees. They also suggested that droughty conditions prior to the fire had resulted in relatively stressed trees and high Douglas-fir populations prior to the fire which contributed to the post-fire population increases.

Cunningham et al. (2005) studied Douglas-fir beetle attack on a range of fire-injured Douglas-fir and found that one year after the fire event the DFB selected and attacked large-diameter Douglas-fir with 60-80 percent bole char and 60-80 percent crown volume scorch. The following year beetle preference shifted to smaller trees with lighter fire injury because most of the larger trees had already been colonized the previous year. In the third year host selection shifted to green trees along the burn perimeter but beetle populations did not reach outbreak levels. The burn was an August wildfire.

Hood and Bentz (2007) found in their study of post-fire Douglas-fir beetle attacks and tree mortality that beetles attacked trees with greater crown scorch, but that beetle attack and mortality was also related to cambium damage and stand stocking. They noted that trees within their Yellowstone data set that died within 4 years after the Yellowstone wildfire had greater crown scorch (52 percent versus 22 percent) and cambium damage (2.9 versus 2.2 tree base quadrants damaged) than live trees.

Hood and Bentz (2007) also included in their study data from a prescribed fire in Western Montana. In that data they found that dead trees had greater crown scorch (68 percent versus 15 percent) and cambium injury (2.9 versus 0.5 quadrants damaged). They also noted that only 2 percent of the trees in the prescribed burn were attacked by Douglas-fir beetles.

In western Montana, Six and Skov (2009) studied the response of bark beetles and their natural enemies to prescribed-burning-only, thinning-only, and thinning-and-prescribed-burning treatments in mixed-conifer forests. They describe their burns as being in late spring with relative humidities of 20-48 percent and flame lengths of 0.2 to 1.2 m (0.7-3.9 feet) in the burn-only treatment and 0.2 to 2.7 m (0.7-8.9 feet) in the thin-and-burn treatment. Their fires were relatively patchy with some areas burning fairly hot resulting in considerable mortality of small diameter trees, while other areas remained relatively untouched. The thin-and-burn treatments were less patchy in nature than the burn-only treatment. They observed that Douglas-fir beetle activity increased following the treatments but decreased the following year. During the four years studied, they recorded that 20 percent of the trees attacked in the thin-and-burn treatment were attacked successfully and 6 percent of the attacked trees in the burn-only treatment were attacked successfully. They observed that mean crown scorch height, percent circumference charred, ground charring, and d.b.h. were higher in the attacked trees than in the un-attacked trees. They concluded that the increase in Douglas-fir beetle was short lived, and occurred on fire-weakened trees with the beetle unable to successfully move to residual green trees. They stated a mean crown scorch height of 11.59 m in the thin-and-burn treatment and a mean flame length of 7.98 in the burn-only treatment.

In Oregon, Youngblood et al. (2009) studied delayed mortality in ponderosa pine and Douglas-fir following thinning, thinning and burning and burning only treatments. They found that bark beetle

mortality was low overall with only 0.03 percent across all species, but was higher in the treatments involving prescribed burning.

Summary

Of the two bark beetles we are concerned with and addressing in this report, we can conclude that prescribed burning in the project area would not increase MPB, would likely increase DFB to a small degree for a short time, and would decrease the potential for wildfires in the future to cause an increase in DFB.

Mountain pine beetle risk is now low in the project due to the recent outbreak, and damage by fires does not appear to substantially increase MPB activity.

Douglas-fir beetle can increase following fires, with the beetles initially targeting the largest, moderately to highly damaged Douglas-fir, and when they are depleted would turn toward smaller diameter trees, trees with light damage, and eventually green trees. The impacts from DFB following wildfires can be substantial. The impacts from DFB following prescribed burning would be much lower because of the substantially lower tree crown, bole, and root damage caused by the prescribed burn.

Thinning Effects on Bark Beetle Risk

Bark beetles are characterized by foresters as primary and secondary. Aggressive bark beetles thought of as primary killers of trees are those that attack and kill apparently healthy trees. These primary killers include Douglas-fir beetle (*Dendroctonus pseudotsugae*), mountain pine beetle (*Dendroctonus ponderosae*), western pine beetle (*Dendroctonus brevicomis*), pinyon engraver (*Ips confusus*), roundheaded pine beetle (*Dendroctonus adjunctus*), spruce beetle (*Dendroctonus rufipennis*), and fir engraver (*Scolytus ventralis*). Secondary bark beetles infest severely stressed, dying, or freshly dead trees as well as stressed tree tops and branches. Pine engraver (*Ips pini*), red turpentine beetle (*Dendroctonus valens*) and striped ambrosia beetle (*Trypodendron lineatum*) are mostly considered secondary bark beetles. Depending upon stand conditions and beetle population levels, some bark beetles that typically act in a secondary role can act as a primary killer of trees. Pine engraver, for example, normally reproduces in logging slash, wind-blown trees, broken limbs, and severely stressed trees like other secondary bark beetles, but when populations increase due to an abundance of host material, it frequently invades and kills small live trees or the tops of larger trees. Bark beetle risk concerns in the project area involve primary bark beetles, not secondary, and the following discussion addresses only those listed above as primary bark beetles.

Researchers began to recognize the importance of tree stocking control to reduce bark beetle activity in about 1941 (Eaton 1941). In 1953, Clements recognized the relationship between stand density and mountain pine beetle activity in sugar pine in 1953 (Clements 1953 in Oliver 1995). Since then, Sartwell and Stevens (1975) worked to further establish the links between tree stocking levels and bark beetle activity. Based upon the works of Sartwell and others, Oliver (1995) investigated the relationship between the stand density index (SDI) threshold of self-thinning mortality due to competition and SDI thresholds for mortality due to bark beetles. Oliver (1995) concluded that stand density for ponderosa pine stands was limited by *Dendroctonus* bark beetles to lower levels than the level of self-thinning. He found that there appears to be a “limiting stand density index” of 365, and stands approaching that limiting SDI usually suffered large losses from bark beetle epidemics that equal or exceed periodic growth for the stands experiencing the bark beetle mortality. He suggests that endemic levels of bark beetle mortality could start in stands when they reached an SDI of 230. The 230 SDI level could be considered a “zone of imminent bark beetle mortality.”

Within the last several decades, a number of studies examined the relationships between tree thinning to reduce bark beetle activity and risk. Many of the studies observed decreased bark beetle activity with

decreased tree stocking levels. These studies include: (1) observations of low bark beetle activity within thinned stands during long term stocking studies (Cochran and Barrett 1995, Cochran and Barrett 1999a, Cochran and Barrett 1999b, Cochran and Dahms 2000), (2) control studies measuring bark beetle mortality within pine stands thinned to various stocking levels and un-thinned areas (Amman 1988a, Amman 1988b, Amman et al. 1988a, Amman et al. 1988b, Cole and McGregor 1985, Cole et al. 1983, Fiedler and Morgan 2002, Fiddler et al. 1995, McGregor et al. 1987, Mitchell et al. 1983, Safranyik et al. 2004, Schmid and Mata 2005, Whitehead and Russo 2005) and (3) control studies measuring bark beetle activity as a function of the number of beetles trapped in stands thinned to various stocking levels as well as unthinned stands (Bartos and Booth 1994, Sanchez-Martinez and Wagner 2001, Schmitz et al. 1981, Zausen et al. 2005). Of the mortality studies, only Mitchell et al. (1983) did not demonstrate a difference in mortality between lightly thinned stands and unthinned controls, but they did observe that the heavily thinned stands had no mortality. Only one trapping study, Sanchez-Martinez and Wagner (2001), did not observe fewer trapped beetles in thinned stands compared to unthinned. Sanchez-Martinez and Wagner's (2001) measurements found no significant difference between bark beetles trapped in thinned and unthinned ponderosa pine stands on the Coconino plateau in Arizona. However, their data was collected during low levels of bark beetle activity (endemic) in the area and they observed that the average tree size within the unthinned stands was very small, (22.2 cm) making the trees undesirable habitat for the most aggressive bark beetles found in the area--western pine beetle and mountain pine beetle. Given the results all studies mentioned above, we conclude that available research provides overwhelming evidence for the utility of thinning to reduce tree stocking and therefore the level of bark beetle mortality and the risk of epidemic levels of mortality.

Restoration

Whitebark Pine Restoration

Whitebark pine (*Pinus albicaulis*) is a subalpine conifer that is relatively slow growing, intolerant of shade, and tolerant of poor soils, steep slopes, windy exposures, and cold environments (Arno and Hoff 1990). Whitebark pine cones are indehiscent, that is, they do not open sufficiently to release the seeds when ripe but they may be shed from the tree and decay on the ground, releasing the seeds (Arno and Hoff 1990, Owens et al. 2008). Seeds are large and wingless. The combination of indehiscent cones and large wingless seeds limits unaided dispersal of seeds. The major mechanisms for dispersing whitebark pine seed depends primarily upon the seed-harvesting and caching behavior of Clark's nutcracker (*Nucifraga columbiana*) (Tomback 1982, Hutchins and Lanner 1982), although a number of other birds and small mammals take the seeds for eating and for storage as winter food. Wildlife species that eat whitebark pine seeds include woodpeckers, jays, ravens, chickadees, nuthatches, finches, chipmunks, ground squirrels, bears and probably mice (Hutchins and Lanner 1982, Tomback 2001). Pine squirrels (*Tamiasciurus* spp.) harvest and cache whitebark pine cones in middens (Hutchins and Lanner 1982, Kendall 1983). Whitebark pine seeds serve as an important food source for grizzly bears (*Ursus arctos*) and black bears (*U. americanus*) which raid the middens (Kendall 1983).

Whitebark pine grows in a wide range of plant communities. It can be found in pure stands as the climax species on the coldest and driest sites where harsh growing conditions keep out the less hardy species (Pfister et al. 1977). At the highest elevations, it can be found growing as small stands of short, shrublike trees (krummholz) mixed in with alpine herblands; but on less harsh sites, it achieves larger size and straighter form. Whitebark pine grows as a co-climax species on sites capable of supporting shade-tolerant tree species such as subalpine fir, but on which they are unable to grow vigorously enough to replace the whitebark pine. These are described as whitebark pine-subalpine fir (*Abies lasiocarpa*) habitat types (Pfister et al. 1977) and whitebark pine phases of subalpine fir habitat types (Steele et al. 1983). On moister subalpine fir habitat types within the analysis area, whitebark pine can be present as a major seral

species stand component, and on dryer subalpine fir habitat types as a minor seral species stand component.

Whitebark pine's presence as a seral species in subalpine fir habitat types is maintained by disturbances, mainly fires (Arno 2001). Prior to 1900, fires burned through whitebark pine forests at average intervals ranging from about 30 to and 400 years, usually with mixed-severity (Arno and Peterson 1983, Morgan and Bunting 1990, Barrett 1994, Brown et al. 1994, Keane et al. 1994, Tomback et al. 2001, Murray 2008, Larson et al. 2009), although the longest fire return intervals were associated with a stand-replacing fire regime (Romme 1982). Some of the seral whitebark pine stands have been perpetuated by low-intensity fires that kill understory fir and spruce (Arno 1986, Arno 1976, Fisher and Bradley 1987, Arno and Hoff 1990, Bradley et al. 1992). Severely burned patches within mixed-severity fires create openings that are used by nutcrackers for caching seeds, resulting in even-aged, whitebark pine stands.

Whitebark pine has been declining throughout major portions of its range for the last 50 years due to the effects of diseases, insects, and succession (Kendall and Keane 2001) with a rapid decline since the 1960s (Keane et al. 1996). White pine blister rust (*Cronartium ribicola*) has led to the most rapid and precipitous decline in whitebark pine. Impacts from the disease have been highest in the more mesic parts of whitebark pine range, but although the coldest and driest whitebark pine stands have been impacted to a lesser degree, all whitebark pine can be considered at risk. White pine blister rust (WPBR) enters trees through tree needles and grows from the infected needles through branches to the main stem. Smaller trees die more quickly than larger trees. Although larger trees take longer to die, the ends of branches can be killed long before the tree dies, which reduces or eliminates cone production since whitebark pine cones are produced at the ends of branches in the upper portion of the tree crown.

During the last 100 years, the area of whitebark pine cover type in the interior Columbia River Basin and the Bob Marshall Wilderness Complex in Montana is estimated to have declined 45 percent with the whitebark pine in areas where it is a major seral species declining by 98 percent (Keane et al. 1996). In a disease study of white pines (*Pinus albicaulis* and *P. flexilis*) of the Intermountain West, Smith and Hoffman (2000) found the incidence (present within the sampled stands) of WPBR to be 55 percent in the middle Rocky Mountains. In the Bob Marshall Wilderness Complex of Montana, Keane et al. (1994) reported an 83 percent infection intensity (percentage of live trees infected) with a 33 percent average crown kill in 1990. They found that snags were common, ranging from 0 to 123 trees/ha and attributed most of the whitebark pine mortality to blister rust because they found no evidence of extensive bark beetle mortality. South of the project area in the Grand Teton National Park, Kendall et al. (1996a) found an average of 7 percent dead (ranging from 0 to 50 percent), and in Yellowstone National Park found an average of 7 percent dead (ranging from 0 to 64 percent). Kendall et al. (1996b) on the Gallatin National Forest found 10 percent dead (ranging from 0 to 43 percent). These mortality values have almost certainly increased within the last 15 years due to additional WPBR-related mortality and due to the recent mountain pine beetle epidemic. Blister rust surveys of whitebark pine in two stands south of the Stonewall project area on the Helena National Forest done in 2007 and 2009 found 74 and 97 percent WPBR infection levels (see WBP Survey_granite.xls and WBP Survey_redmtn6253.xls in project records).

Whitebark pine in the Northern Rocky Mountains depends upon fire to maintain its dominance or presence on sites where it is a successional species (Arno 2001, Keane 2001, Kendall and Keane 2001, Morgan and Murray 2001). It often can survive low-severity fires that kill its competitors. Many fires can kill most fir, spruce, and young whitebark pine, but few larger whitebark pines. Fire frequency has decreased in many whitebark pine forests since the late 1880s, with the greatest change in the last 60 years (Brown 1994, Murray et al. 1998, Rollins et al. 2000). This fire exclusion has allowed an increase in competition from shade-tolerant and fire-intolerant species and advanced the age of whitebark pine stands (Arno 1986, Kendall and Keane 2001, Keane et al. 1994) making whitebark pine trees more susceptible to

WPBR and mountain pine beetle. Keane et al. (1994) reported that in the Bob Marshall Wilderness Complex, their sampled stands typically consisted of an overstory of old whitebark pine and spruce with an understory of almost exclusively subalpine fir (8 to 1500+ trees/ha, 30 to 250 years of age). They found whitebark pine regeneration in only about 9 percent of their sample plots. The number and size of forest openings suitable for nutcracker caching and whitebark seedling growth has declined. Increases in fuel loads as stands transition to dominance by subalpine fir and Engelmann spruce has led to increases in fire-severity, which threatens the survival of even the largest and most fire resistant whitebark pine trees (Morgan and Bunting 1990).

Mountain pine beetle attacks whitebark pine in addition to lodgepole pine. Increases in stand age, average tree size, and competition, increases whitebark pine tree and stand susceptibility to attack from mountain pine beetle as it does with lodgepole pine. White pine blister rust infection also stresses whitebark pine trees, making them more attractive or susceptible to mountain pine beetles (Keane et al. 1994). The recent mountain pine beetle epidemic has killed whitebark pine, along with lodgepole and ponderosa pine.

Restoring whitebark pine must address the major factors causing its decline; competition, succession and white pine blister rust (Tomback et al. 2001). To be successful in the long term, restoration should emphasize the return of ecosystem processes rather than simply historic stand conditions (Keane and Arno 2001). The primary ecosystem process that should be returned is fire.

Techniques that can be used to restore whitebark pine (Keane and Arno 1996, Keane and Arno 2001, Tomback et al. 2001) include:

- Planting rust-resistant whitebark pine seedlings
- Release cuttings
- Thinning
- Tree understory removal
- Selective tree removal
- Cutting small openings (50 m diameter) for caching by Clark’s nutcracker
- Natural stand-replacement fire
- Prescribed stand-replacement fire with or without cutting for fuel enhancement
- Variable intensity prescribed burning in natural fuels
- Variable intensity prescribed burning with cutting for fuel enhancement
- Underburning

Keane and Parsons (2010a) describe the results of a study to restore white pine ecosystems using treatments that emulate the historic fire regime—primarily combinations of prescribed fire, silvicultural cuttings, and fuel enhancement cuttings. They found that all treatments that included prescribed burning created suitable nutcracker caching habitat, and many birds were observed caching seeds in the burned areas. After 5 years, however, they had not found a significant increase in regeneration of whitebark pine. They attributed the lack of regeneration to the high level of blister rust in the surrounding area that had reduced available seed and forced the nutcrackers to reclaim most of the cached seed, as well as site severity, a lack of plant cover, and a relatively short time since disturbance. Keane and Parsons (2010b) recommended that an evaluation of natural regeneration in the treatments must be made at least a decade after burning. In four of the five study sites, they recorded 88 to 95 percent mortality from blister rust, with less than 1 percent mortality on the fifth study site. Based upon their findings, their recommendations included:

- Emulating historical fire regimes
- Using prescribed burning and augmenting fuelbeds by cutting trees where necessary

- Letting wildland fires burn under acceptable conditions
- Planting potentially rust-resistant trees where whitebark pine blister rust-caused mortality was above 20 percent, rust infection levels were above 50 percent, or bark beetle mortality levels were high

Treatment Groups 7 and 8 in the Stonewall project would be prescribe burned with mixed-severity fires. The treatments in Group 7 would create mortality patches less than 5, 10, or 20 acres depending upon the unit and in Group 8 would create mortality patches less than 30 or 75 acres depending upon the unit. Where necessary, the treatments would involve cutting trees with chainsaws prior to burning to enhance increase surface fuel loadings. During cutting operations, individuals and patches of whitebark pine would be thinned around where available to reduce competition and to protect them from the prescribed burn. The result of the treatments would be to create a mosaic of lightly burned timbered areas and more severely burned patches. The patches would provide areas for nutcracker caching and for whitebark pine to establish and grow. These practices are consistent with recommendations stated above by Keane and Parsons (2010a), Keane and Arno (1996), Keane and Arno (2001), and Tomback et al. (2001) to emulate historical fire regimes, use variable intensity prescribed burning, augmenting fuels where necessary, thin to release whitebark pine trees, remove understories, and create small openings.

Aspen Restoration

Quaking aspen (*Populus tremuloides*) is the most widely distributed tree in North America (Perala 2004). It is a fast-growing, short-lived, deciduous tree that reproduces by seed and vegetatively. Although aspen can produce an abundance of highly viable seeds, few aspen seedlings survive in nature due to the short period of seed viability (2-4 weeks following maturity under favorable conditions and perhaps much less under unfavorable), unfavorable moisture during seed dispersal, high soil surface temperatures, fungi, adverse diurnal temperature fluctuations during initial seedling growth, and the unfavorable chemical balance of some seedbeds (Maini and Cayford 1968, Meyer and Fechner 1980). Aspen forms clones, which are aggregations of stems mainly produced asexually from a single sexually produced individual through root suckers, although some root collar and stump sprouts can be produced (Perala 2004). Aspen clones typically produce root suckers in response to a disturbance, for example fires, that affect the clone and produce changes in the production of growth regulators (i.e. auxin and cytokinin) soil temperatures, and available moisture. In general, the greater the disturbance the greater the number of suckers produced due to increases in cytokinin-to-auxin ratios in the root systems, increases in soil temperatures, and increases in available site resources such as water and light. Root system carbohydrate reserves are also involved. Carbohydrate reserves provide the suckers with energy until they can provide their own through photosynthesis, and so the density of aspen regeneration following disturbance depends upon the level of those reserves. Although aspen stems are short-lived relative to other trees, aspen can reproduce through suckering following disturbance and so aspen clones can be quite old.

Aspen can grow on site conditions that preclude the establishment of conifers but which have adequate subsurface moisture for a long-lived aspen clone to survive (Jones and DeByle 1985, Mueggler 1988). These self-perpetuating clones can be considered “stable” and “climax” and are not seral to a conifer species (Pfister et al. 1977). Most, if not all, of the aspen clones within the Stonewall Project area are growing within conifer stands and can be considered a seral species to a conifer species, either subalpine fir or Douglas-fir. They are usually small and have apparently been perpetuated by periodic wildfires (Pfister et al. 1977). As a seral species, without disturbance, over time the aspen can be expected to be overtopped by taller conifers and outcompeted for site resources.

Thinning within and around aspen clones has been shown to be an effective treatment for increasing aspen regeneration and restoring aspen (Arikian et al. 1999, Huffman et al. 1999, Shepperd 2001, Prévost and Pothier 2002, Jones et al. 2005, Groot et al. 2009, Lennie et al. 2009). The heavier the thinning, the greater the number of aspen suckers produced (Huffman et al 1999, Prévost and Pothier 2002) and removing all competing trees from within and around aspen has been shown to produce the greatest

increase in aspen suckering (Stone et al. 2001, Groot et al. 2009, Lennie et al. 2009, Prévost and Pothier 2002).Prescribed burning has also been shown effective at promoting aspen regeneration (Brown and DeByle 1987, Bartos et al. 1991, Kay 2001, Shepperd 2001, Durham 2008, Paragi and Haggstrom 2007). The effects of prescribed burning on aspen vary because fuels and flammability vary considerably within the aspen and mixed aspen-conifer overstory types (Brown and Simmerman 1986, Brown and DeByle 1987). In general, the fuel types in order from high potential fire intensity and rate of spread to low are: mixed conifer-aspen/shrub, aspen/shrub, mixed conifer-aspen/forb, aspen tall forb, and aspen low forb (Brown and Simmerman 1986). Brown and Simmerman (1986) rate the probability of successfully applying prescribed fire to aspen forests as moderate to high in the aspen/shrub, aspen/tall forb and mixed aspen-conifer fuel types. The aspen within the Stonewall area is present in mixed aspen-conifer fuel type.

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Appendix C – Cumulative Effects

Stonewall Vegetation Project Cumulative Effects Activities

The area analyzed in cumulative effects analysis is usually not limited to the project area; it varies with the resource or species analyzed. Each resource has different “boundaries” for its effects analysis. Quantified, detailed information regarding effects, leading to specific reasoned conclusions can be found in the cumulative effects section of each specialist report located in the project record.

Available information was reviewed. Many fires in the affected watersheds had no accompanying written information; however, fire occurrence data provides a glimpse of the fire suppression history in the project area. Fire information within all ownerships in the Stonewall Vegetation Project area and adjacent areas was considered. Records note there were 193 fires reported from 1920 till 2014. Acreage for fire size classes are as follows: (A) less than 0.25 acres, (B) 0.26-9.9 acres, (C) 10-99 acres, (D) 100 – 299 acres, (E) 300-999, (F) greater than 1,000 acres.

Table C- 1. Number of fires in the Stonewall watersheds by decade and size class

DECADE	A	B	C	D	E	F	TOTAL
1920-1929	2						2
1930-1939	12	1					13
1940-1949	14				1		15
1950-1959	9	2	1				12
1960-1969	20		1				21
1970-1979	9	6	1				16
1980-1989	15	5	1				21
1990-1999	40	9	1	1			51
2000-2009	27	8	1		1		37
2010-2014	1	2	1			1	5
Total number of fires	149	32	6	1	2	1	193

(Kurtz 2009; updates L. Burns *personal communication*)

Fires that escaped detection are not included. Fire occurrence data was digitized as point-source data from historical maps that portrayed fires by year, size class, and cause for 1920 to 1969 (Kurtz 2009). For 1920 to 1969, no more than 1,243 acres on all ownerships have burned based on the maximum acreage per size class and the number of fires that occurred in that size class. For the period from 1970 to 2009, fire occurrence information was developed from Kansas City fire database (KCFast). The records from this period have detailed information including acreage, cost, and physical location. During the period from 1970 to 2009, 125 fires burned approximately 531 acres within the watershed area. Therefore, no more than 1,774 acres have burned across all ownerships since 1920, or less than 4 percent of the project area. The Snow/Talon fire burned 37,905 acres adjacent to the project area in 2003, approximately 87 acres burned within the project boundary. The Keep Cool Fire burned 302 acres within and adjacent to the project area in 2006, approximately 261 acres burned within the project boundary. In 2007, the Bull Mountain Fire burned 30 acres.

The following tables of past, present, and reasonably foreseeable activities have been used by the interdisciplinary team members in determining the cumulative effects for their respective resource. Each resource specialist has determined which of the following activities are applicable to their analysis, depending on their cumulative effects boundary.

Areas considered in the tables below include the Stonewall Vegetation Project area (Stonewall Project), watersheds (6th Code HUCs) in and adjacent to the project area, and Stonewall Project area and combined boundary (Stonewall Combined Boundary) (used for selected specific species). These represent the cumulative effects areas required for most resources, except for the inventoried roadless area. Activities are sorted by decade. Information on past activities beyond the HUC areas is available from the Forest-wide Hazardous Tree Removal and Fuels Reduction – Healthy Forests Restoration Act Project analysis. Harvest/fire records prior to 1950 are not available. Harvest and fuel treatments are noted in the table below by the respective boundaries. Harvest activities are sorted by intermediate and regeneration treatments (see definitions). "Fuels activities" includes prescribed fire (including hand slashing), pile burning and jackpot burning. Timber harvest and/or fuel treatment acres could overlap on the same piece of ground so total acres reflected in the table may double-count some parcels of ground; refer to Figure C-1 for clarification. Current stand conditions as a result of past disturbances are reflected in existing condition reports by resource area. Present or ongoing projects are those projects in the implementation phase, or that occur on a somewhat routine basis (e.g., road maintenance, personal firewood cutting). Reasonably foreseeable projects are in the planning or analysis phase, which means there is potential for change (e.g., public input, changed conditions). In addition, natural processes such as succession, and natural events such as droughts are always occurring and may affect final project design.

Past Activities

Table C- 2. Acres of fuels treatments and prescribed burning from 1950-present

Row Labels	1950s	1960s	1970s	1980s	1990s	2000s	2010s	Grand Total Acres
Fuels treatments	25	1,751	1,097	1,569	2,460	1,020		**7,922**
Prescribed burning						2,841		**2,841**
Other						382**	**	**382**
Grand Total	**25**	**1,751**	**1,097**	**1,569**	**2,460**	**4,243**		**11,145**

* Past fire and fuels management activities obtained from Helena National Forest GIS spatial and tabular databases.
**Forestwide Hazardous Tree Removal and unspecified amount of public fire wood

Table C- 3. Past activities

Activity/Name	Decade/Year	Drainage	Scope Of Activity	Resource Effects
1950- 1959				
Forest Service Timber Harvest	Pre 1960	See Figure C- 1	Timber harvest primarily tractor logging, use of skid trails and haul use of local roads. Stonewall Regeneration harvest: 198 acres by HUCs Beaver Creek: Regeneration harvest: 199 acres Humbug Creek, Keep Cool Creek, Lincoln Creek No records Stonewall Combined Boundary Regeneration harvest: 305 acres	Harvest regeneration treatments created an early seral stage, of which a few are still providing most of the early seral in the project area. A reduction in wildlife cover and forage occurred immediately following harvest; sites affected by these treatments now provide increased levels of herbaceous and woody forage on most sites, although some stands have closed canopy conditions and provide hiding and thermal cover with little forage. Effects of these disturbances on vegetation are reflected in the existing condition.
Fire/Fuels	Pre-1960	Multiple	Stonewall Fuels treatments: 25 acres by HUCs Beaver Creek: Fuels treatments: 25 acres Humbug Creek, Keep Cool Creek, Lincoln Creek: No records Stonewall Combined Boundary Fuels treatments: 25 acres	Effects included a short-term (<10 years) reduction in fuels, cover and forage that has since been restored. Effects of these disturbances on vegetation are reflected in the existing condition.
Mining	1950s	Multiple	Small scale hard rock mining	Small, localized temporary disturbance to soils and streamside banks.
Private and state lands timber harvest	1950s	Multiple	Unspecified acres; primarily tractor logging, haul use of local existing roads.	Removal of live, and dead and dying trees and potential for the spread of invasive species. Habitat for species that utilize mature forest was reduced on some of the acres affected. Because off-forest lands occur at lower elevations in highly fragmented portions of the analysis area, most activities did not reduce landscape-level connectivity or adversely affect movement of

Activity/Name	Decade/Year	Drainage	Scope Of Activity	Resource Effects
				wildlife species that are sensitive to fragmentation and human activity.
1960 - 1969				
Forest Service timber harvest	1960 - 1969	See Table C- 1	Stonewall Regeneration harvest: 1,608 acres; Sanitation harvest: 37 acres; Intermediate: 254 acres; Reforestation: 1,144 acres By HUCs: Beaver Creek: Regen harvest: 589 acres; Intermediate harvest. 126 acres Humbug Creek: No records Keep Cool Creek: Regen harvest: 1,241 acres; Intermediate harvest. 1 53 acres: Lincoln Creek: Regen harvest: 258 acres; Sanitation harvest: 37 acres Stonewall Combined Boundary Regeneration Harvest: 3,535 acres; Intermediate Harvest: 254 acres; Sanitation Harvest: 60 acres; Reforestation: 2,340 acres	Regeneration and salvage treatments created an early seral stage, of which a few are still providing most of the early seral in the project area. Intermediate treatments reduce stand densities to improve vigor of remaining trees. Reforestation efforts increases stocking of desired tree species. A reduction in wildlife cover and forage occurred immediately following harvest; sites affected by these treatments now provide increased levels of herbaceous and woody forage on most sites, although some stands have closed-canopy conditions and provide hiding and thermal cover with little forage. Effects of these disturbances on vegetation are reflected in the existing condition.
Fire/Fuels	1960-1969	See Figure C- 1 and Table C- 1	Stonewall Fuels treatments: 1,751 acres By HUCs Beaver Creek: Fuels treatments: 729 acres; Humbug Creek: Fuels treatments: 11 acres; Keep Cool Creek: Fuels treatments: 1,633 acres; Lincoln Creek: Fuels treatments: 78 acres	Effects included a short-term (<10 years) reduction in fuels, cover and forage, which have since been restored. Effects of these disturbances are reflected in the existing condition.
Livestock grazing on federal and private lands	1960-1969	Multiple	Stonewall, HUC and Stonewall combined boundary: Grazing of cattle, sheep and horses.	Grazing removed wildlife cover and forage on the sites, reduced species diversity, and increased the spread of invasive plants. While impacts still exist, these effects have been reduced due to more recent grazing management regimes, monitoring and mitigation. Effects of these disturbances on vegetation are reflected in the existing condition.

Activity/Name	Decade/Year	Drainage	Scope Of Activity	Resource Effects
Mining	1960s	Multiple	Small scale hard rock mining	Small, localized temporary disturbance to soils and streamside banks.
Private and state lands timber harvest	1960s	Multiple	Unspecified acres; primarily tractor logging, haul use of local existing roads.	Removal of live, and dead and dying trees and potential for the spread of invasive species. Habitat for species that utilize mature forest was reduced on some of the acres affected. Because off-forest lands occur at lower elevations in highly fragmented portions of the analysis area, most activities did not reduce landscape-level connectivity or adversely affect movement of wildlife species that are sensitive to fragmentation and human activity.
1970 - 1979				
Forest Service timber harvest	1970 - 1979	See Figure C- 1	Stonewall: Regeneration harvest: 502 acres Sanitation harvest: 82 acres By HUCs Beaver Creek: Regeneration harvest: 388 acres; Sanitation harvest: 21 acres Humbug Creek: Regeneration harvest: 37 acres Keep Cool Creek: Regeneration harvest: 116 ac.; Sanitation harvest: 24 ac. Lincoln Creek: Regeneration harvest: 116 acres; Sanitation harvest: 61 acres	Regeneration and salvage treatments created an early-seral stage, of which a few are still providing most of the early-seral in the project area. Intermediate treatments reduce stand densities to improve vigor of remaining trees. Reforestation efforts increases stocking of desired tree species. A reduction in wildlife cover and forage occurred immediately following harvest; sites affected by these treatments now provide increased levels of herbaceous and woody forage on most sites, although some stands have closed-canopy conditions and provide hiding and thermal cover with little forage. Effects of these disturbances on vegetation are reflected in the existing condition.
Fire/Fuels	1970-1979	See Figure C- 1 and Table C- 1	Stonewall Fuels activities 1,097 acres By HUCs Beaver Creek: Fuels treatments: 875acres	Effects included a short-term (<10 years) reduction in fuels, cover and forage, which have since been restored. Effects of these disturbances are reflected in the

Activity/Name	Decade/Year	Drainage	Scope Of Activity	Resource Effects
			Humbug Creek: Fuels treatments: 49acres Keep Cool Creek: Fuels treatments : 524 acres Lincoln Creek: Fuels treatments: 161 acres	existing condition.
Livestock grazing on federal and private lands	1970-1979	Multiple	Grazing of cattle, sheep and horses.	Grazing removed wildlife cover and forage on the site, reduced species diversity, and increased the spread of invasive plants. While impacts still exist, these effects have been reduced due to more recent grazing management regimes, monitoring and mitigation. Effects of these disturbances on vegetation are reflected in the existing condition.
Mining	1970s	Multiple	Small scale hard rock mining	Small, localized temporary disturbance to soils and streamside banks.
1980 - 1989				
Forest Service timber harvest	1980 - 1989	See Figure C- 1	Stonewall: Regeneration harvest: 575 acres Sanitation harvest: 17 acres By HUCs Beaver Creek: Regeneration harvest: 371 acres Keep Cool Creek: Regeneration harvest: 8 acres Lincoln Creek: Regeneration harvest: 205 acres Sanitation harvest: 17acres	Regeneration treatments created an early seral stage, of which a few are still providing most of the early seral in the project area. Sanitation and intermediate treatments reduce stand densities to improve vigor of remaining trees. Reforestation efforts increases stocking of desired tree species. A reduction in wildlife cover and forage occurred immediately following harvest; sites affected by these treatments now provide increased levels of herbaceous and woody forage on most sites, although some stands have closed-canopy conditions and provide hiding and thermal cover with little forage. Effects of these disturbances on vegetation are reflected in the existing condition.
Fire/Fuels	1980-1989	See Figure C- 1 and Table C- 1	Stonewall Fuels activities 1,569 acres By HUC's Beaver Creek: Fuels treatments: 791 acres	Effects included a short-term (<10 years) reduction in fuels, cover and forage, which have since been restored. Effects of these disturbances are reflected in the

Activity/Name	Decade/Year	Drainage	Scope Of Activity	Resource Effects
			Humbug Creek: Fuels treatments:11 acres Keep Cool Creek: Fuels treatments: 141 acres Lincoln Creek: Fuels treatments: 780 acres	existing condition.
Livestock grazing on federal and private lands	1980-1989	Multiple	Grazing of cattle, sheep and horses.	Grazing removed wildlife cover and forage on the site, reduced species diversity and increased the spread of invasive plants. While impacts still exist, these effects have been reduced due to more recent grazing management regimes, monitoring and mitigation. Effects of these disturbances on vegetation are reflected in the existing condition.
Private and state lands timber harvest	1980s	Multiple	Unspecified acres; primarily tractor logging, haul use of local existing roads.	Removal of live, and dead and dying trees and potential for the spread of invasive species. Habitat for species that utilize mature forest was reduced on some of the acres affected. Because off-forest lands occur at lower elevations in highly fragmented portions of the analysis area, most activities did not reduce landscape-level connectivity or adversely affect movement of wildlife species that are sensitive to fragmentation and human activity.
Mining	1980s	Multiple	Small scale hard rock mining	Small, localized temporary disturbance to soils and streamside banks.
1990 - 1999				
Forest Service timber harvest	1990 – 1999	See Figure C- 1	Stonewall Regeneration harvest: 787 acres Sanitation harvest: 220 acres Intermediate harvest: 17 acres By HUCs Beaver Creek Regeneration harvest: 275 acres Intermediate harvest: 16 acres Sanitation harvest: 186 acres Humbug Creek	Regeneration treatments created an early seral stage, of which a few are still providing most of the early seral in the project area. Sanitation and intermediate treatments reduce stand densities to improve vigor of remaining trees. Reforestation efforts increases stocking of desired tree species. A reduction in wildlife cover and forage occurred immediately following harvest; sites affected by these treatments now

Activity/Name	Decade/Year	Drainage	Scope Of Activity	Resource Effects
			Intermediate harvest: 49 acres Keep Cool Creek Regeneration harvest: 393 acres Intermediate harvest. 78 acres Sanitation harvest: 279 acres Lincoln Creek Regeneration harvest: 432 acres Intermediate harvest: 17acres Sanitation harvest: 28 acres	provide increased levels of herbaceous and woody forage on most sites, although some stands have closed canopy conditions and provide hiding and thermal cover with little forage. Effects of these disturbances on vegetation are reflected in the existing condition.
Fire/Fuels	1990-1999	See Figure C- 1 and Table C- 1	Stonewall Fuels activities: 2,460 acres By HUCs Beaver Creek: Fuels treatments: 1,196 acres Humbug Creek: Fuels treatments: 1,145 acres Keep Cool Creek: Fuels treatments: 1,957 acres Lincoln Creek: Fuels treatments: 779 acres	Effects included a short-term (<10 years) reduction in fuels, cover and forage, which have since been restored. Effects of these disturbances are reflected in the existing condition.
Livestock grazing on federal and private lands	1990-1999	Multiple	Grazing of cattle, sheep and horses.	Grazing removed wildlife cover and forage on the site, reduced species diversity and increased the spread of invasive plants. While impacts still exist, these effects have been reduced due to more recent grazing management regimes, monitoring and mitigation. Effects of these disturbances on vegetation are reflected in the existing condition.
Private and state lands timber harvest	1990s	Multiple	Unspecified acres; primarily tractor logging, haul use of local existing roads.	Removal of live, and dead and dying trees and potential for the spread of invasive species. Habitat for species that utilize mature forest was reduced on some of the acres affected. Because off-forest lands occur at lower elevations in highly fragmented portions of the analysis area, most activities did not reduce landscape-level connectivity or adversely affect movement of wildlife species that are sensitive to fragmentation and human activity
Mining	1990s	Multiple	Small hand-scale placer mining	Small, localized temporary

Activity/Name	Decade/Year	Drainage	Scope Of Activity	Resource Effects
				disturbance to soils and streamside banks.
2000 - 2010				
Forest Service timber harvest	2000-2010	See Figure C- 1	Stonewall Regeneration harvest: 154 acres By HUCs: Beaver Creek: No records; Humbug Creek: Intermediate harvest: 60 acres; Keep Cool Creek: Regeneration harvest: 5 acres; Lincoln Creek: Regeneration harvest: 154 acres Sanitation harvest. 16 acres	Regeneration treatments created an early-seral stage, of which a few are still providing most of the early seral in the project area. Sanitation and intermediate treatments reduce stand densities to improve vigor of remaining trees. A reduction in wildlife cover and forage occurred immediately following harvest; sites affected by these treatments now provide increased levels of herbaceous and woody forage on most sites, although some stands have closed-canopy conditions and provide hiding and thermal cover with little forage. Effects of these disturbances on vegetation are reflected in the existing condition.
Fire/Fuels	2000 to 2010	See Figure C- 1 and Table C- 1	Stonewall Fuels activities: 1,020 acres By HUCs Beaver Creek: Fuels treatments: 181 acres Humbug Creek: Fuels treatments: 166 acres Keep Cool Creek: Fuels treatments: 285 acres Lincoln Creek: Fuels treatments: 571 acres	Effects included a short-term (<10 years) reduction in fuels, cover and forage, some of which may have since been restored. Effects of these disturbances are reflected in the existing condition.
Pheromone control	2002	Lincoln Gulch	Placement of MCH caps, occurred just w/in Stonewall Vegetation area.	Small, localized temporary disturbance from site visits
Livestock grazing on federal, state, and private lands	2000-2010	Multiple	Grazing of cattle, sheep and horses.	Grazing removed wildlife cover and forage on the site, reduced species diversity and increased the spread of invasive plants. Effects of these disturbances on vegetation are reflected in the existing condition.
Mining	2000s	Multiple	Small hand-scale placer mining	Small, localized temporary disturbance to soils and streamside banks.

Ongoing Activities

Table C- 4. Ongoing Activities 2010-present

Activity/Name	Decade/Year	Drainage	Scope Of Activity	Resource Effects
Pine Grove Campground Fencing	2011	Beaver Creek	Fence exclosure of 8 acres to keep livestock out of the developed campground area.	Removed impact from livestock use
Alice Creek, Hogum Creek, and Poorman prescribed burns	2010-present		BMSS IRA 2,841 acres Specimen Creek IRA 793 acres Hand pile, hand slashing, pile burning and prescribed burns for wildlife habitat improvement.	Temporary, localized disturbance during operations. Some felling of small diameter trees and reduction in fuels. Short-term increase in growth of shrubs and forbs. Potential for weed persistence or spread.
Forestwide hazardous tree removal and fuels reduction HFRA project	Ongoing	Forestwide	Stonewall: 382 acres BMSS IRA: 82 acres By HUCs: total 568 acres Beaver Creek: 172 acres Keep Cool Creek: 270 acres Lincoln Creek: 127 acres	Temporary, localized disturbance during operations. Felling and removal of dead and damaged “hazardous” trees from roadsides. Very minor effects on live tree stocking, stand structures, and species compositions. Potential for weed persistence or spread.
Pine Grove campground	Ongoing annual use & maintenance	Upper Beaver Creek	Developed recreation site, overnight use (free-use facility). Season of use 5/15 – 11/15.	Localized noise disturbance, road use.
Livestock grazing Permits	Ongoing		The Stone Dry area includes 3 allotments; 1 sheep and two cattle (see Stone Dry NFMA Report for more detail – pp. 1-3). Keep Cool Liverpool allotment: project area 3,171 acres Stonewall allotment: project area 2,000 acres By HUCs: total 4,486 acres Beaver Creek 3,510 acres; Keep Cool Creek HUC 785 acres; Lincoln Creek HUC 191 acres Portions of several allotments overlap the Bear-Marshal-Scapegoat-Swan (BMSS) IRA. Keep Cool Liverpool allotment: BMSS IRA 4,344 acres, Keep Cool Creek 7,500 acres Stonewall allotment: BMSS IRA 203 acres, LG IRA 124 acres Arrastra allotment: LG IRA 202 acres Alice Creek allotment: BMSS IRA 12,963 acres	Potential impacts on aspen and conifer regeneration in proposed treatment units analyzed. Proposed Unit 57 (93 acres) and most of Unit 43 (about 80 acres) are within livestock allotments. Grazing removes wildlife cover and forage on the site, and reduces species. Potential for spread of existing weed populations as well as introduce new populations, but with implementation of BMPs populations should not expand substantially. Continued potential negative effects to riparian areas, water quality, fish and fish habitat, with some potential for improvements from current conditions in some locations.
Livestock grazing on state trust and private lands	Ongoing	Multiple	Grazing of cattle, sheep and horses. May result in riparian vegetation, stream bank and upland impacts.	Removal of live, and dead and dying trees and potential for the spread of invasive species. Habitat for species that utilize mature forest was reduced on some of the

Activity/Name	Decade/Year	Drainage	Scope Of Activity	Resource Effects
				acres affected. Because off-forest lands occur at lower elevations in highly fragmented portions of the analysis area, most activities did not reduce landscape-level connectivity or adversely affect movement of wildlife species that are sensitive to fragmentation and human activity. Potential for spread of existing weed populations as well as introduce new populations. Continued potential negative effects to riparian areas, water quality, fish and fish habitat, with some potential for improvements from current conditions in some locations.
Mining Activity	Ongoing	Multiple	Overall, permitted mining activity on the Lincoln Ranger District in recent years has been limited to small operations with mainly hand work.	Small, localized temporary disturbance to vegetation, soils and streamside banks.
Noxious Weed Treatment	Ongoing	Multiple	Herbicide treatment is primarily along roads and in patches that are accessible to mechanized equipment, and backpack/horsepack equipment; some biocontrol treatment (insects), grazing control (sheep), and mechanical. Stonewall Vegetation Project area 1,111 acres Bear-Marshall-Scapegoat-Swan IRA 386 acres Lincoln Gulch IRA 261 acres	Potential impacts to small trees along roadsides and in proposed regeneration units. Of the 1,111 acres within the project area, 443 acres are within intermediate treatment units, 50 acres are in prescribed burn units, and 492 are on roadsides. Applying herbicides for control of noxious weeds would have little potential impact to desirable tree stocking in these areas. 126 acres are within proposed regeneration harvest units, with herbicide application having minimal impacts if appropriate application methods are used. Potential short-term impacts to water quality if stream set-backs are not adhered to or if spills occur. Potential impact to sensitive plant populations, known populations would be protected from disturbance, but some habitat or individuals could be impacted.
Lincoln compound	Ongoing	Humbug Creek	Humbug Creek HUC 110 acres	Continued disturbance within a developed area.
Outfitting	Ongoing	Multiple	Outfitter and guide special use permits for big game and spring bear seasons, day use and overnight camping.	Temporary displacement of use of area.
Road maintenance	Annual	Multiple	Grading and spot-gravelling performed as needed. Culvert maintenance may include clean out and or replacement where warranted for water flow.	Potential impacts to water quality from inadvertent side casting of road material

Activity/Name	Decade/Year	Drainage	Scope Of Activity	Resource Effects
				into stream channels and erosion of freshly bladed surface, but longer-term benefits based on road drainage improvements and fish passage.
Trail maintenance	Annual Ongoing	Multiple	Routine and spot maintenance forest system trails	Potential short-term soil/water/wildlife/fish/recreation effects. Potential trail closures or restrictions
Road special use permit	Ongoing	Multiple	Re-issuance of existing road access permit for long-term.	Continuation of existing use.
Personal use firewood cutting	Ongoing	Multiple	Dead trees with approximately 100 feet of existing travel routes within the analysis are being removed by the public for firewood.	Temporary disturbance, reduction of some down wood within travel corridors. Potential for weed spread.
Private land timber sale	Ongoing	Private property, state property	Unspecified acres; primarily tractor logging using existing roads for hauling.	Temporary, localized disturbance during operations. Removal of live, and dead and dying trees and potential for the spread of invasive species. Habitat for species that utilize mature forest may be reduced on some of the acres affected. Because off-forest lands occur at lower elevations in highly fragmented portions of the analysis area, most activities did not reduce landscape level connectivity or adversely affect movement of wildlife species that are sensitive to fragmentation and human activity. Felling and removal of trees, potential for weed persistence or spread.
DNRC timber sale (Liverstone)	Ongoing	Stonewall/Beaver Creeks	Timber sale on State Trust Land. Harvest of approx.. 260 acres	Potential harvest effects to watersheds and wildlife. Site-specific effect disclosed in the DNRC EA (per MEPA).
Private land development	Ongoing	Multiple	Development for housing in several areas in the vicinity of the town of Lincoln.	Increased disturbance and road use may displace wildlife. Habitat alteration for developed sites.
Blackfoot-North Divide Winter Travel Plan	DN signed 09/14/13 Ongoing	Lincoln RD	The Blackfoot-North Divide Winter Travel Plan would provide for a variety of motorized and non-motorized winter recreational opportunities. Total area affected by this decision. North of Hwy 200 in or adjacent to the Stonewall project is 102,330 acres.(58,250 acres open for snowmobile use and 44,080 acres closed to snowmobile use).	Displacement or effects of noise to animals by over-snow use in winter. Recreation/social/economic effects.in the Lincoln area.

Reasonably Foreseeable Future Activities

Table C- 5. Foreseeable future activities

Activity/Name	Estimated Implementation	Drainage	Scope Of Activity	Resource Effects
Blackfoot Travel Plan (non-winter)	Currently Under analysis	Lincoln RD	The Lincoln Ranger District is currently developing the Blackfoot Travel Plan (non-winter) that would designate motorized public access routes on motor vehicle use map. This plans is being developed in accordance with 36 CFR 212, Subpart B, Designation of Roads, Trails, and Areas for Motor Vehicle Use	Action alternatives would reduce overall road density and related effects such as potential for weed spread, sedimentation delivery from roads to area streams, and disturbance to wildlife. Under the action alternatives use of roads may change from motorized to non-motorized; opportunities for both motorized and non-motorized recreation would continue to be available across the district. There is a potential for ground disturbance from road and trail reroutes, construction of connectors and reconstruction of routes.
Road maintenance	Continuation	Multiple	Grading and spot-gravelling performed as needed. Culvert maintenance may include clean out and or replacement where warranted for water flow.	Temporary displacement of animals due to human activity. Potential impacts to water quality from inadvertent side casting of road material into stream channels and erosion of freshly bladed surface, but longer-term benefits based on road-drainage improvements and fish passage.
Livestock grazing on federal, state trust, and private lands	Continuation	Multiple	Grazing of cattle, sheep and horses.	Potential impacts on aspen and conifer regeneration. Grazing removes wildlife cover and forage on the site, and reduces species. Potential for spread of existing weed populations as well as introduce new populations. Continued potential negative effects to riparian areas, water quality, fish and fish habitat, with some potential for improvements from current conditions in some locations.

Activity/Name	Estimated Implementation	Drainage	Scope Of Activity	Resource Effects
Private and state trust land timber sales	Continuation	Private property, state property	Unspecified acres; primarily tractor logging using existing roads for hauling.	Removal of live, and dead and dying trees and potential for the spread of invasive species. Habitat for species that utilize mature forest may be reduced on some of the acres affected. Because off-forest lands occur at lower elevations in highly fragmented portions of the analysis area, most activities did not reduce landscape-level connectivity or adversely affect movement of wildlife species that are sensitive to fragmentation and human activity.
Noxious weed treatment	Continuation	Multiple	Herbicide treatment is primarily along roads and in patches that are accessible to mechanized equipment, and backpack/horsepack equipment; some biocontrol treatment (insects), grazing control (sheep), and mechanical. Stonewall Vegetation Project area 1,111 acres Bear-Marshall-Scapegoat-Swan IRA 386 acres Lincoln Gulch IRA 261 acres	Potential impacts to small trees along roadsides and in proposed regeneration units. Applying herbicides for control of noxious weeds would have minimal impacts to desirable tree stocking because appropriate application methods would be used.
Stream restoration	Summer 2015 (DM signed 2/3/15)	Stonewall Creek	Restore approximately 4,200 feet of stream channel impacted by past mining activities. Removal of mining waste rock and channel improvement for improving fish habitat and channel stability utilizing primarily natural materials. Riparian and floodplain revegetation will be include planting of native grass sod, forbs and shrubs. The project is a cooperative effort with Trout Unlimited.	Short-term instream disturbance and minor road improvement s to NFSR#607 for material and equipment haul to and from the project site.
Copper Creek Wildlife Enhancement (Aspen) Project	2015	Copper Creek	Proposed treatment includes reducing/removing conifer competition in aspen clones and around whitebark pine by mechanical treatment. No heavy equipment would be used and no commercial product would be removed from the site.	Potential effect to Lynx habitat

Data source: HNF Lincoln RD GIS. Codes categorized as follows:

Fuels treatments: 1111,1112,1113,1115,1117,1120,1130,1150,1152,1153,1154

Regeneration treatments: 4111,4112,4113,4117,4121,4131,4132,4133,4134,4141,4142,4148,4211

Intermediate treatments: 4151,4152,4210,4220

Sanitation treatments: 4230, 4231, 4232

Reforestation treatments:

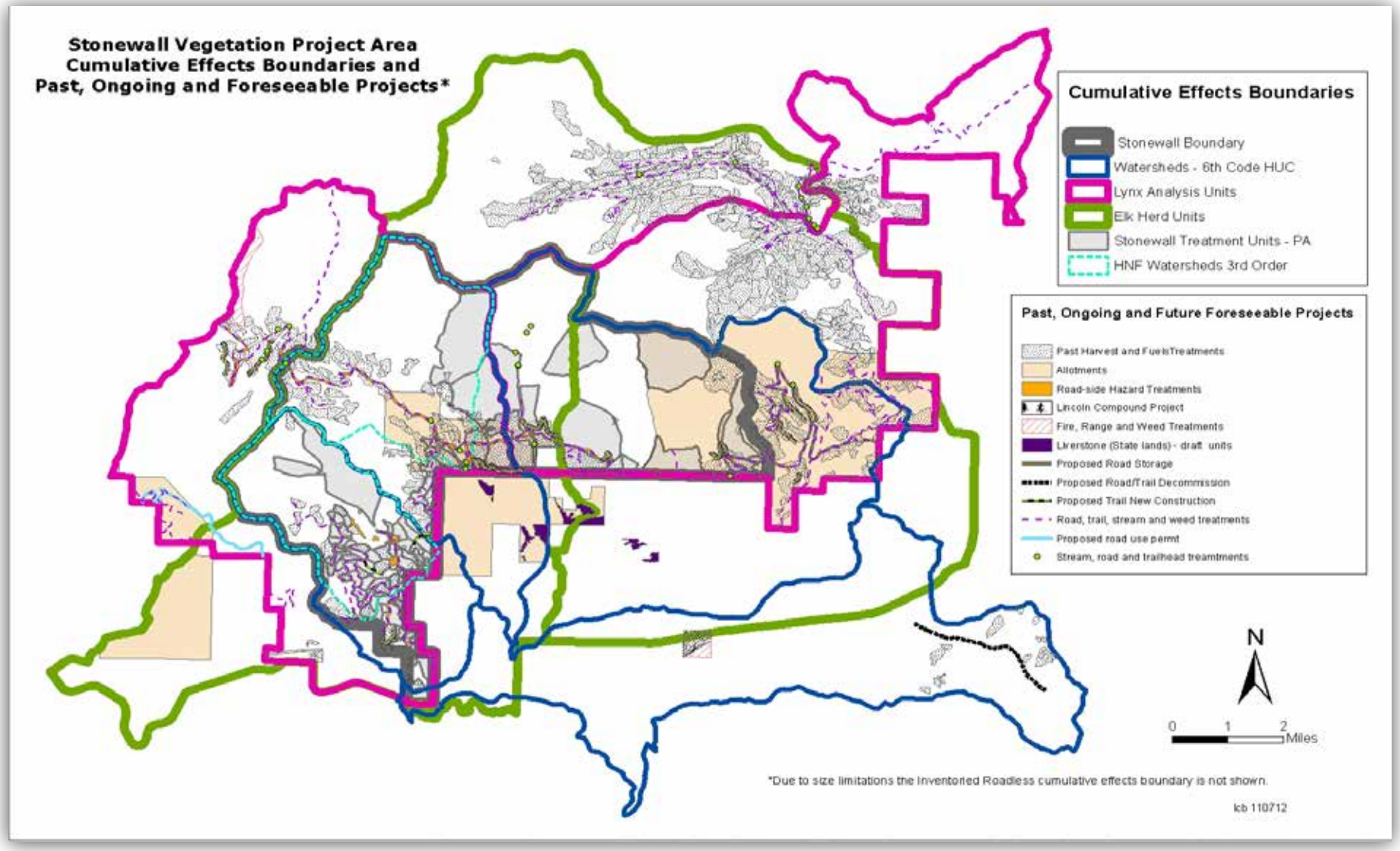

Figure C- 1. Past, Ongoing and Foreseeable Projects within the Cumulative Effects Boundaries (wildfire location information not available, not mapped)

Past, Ongoing and Future Activities in the Bear-Marshall-Scapegoat-Swan IRA

Table C- 6. Acres of past harvest and fuels activities in the Bear-Marshall-Scapegoat-Swan IRA

Past Harvest and Fuels Activity	Acres within IRA
Prescribed Burning	40,336.0
Wildfire	9,460.6
Man Caused Fire	653.2
Fuels Treatment (yarding, rearranging, compacting, crushing, piling)	4,493.5
Thinning (hazardous fuels reduction, fuel break)	7,992.5
Range Improvement	870.9
Timber Harvest (patch clearcut, stand clearcut, shelterwood establishment cut, seed-tree seed cut, shelterwood staged removal cut, single tree selection cut, group selection cut, liberation cut, commercial thin, sanitation salvage, precommercial thin)	2,962.3
Reforestation Needs Created	2,708.7
Reforestation/Planting/Regeneration activities	6,856.3
Wildlife/T&E activities	337.8
TOTAL	**76,671.8**

Table C- 7. Ongoing and reasonably foreseeable future actions in the Bear-Marshall-Scapegoat-Swan IRA

Forest and District	Project Name and Location	Acres(miles) in BMSS IRA	Type of Activity in BMSS IRA	Effects
Flathead NF/Spotted Bear RD	Soldier Addition II EA (Decision Notice signed December 2011) The portion of the district affected by the vegetation treatments in this project are bounded to the east by the Hungry Horse Reservoir and the South Fork Flathead River, to the north by Sullivan Creek, to the south by Bunker Creek, and to the west by Bruce Ridge	1,333 acres prescribed fire and 1 acre of hand cutting of small trees	1,333 acres of prescribed burning to sustain the role of fire in the ecosystem and help restore whitebark pine habitat. and 1 acre of hand treatment to reduce hazardous fuels around the Stony Hill Electronic Site to protect the site from future wildland fire. Implementation expected: 2012 - 2022	Short-term effects to solitude and opportunities for primitive and unconfined recreation would be minimal due to the increased presence of people and noise during project implementation. Helicopter use is expected to occur over a 1- to 2-day period during the ignition process; however, helicopter use is not unusual in the area. During the implementation of the fuels treatment at the Stony Hill Electronics Site, solitude may be interrupted by the power saws used in thinning and the presence of personnel on the site for several days. Short-term effects to the undeveloped characteristics while cut stumps are visible at the site; however, when viewed from off-site the area would resemble other subalpine openings. Thinning treatments would not affect the remoteness characteristic of the area. Burning would be expected to enhance the natural integrity and apparent naturalness of the area. Burning would not affect the feel of remoteness in this IRA.
Flathead NF/Spotted Bear RD	Spotted Bear River (Decision Notice signed August 2011) The project area is bounded on the west by the Hungry Horse Reservoir and the South Fork Flathead River, on the north by	436 acres of prescribed fire	Prescribed burning on 436 acres to sustain the role of fire in the ecosystem and improve the availability of seasonal habitat for ungulates, grizzly bears, and other wildlife species Expected implementation: 2012-2022. Some of the prescribed burning could begin in 2012. Due to the infrequency of achieving	Short-term effects to solitude and opportunities for primitive and unconfined recreation would be minimal due to the increased presence of people and noise during project implementation. Helicopter use is expected to occur over a 1- to 2-day period

Forest and District	Project Name and Location	Acres(miles) in BMSS IRA	Type of Activity in BMSS IRA	Effects
	South Fork Dry Park Creek, on the south by a minor ridge off Spotted Bear Mountain just north of the mouth of Cedar Creek, and on the east by the Great Bear Wilderness and Bob Marshall Wilderness boundaries.		the desired combination of weather and fuel/vegetative conditions, implementation of the prescribed burning may take up to 10 years before completed.	during the ignition process; however, helicopter use is not unusual in the area. People who use the area for primitive recreation opportunities would use the area as they did before, although they may be restricted during the time the area is actively burning. Additionally, instead of the area being “green” as it was before, portions of the area would now be considered “black,” but this should not affect their recreational use of the area. Short-term effects to the undeveloped characteristics while cut stumps and areas blackened by fire are visible. Proposed burning is designed to produce effects similar to those expected in a historic natural fire and result in more resilient forest conditions for long-term benefits. The vegetation slashing and subsequent burning is not anticipated to detract from IRA characteristics such as natural integrity and apparent naturalness.

Forest and District	Project Name and Location	Acres(miles) in BMSS IRA	Type of Activity in BMSS IRA	Effects
Lewis and Clark NF/Rocky Mountain RD	Benchmark Fuels EA (Analysis Complete – EA being revised due to remanding on appeal) T19N R09W and T20N R10W	388	Use of prescribed fire and mechanical fuels treatments to reduce fuel hazards. Expected implementation: chainsaw and hand-piling Summer/Fall 2013, Mechanical removal of trees may begin Winter 2013. Prescribed burn implementation anticipated to occur over the course of several years.	Short-term effects to solitude and opportunities for primitive and unconfined recreation due to the increased presence of people and noise during project implementation. Short-term effects to the undeveloped characteristics while cut stumps and areas blackened by fire are visible. Long-term benefits to naturalness as fuel hazards are reduced.
Lewis and Clark NF/Rocky Mountain Ranger District	Rocky Mountain Ranger District Travel Plan EIS—Badger -Two Medicine Area (Analysis Complete) The project area extends from Birch Creek which is situated about 17 miles west of the town of Dupuyer, Montana, north about 20 miles to Glacier National Park near Highway 2 and west to Marias Pass and the Continental Divide.	(7.59)	3.74 miles of road to be converted to non-motorized system trails 0.26 road miles to be decommissioned 3.59 trail miles to be decommissioned	Long-term benefits to opportunities for primitive and unconfined recreation, more effective management of unauthorized motorized use
Lewis and Clark NF/Rocky Mountain Ranger District	Rocky Mountain Ranger District Travel Plan EIS—Birch Creek South Area (Analysis Complete) The project area extends from Birch Creek which is situated about 17 miles west of the town of Dupuyer, Montana, south about 70 miles to Red Mountain near Highway 200.	(20.2)	2 miles of undetermined road adopted as part of the designated transportation system within the IRA. 12 miles of non-system trail adopted as part of the designated transportation system within the IRA (4 of these miles motorized trails). 6.2 miles of unneeded existing roads and trails decommissioned.	Long-term benefits to opportunities for primitive and unconfined recreation, more effective management of unauthorized motorized use

Forest and District	Project Name and Location	Acres(miles) in BMSS IRA	Type of Activity in BMSS IRA	Effects
Helena NF/Lincoln RD	Forestwide Hazardous Tree Removal and Fuels Reduction—HFRA (Analysis Complete)	approximately 82 (2.86)	Removal of trees that are dead or present a hazard (falling) within 1 ½ tree lengths of the edge of an open road. The trees to be removed in the IRA are all on existing, open roads that provide access to trailheads, trails, private lands, dispersed recreation sites, campgrounds, administrative sites, recreation opportunities and general forest access. Implementation began Fall 2010.	Short-term effects to solitude and opportunities for primitive and unconfined recreation due to the increased presence of people and noise during project implementation. Short- term effects to the undeveloped characteristics while cut stumps are visible.
Helena NF/Lincoln RD	Blackfoot Winter Travel Plan—EA (DN signed 09/14/2013)	N/A	Designate motorized and non-motorized trails for winter use	Long-term benefits to opportunities for primitive and unconfined recreation, more effective management of unauthorized motorized use
Helena NF/Lincoln RD	Blackfoot Travel Plan (non-winter)—EIS (Under Analysis)	N/A	Designate motorized and non-motorized trails	Long-term benefits to opportunities for primitive and unconfined recreation, more effective management of unauthorized motorized use
Helena NF/Lincoln RD	Alice Creek Wildlife Enhancement Project (Under Analysis) 13 miles northeast of Lincoln, MT. Bordered by the Continental Divide along the north and eastern edge, and the Scapegoat Wilderness along the western side.	2,823	Improve big game winter range by reducing conifer encroachment within native grasslands. In addition to creating and maintaining natural openings and improving stand structure, burning would improve forage quality and quantity.	Short-term effects to solitude and opportunities for primitive and unconfined recreation due to the increased presence of people and noise during project implementation. Short-term effects to the undeveloped characteristics while cut stumps and areas blackened by fire are visible. Long-term benefits to naturalness as winter range and forage are improved.

Forest and District	Project Name and Location	Acres(miles) in BMSS IRA	Type of Activity in BMSS IRA	Effects
Helena NF/Lincoln RD	Dry Creek Prescribed Fire (planned future activity in SW Crown)	2,000	Use of prescribed fire and mechanical fuels treatments to reduce fuel hazards.	Short-term effects to solitude and opportunities for primitive and unconfined recreation due to the increased presence of people and noise during project implementation. Short-term effects to the undeveloped characteristics while cut stumps and areas blackened by fire are visible. Long-term benefits to naturalness as fuel hazards are reduced.
Helena NF/Lincoln RD	Weed Treatments (ongoing)	388	Ground based herbicides applied to reduce invasive weed infestations.	Short-term effects to solitude during project implementation, Long-term beneficial effects to naturalness as weed infestations are reduced.
Helena NF/Lincoln RD	Grazing Allotments (ongoing)	17,511	Ongoing grazing in the Alice Creek, Keep Cool Liverpool, and Stonewall Allotments	No new impacts to roadless resources are anticipated, there may be minor long-term (ongoing) impacts to naturalness due to the presence of livestock.
Lolo NF/Seeley Lake RD	Dick Creek Fuels Management Project (Analysis complete, Decision signed 4/26/2008) Located near McCabe Point within the “Monture Area” of the BMSS	1,075	This project includes prescribed burning on approximately 1,075 acres of transitory range and winter range located near the Blackfoot Clearwater Wildlife Management Area. Implementation of approximately 775 acres of prescribed burning was conducted in 2011. Implementation of remaining approximately 300 acres of prescribed burning planned for fall of 2012, or later depending on available burn window.	This project would not alter the natural character of the BMSS and when completed would appear as a natural fire would; leaving a mosaic of burn patterns on the landscape. Ignition would be conducted aerially, and control lines would utilize natural topographic breaks. No tree felling would be conducted as part of this project that would alter the character of the IRA. The feeling of isolation and solitude could be reduced for a short time period while aerial ignition activities occur. The sight and sounds of

Forest and District	Project Name and Location	Acres(miles) in BMSS IRA	Type of Activity in BMSS IRA	Effects
				the helicopter would affect the feeling of solitude in the lower reaches of the Dick Creek drainage for one to two days.
Lolo NF/Seeley Lake RD	Swan Face Prescribed Burn (Analysis Complete, Decisions signed 7/25/2011) Located near Clearwater Lake in the Swan Front Area.	2,500	This project includes the reintroduction of fire to restore the role of fire and enhance ecosystem processes. Ignition would be conducted by hand and aerially, and control lines would utilize natural topographic breaks. Implementation of prescribed burning planned to be conducted in the fall of 2012.	No tree felling would be conducted as part of this project that would alter the character of the IRA. The feeling of isolation and solitude could be reduced for a short time period while ignition activities occur. The sight and sounds of the helicopter would affect the feeling of solitude in the vicinity of the burn for two to three days.
Helena NF/Lincoln RD	Alice Creek Wildlife Enhancement Approximate implementation 2016 Alice Creek (Northeast of the Stonewall Project area)	Approximately 1700	Removal of encroaching young conifers (slashing/pile burning and prescribed fire) in a mosaic pattern across about 60% of the 2,823-acre project area. Objective is to enhance big game forage within natural open parks, including enhancing aspen in these areas	Potential lynx habitat effects

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Appendix D – Stonewall Roadless Area Characteristics Worksheet

Roadless Areas: The Bear-Marshall-Scapegoat-Swan Inventoried Roadless Area (IRA) is 866,330 acres and managed by the Helena, Lewis and Clark, Lolo and Flathead National Forests. The portion of the Bear-Marshall-Scapegoat-Swan IRA managed by the Lincoln Ranger District of the Helena National Forest covers 53,995 acres, and the Stonewall Vegetation Project area overlaps with 12,254 acres. The Lincoln Gulch IRA covers 8,246 acres, and the Stonewall Vegetation Project area overlaps with 3,193 acres.

Table D- 1 that follows displays effects to roadless characteristics.

Table D- 1. Effects to roadless characteristics

Roadless Characteristics As described in 36 CFR 294 – Roadless Area Conservation Final Rule, 2001	Is there an effect? Yes or No	Is the effect improving, stable or degrading?	Describe the actual effect. Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would alter or modify the landscape.
Soil, Water and Air resources These three key resources are the foundation upon which other resource values and outputs depend. Healthy watersheds catch, store, and safely release water over time, protecting downstream communities from flooding; providing clean water for domestic, agricultural, and industrial uses; helping maintain abundant and healthy fish and wildlife populations; and are the basis for many forms of outdoor recreation. Identify any unique or critical watershed resources. Describe how the project will affect these key resources areas and the habitats that depend on them.	Yes, Short Term Yes, Short Term Yes, Temporary	Stable Improving Stable	**Soil:** There would be some immediate effects to soils as fire consumes the organic layer. Project design features would minimize soil erosion and sediment delivery to streams is not likely. **Water:** Decreased forest canopy would lead to an increased risk of surface erosion for about a year after a high severity fire or mixed severity burns. High severity burns would not pose an adverse risk of sedimentation unless they are over more than 10-20 acres and on steeper slopes. High severity burns near streams pose the highest risk for sedimentation. However, riparian buffers would provide protection and reduce the risk of sedimentation reaching streams. After about a year, vegetative recovery and reduced wildfire risk would improve conditions compared to present conditions. **Air:** Management activities would likely cause direct short-term impacts from dust and smoke. Dust would be generated through various activities including transportation of material. These activities are not anticipated to result in significant impacts to regional air quality because of the transitory nature of fugitive dust. Smoke from burning operations could produce some smoky days in the local area and generally lasts 1-3 days after ignition is completed. Smoke may settle into the lower draws and drainages during the evening hours following ignition. Permissible burn days are determined based on metrological conditions that tend to disperse smoke.
Sources of public drinking water National Forest System lands contain watersheds that are important sources of public drinking water. Roadless areas within the National Forest System contain all or portions of 354 municipal watersheds contributing drinking water to millions of citizens.	Maybe	Stable, then after a year Improving	No sources of drinking water would be affected by the project.

Roadless Characteristics As described in 36 CFR 294 – Roadless Area Conservation Final Rule, 2001	Is there an effect? Yes or No	Is the effect improving, stable or degrading?	Describe the actual effect. Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would alter or modify the landscape.
Maintaining these areas in a relatively undisturbed condition saves downstream communities millions of dollars in water filtration costs. Careful management of these watersheds is crucial in maintaining the flow and affordability of clean water to a growing population. Identify any public drinking water systems or sources within the project area or that would be affected by the project. Describe how the project would affect water quality and quantity of the public drinking water source.			
Diversity of plant and animal communities Roadless areas are more likely than roaded areas to support greater ecosystem health, including the diversity of native and desired nonnative plant and animal communities due to the absence of disturbances caused by roads and accompanying activities. Inventoried roadless areas also conserve native biodiversity by serving as a bulwark against the spread of nonnative invasive species. Discuss the diversity of plant and animal communities. Identify any unique plant and animal communities within the area. Describe effects to the diversity of communities and impacts to populations in the areas.	Yes	Stable/Improving	Project IRA's provide habitat for large number of wildlife species that depend on their remote forested character including nine threatened, endangered and sensitive species (discussed below). These areas provide critical lynx habitat, grizzly bear core and den habitat and wolverine den habitat. While activities proposed under alternatives 2 and 3 would result in short-term disturbance, because no new roads are proposed, all alternatives would maintain the remote character of the area and long-term human access would be unchanged under all alternatives. Approximately 23,000 acres have recently burned and due to elevated fuel conditions, the likelihood of stand replacing wildfire and a long-term loss of suitable wildlife habitat is greatest under alternative 1, whereas alternatives 2 and 3 both reduce the risk of catastrophic wildfire. Vegetative diversity would be relatively unchanged under alternative 1, although a continued reduction in whitebark pine and aspen is likely to occur. Treatments proposed under alternatives 2 and 3 would enhance stand and landscape level vegetative and habitat diversity, including maintenance or improvement of white-bark pine and aspen.
Habitat for TES and species dependent on large undisturbed areas of land Roadless areas function as biological strongholds and refuges for many species. Of the nation's species currently listed as threatened, endangered, or proposed for listing under the Endangered Species Act, approximately 25% of animal species and 13% of plant species are likely to have habitat within inventoried roadless areas on National Forest System lands. Roadless areas support a diversity of aquatic habitats and communities, providing or affecting habitat for more than 280 threatened, endangered, proposed, and sensitive species. More than 65% of all Forest Service sensitive species are directly or indirectly affected by inventoried roadless areas. This percentage is	Yes	Stable/Improving	**Plants:** Under both alternatives, all treatments in the roadless areas would be prescribed burning with hand preparation. More area would be treated under alternative 2. TES plants: *Pinus albicaulis* (whitebark pine) is the only sensitive species found in the project area. Sensitive plant habitat has not been mapped in the project area, but there is likely to be potential habitat for eight additional herbaceous sensitive plant species. None of the herbaceous sensitive plants would be directly affected unless there are undiscovered occurrences in the roadless area. Treatment in the roadless area would be prescribed burns, generally of mixed severity that would create openings less than 75 acres in size. Low severity burns would be expected to have minimal impacts since these herbaceous species have adaptations to fire and all typically grow in moist to wet areas that would be less likely to burn. Large openings in the canopy could reduce the shade that is needed by several of these species. These species and their habitat would be expected to be similarly affected by wildfire. Occurrences of whitebark pine would be protected by the project design

Roadless Characteristics As described in 36 CFR 294 – Roadless Area Conservation Final Rule, 2001	Is there an effect? Yes or No	Is the effect improving, stable or degrading?	Describe the actual effect. Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would alter or modify the landscape.
composed of birds (82%), amphibians (84%), mammals (81%), plants (72%), fish (56%), reptiles (49%), and invertebrates (36%). Identify any TES or sensitive species within the Roadless area. Describe how the project would affect the habitats or populations and whether this effect is significant across the normal range and distribution of these habitats and populations.			feature SILV-2 which is designed to protect individuals and enhance habitat for the species. Thus, while there is the potential for individuals to be charred or physically damaged during the treatment, beneficial effects for whitebark pine (in the form of habitat enhancement due to the removal of shade-tolerant species and creation of caching sites for Clark's nutcrackers) are expected in the long-term. **Invasive plants:** Small areas of spotted knapweed overlap roadless area units 80, 82, and 84. Effects of fire on spotted knapweed are variable but available studies have shown that fire may kill above ground plant parts but the sturdy perennial taproot is likely to survive all but the most severe fires. For the most part, spotted knapweed may be expected to establish, persist, or spread following fire. In some cases hot fires have shown the greatest increase in spotted knapweed cover after several years (Zouhar 2001). Project design features and the ongoing weed management program on the Helena National Forest (which treats 1/3 of infested acres each year) would reduce the potential for new establishment and spread of spotted knapweed in the roadless areas as a result of proposed actions. **Animals:** Project IRA's provide habitat for two federally listed species including the grizzly bear and Canada lynx and seven Regionally Sensitive Species including the gray wolf, wolverine, fisher, Townsend's big-eared bat, black-backed woodpecker, flammulated owl and western toad. The following is a brief discussion of anticipated effects to these species. **Grizzly Bear –** All but approximately 2,700 acres of Project level IRA's are considered occupied grizzly habitat and these areas contain 39,000 acres of grizzly bear core habitat and over 8,000 acres of den habitat. Because there are no roads proposed in the IRA, core habitat and Total Motorized and Open Motorized Road Densities would be unaffected under all alternatives. Under alternative 1, den habitat would be unaffected. Also while suitable habitat would be largely unchanged, over the long-term due to the absence of fire, whitebark pine would continue to decline under alternative 1. Under alternatives 2 and 3, localized short-term increases in human disturbance would occur during burning. Due to proposed low and mixed severity burning there would also be a reduction in cover on 4,845 acres and 3,564 acres under alternatives 2 and 3 respectively, although cover would be maintained within and adjacent to all units. Of this, potential short-term impacts to 979 acres of den habitat would occur under alternative2 and 920 acres of den habitat would be affected under alternative3. Unaffected den habitat would be widely available under both alternatives. Both alternatives 2 and 3 would maintain or promote development of white bark pine.

Roadless Characteristics As described in 36 CFR 294 – Roadless Area Conservation Final Rule, 2001	Is there an effect? Yes or No	Is the effect improving, stable or degrading?	Describe the actual effect. Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would alter or modify the landscape.
			Canada Lynx – Project level IRA's contain 32,587 acres of Lynx critical habitat. Because there is no hare habitat proposed for treatment within the IRA, lynx foraging habitat would remain relatively unchanged under all alternatives. Also due to the absence of treatment, lynx cover would be unchanged under alternative 1. Under alternatives 2 and 3, low and mixed severity fire would occur on 3,349 acres and 2,410 acres of suitable den habitat respectively and cover would be reduced on most of this acreage. However considering that up to 25 percent of the treatment sites would have unburned lands, suitable cover would continue to occur on all treatment sites. Also due to establishment of understory vegetation, proposed actions would increase long-term foraging habitat on the acreage treated. Large blocks of unaffected suitable habitat would be available in all watersheds and connectivity and landscape level habitat would be maintained under all alternatives. All alternatives are consistent with NRMLD standards and guidelines. **Gray Wolf –** Due to its remote nature, virtually all of the project IRA's provide suitable gray wolf habitat, although no known den or rendezvous sites would be affected under any alternative. Also because there are no new roads proposed, long-term human access would be unchanged under all alternatives, although alternative 2 and 3 would increase short-term human access 4,845 and 3,565 acres respectively. Gray wolf foraging habitat would likely continue to decline in some areas but would generally be maintained under alternative 1, whereas under alternatives 2 and 3, wolf foraging would be maintained in the short-term and increased in the long-term. **Wolverine –** Project level IRA contain approximately 16,500 acres of wolverine den habitat. Prey availability and landscape connectivity would be largely unchanged under all alternatives. Den habitat under alternative 1 would be unaffected, whereas mixed severity burning would affect 1,648 acres or 10 percent of the suitable IRA den habitat under alternatives 2 and 3. Also there would be a short-term increase in human activity on this acreage, as well as a long-term reduction in cover. However 90 percent of the suitable habitat would be unaffected and suitable den and foraging habitat would continue to be available in all affected watersheds under all alternatives. **Fisher –** Project IRAs contain 478 acres of fisher summer habitat and 21,800 acres of winter habitat. Under alternative 1 suitable habitat and prey availability would be largely unchanged. Also because there would be no new roads, long-term human access would be unchanged under all alternatives. Due to proposed low and mixed severity burning, short-term disturbance to foraging individuals and a reduction in cover would occur on 39/1,189 acres of summer/winter habitat under alternatives 2 and 49/718 acres of summer/winter IRA habitat under alternative3. Also due to the canopy openings associated with mixed severity burning, suitable summer/winter

Roadless Characteristics As described in 36 CFR 294 – Roadless Area Conservation Final Rule, 2001	Is there an effect? Yes or No	Is the effect improving, stable or degrading?	Describe the actual effect. Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would alter or modify the landscape.
			habitat would be reduced 4/207 acres and 1/66 acres under alternatives 2 and 3 respectively. Preferred riparian habitat and travel corridors would be maintained under all alternatives. **Townsend's big-eared Bat –** Most of the project IRA's provide suitable foraging habitat for this species and under alternative 1 foraging habitat would be unaffected. Proposed burning would create more open understory conditions and improved foraging habitat on 3,564 and 4,845 acres under alternatives 2 and 3 respectively. While habitat would be reduced on sites where canopy openings would be created through mixed severity burning under alternatives 2 and 3 (up to 900 acres), suitable foraging habitat would continue to be widespread under all alternatives. **Black-backed Woodpecker –** Project IRAs contain approximately 23,000 acres of recently burned high quality black-backed woodpecker habitat. In the absence of future wildfires, habitat may decline under alternative 1. Under alternatives 2 and 3, high intensity burning would create high quality habitat on approximately 1,500 acres and 1,000 acres respectively. **Flammulated Owl –** Suitable flammulated owl habitat occurs on approximately 4,300 acres of project IRAs. Under alternative 1, preferred open canopy habitat would continue to decline. Proposed burning under alternatives 2 and 3 would increase open canopy habitat on 3,900 acres and 2,900 acres respectively. **Western Boreal Toad –** Suitable breeding habitat would be largely unchanged under all alternatives. While proposed burning would affect upland habitat on approximately 4,600 acres under alternatives 2 and 3, suitable habitat would continue to occur on all sites and foraging habitat would be improved on the acreage affected. Unaffected suitable upland habitat predominates across all watersheds under all alternatives.
Primitive and semi-primitive classes of recreation Roadless areas often provide outstanding dispersed recreation opportunities such as hiking, camping, picnicking, wildlife viewing, hunting, fishing, cross country skiing, and canoeing. While they may have many Wilderness-like attributes, unlike Wilderness the use of mountain bikes, and other mechanized means of travel is often allowed. These areas can also take pressure off heavily used wilderness areas by providing solitude and quiet, and dispersed recreation opportunities.	Yes	Stable	The ROS classification in the Bear-Marshall-Scapegoat-Swan and Lincoln Gulch IRAs is primarily Semi Primitive Motorized with areas of Roaded Modified and Roaded Natural. The primary recreation activities occurring within the roadless areas include hunting, hiking, dispersed camping, use of motorized trails in the summer and snowmobiling and cross-country skiing in the winter. In the short term, visitors may be temporarily displaced during implementation of the proposed activities (prescribed burning, hand slashing of small diameter trees and construction of hand fireline). Noise associated with hand slashing of small diameter trees and hand fireline construction would affect the expected experience associated with the areas' roadless character, however this would only impact visitors traveling through the area during project implementation. The proposed low severity and mixed severity prescribed fire would create openings ranging from 5 to 75 acres in size, the more

Roadless Characteristics As described in 36 CFR 294 – Roadless Area Conservation Final Rule, 2001	Is there an effect? Yes or No	Is the effect improving, stable or degrading?	Describe the actual effect. Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would alter or modify the landscape.
Describe current recreation opportunities within the Roadless area. Identify the effects of your project on the area and these activities. Describe the effect in terms of availability for similar experiences in surrounding areas or within the region of use. Consider link to ROS mapping.			open forest canopy is not expected to affect the recreation activities or experience within or adjacent to the project area in the long term. However, the prescribed fire activities would be noticeable by the area users, affecting the on-site management component of the expected setting. No road construction, reconstruction or maintenance is proposed within the IRA acreage; therefore the current IRA roadless characteristic would not change. There would be no long term impacts to recreation opportunities within the project area. Ecosystem restoration and a reduction in the risk of negative impacts from severe wildfire would help to maintain the recreation settings and opportunities. Alternative 2 would treat 4,846 acres out of the total combined 71,256 acres of both IRAs (managed by the Lincoln Ranger District); the prescribed fire would be implemented on 6.8 percent of the total Lincoln RD IRA acreage. Alternative 3 would treat 3,564 acres out of the total combined 71,256 acres of both IRAs (managed by the Lincoln Ranger District); the prescribed fire would be implemented on 5 percent of the total Lincoln RD IRA acreage. Opportunities to continue the popular dispersed recreation activities would exist over the vast majority of the IRA acreage during project implementation and would continue to exist on all of the IRA acres after project completion.
Reference landscapes for research study or interpretation The body of knowledge about the effects of management activities over long periods of time and on large landscapes is very limited. Reference landscapes of relatively undisturbed areas serve as a barometer to measure the effects of development on other parts of the landscape. Describe the landscape that is present. Describe any unique reference landscapes that exist within the Roadless area. Describe how the project activities might affect the reference landscape values of the Roadless area. Consider how the landscapes within the Inventoried Roadless area fits within the broader landscape and if the project creates any overall change. Consider landscape character descriptions in SMS.	No	Stable	No documentation regarding reference landscapes within the project area were found. The current landscape is comprised of dense forests susceptible to insect and wildfire mortality (Douglas-fir and lodgepole pine). In addition, a large-scale mountain pine beetle epidemic has killed most of the mature lodgepole pine and ponderosa pine. The proposed action would result in a landscape setting that resembles a wildfire event which naturally follows a pine beetle event. Forest regeneration and "greenup" would occur shortly thereafter and improve upon the visual appearance of this landscape cycle by resembling an increasingly healthy forest.
Natural appearing landscapes with high scenic quality. High quality scenery, especially scenery with natural-appearing landscapes, is a primary reason that people choose to recreate. In addition, quality scenery contributes directly to real estate values in nearby	Yes	Stable	The current scenic quality of the unroaded areas resembles that of landscapes with high scenic integrity. Although visually unappealing to many, the scenes created by large scale beetle kill and wild fires (within their natural regime) do not change a landscapes scenic integrity or visual quality per the visual or scenery management systems. However, events that occur outside of a natural regime due to management decision (i.e., fire suppression) can. The proposed prescribed fire would help ensure

Roadless Characteristics As described in 36 CFR 294 – Roadless Area Conservation Final Rule, 2001	Is there an effect? Yes or No	Is the effect improving, stable or degrading?	Describe the actual effect. Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would alter or modify the landscape.
communities and residential areas. Describe the current scenic quality and character of the area. Describe project effects to the scenic integrity of the area and changes to the character of the area. Consider existing scenic integrity. Scenic Quality- essential attributes of the landscape. (Glossary 5, Landscape Aesthetics Handbook) Landscape Character – Particular attributes, qualities, and traits of a landscape that give it an image and make it identifiable or unique. (Glossary 3, Landscape Aesthetics Handbook)			the forest maintains a visual appearance characteristic of a wildfire within its natural regime as opposed to an unnaturally intense wildfire. The scenic integrity within the IRAs may decrease from the viewpoint of a user traveling through the proposed prescribe fire treatment units. The fire handlines would create a linear disturbance within the roadless area and stumps from the hand slashing of small diameter trees may remain visible for several seasons following the prescribed fire, which would be an unexpected characteristic for the IRA landscape. The creation of openings in the forest from low and mixed severity prescribed fire ranging from 5 to 75 acres in size would create a more natural and visually appealing mosaic in the landscape, enhancing the overall existing landscape character. Less than 4,846 acres out of the combined 71,256 acres of both IRAs (managed by the Lincoln Ranger District) would be affected and only the users who travel through these areas would notice these changes.
Traditional cultural properties and sacred sites Traditional cultural properties are places, sites, structures, art, or objects that have played an important role in the cultural history of a group. Sacred sites are places that have special religious significance to a group. Traditional cultural properties and sacred sites may be eligible for protection under the National Historic Preservation Act. However, many of them have not yet been inventoried, especially those that occur in inventoried roadless areas. Identify generically any significant cultural resources within the Roadless area and describe the effect of the project on these resources. Typically mitigation will be designed to prevent significant effects to these resources.	Yes	Degrading	Hand slash pile burning within sites could affect historic structures and could alter prehistoric site artifacts. Hand lines within sites could alter historic and prehistoric sites.

Roadless Characteristics As described in 36 CFR 294 – Roadless Area Conservation Final Rule, 2001	Is there an effect? Yes or No	Is the effect improving, stable or degrading?	Describe the actual effect. Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would alter or modify the landscape.
Other locally unique characteristics Inventoried roadless areas may offer other locally identified unique characteristics and values. Examples include uncommon geological formations, which are valued for their scientific and scenic qualities, or unique wetland complexes. Unique social, cultural, or historical characteristics may also depend on the roadless character of the landscape. Examples include ceremonial sites, places for local events, areas prized for collection of non-timber forest products, or exceptional hunting and fishing opportunities. Identify any locally unique characteristics and describe how the project would affect these values.	No	N/A	The proposed action would not impact the special features or values of the Bear-Marshall-Scapegoat-Swan IRA because they do not fall within the Stonewall project area. In the long-term, the proposed action would potentially enhance the productive and primitive Elk hunting opportunities within the Lincoln Gulch IRA.

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Appendix E – Wildlife Species Viability

Introduction

The status of wildlife populations, as we currently understand their distribution on the Helena National Forest (HNF), and their habitats are examined in this section in order to address Forest Plan and Agency requirements that: (1) “viable populations of existing native and desirable non-native plant and animal species are maintained” (Forest Plan II/17) and (2) management activities do not cause a trend towards listing for species that have been identified as sensitive on the Region 1 Sensitive Species List.

Summary of Population Viability Status

Forest Service Region One defines a viable species as “consisting of self-sustaining populations that are well distributed throughout the species range.” Self-sustaining populations are “sufficiently large, and have sufficient genetic diversity to display the array of life history strategies and forms that will provide for their persistence and adaptability in the planning area over time” (Samson 2006). Table E- 1 summarizes the type of data available for each MIS and select sensitive species in the Project area. Ratings for other sensitive species not included in the following table can be found in the Wildlife Resource Report and Biological Evaluation.

Table E- 1. Primary Information Sources for Determining Population Viability of MIS and Sensitive Species in the Stonewall Project area and the HNF

Indicator/ Sensitive Species	Presence/ Absence Surveys by Protocol	Presence/ Absence Surveys Random	Intermittent Species Observations	Comprehensive Habitat Modeling	R1 Conservation Assessment	Habitat Surveys
Elk	X			X		X
Fisher	X			X	X	
Mule Deer	X			X		X
American Marten	X			X	X	
Northern Goshawk	X	X	X	X	X	X
Pileated Woodpecker	X	X	X	X	X	X
Hairy Woodpecker	X	X	X	X		X
Black-backed Woodpecker	X	X	X	X	X	X
Flammulated Owl	X			X	X	X

Viability ratings for elk and mule deer are based on annual tallies of individuals in the field, usually by MDFWP. Extensive data on suitable habitat is also available for elk and mule deer, through Forestwide habitat modeling and systematic field surveys. Ratings for goshawk and hairy woodpecker are based on wide-ranging, but less complete, population surveys in the field. This information is sufficient to indicate the general magnitude and distribution of populations in the project area and throughout the Forest Plan area. Availability of suitable habitat has been estimated through Forestwide habitat models, systematic habitat surveys, or both.

Ratings for marten and pileated woodpecker are more problematic. Population information comes primarily through tallies and mapping of fortuitous and, occasionally, targeted field observations. This demonstrates that the species continue to inhabit the planning area, if not the project area, and it provides a rough indication of how they are distributed. But it is a crude estimator of viability. Conversely, Forestwide habitat models and general field surveys provide a basis for assessing habitat sufficiency.

Based on discussion in the Northern Region Viability Protocol (Samson 1997), the Draft White Paper on Managing for Viable Populations (USDA 2001), and a review of the Northern Region Viability Committee Report (Samson 1997 Appendix B), the following qualitative rating system was applied to MIS populations and habitats as a means of assessing population viability (table E- 2).

Table E- 2. Rating system for MIS populations and viability

Rating	Population Distribution and Condition within Potential Habitat	Potential for Population Interaction and Colonization of Empty Habitat	Probability of Population Persistence over 50–100 years
5	Population widely distributed, robust, and resilient	Few limitations on population interactions	Very High: Population large, widespread, relatively stable, highly resilient
4	Population well distributed; variable population density	Some barriers to population interaction and habitat occupancy	High: Population widespread, resilient; no insurmountable decimating factors or habitat problems
3	Population may be widely but sporadically distributed; variable density within suitable patches	Barriers to interaction result in some persistently empty habitat blocks	Moderate: Population widely but sporadically distributed; key habitat may be limited or vulnerable; decimating factors a potential problem
2	Population segments localized; small but may be persistent	Population segments often isolated; limited routes for interaction and recolonization of empty habitat	Low: Population small, subject to stochastic effects; long-term availability of key habitat uncertain
1	Population segments localized, small, ephemeral	Population segments highly isolated; little possibility of interaction or recolonization of empty habitat	Very Low: Populations very small, habitat limited and unstable; highly vulnerable to stochastic effects

The ratings in table E- 3 apply to potential habitat for the HNF as a whole. In some cases, the project area contributes to maintaining viability of these populations but is not sufficient in and of itself to encompass or support a self-contained viable population or subpopulation. Given the lack of quantitative data, it is not possible to define a precise timeframe for probability of persistence. But, in general, it is intended to apply to the long term: the probability that the population would persist for 50–100 years within the Helena National Forest Plan Area (Samson 1997).

Table E- 3. MIS and sensitive species potential habitat on the HNF

Indicator/ Sensitive Species	Population Distribution Rating	Population Interaction Rating	Estimated Probability of Population Persistence	Comments
Elk	5	4	5	Elk populations on the HNF are robust. Habitat is ubiquitous. Barriers to movement are common, but no substantial blocks of elk habitat are isolated. In spite of local habitat problems, long-term viability of elk populations is not a concern.
Fisher	3	4	4	The project area is at the eastern range of fisher. On the HNF fisher habitat is confined mainly to the western portion of the Forest. It is increasing as forests age, in those areas not affected by MPB. Primary habitat is interconnected by forested travel habitat. Population is widely distributed; numbers are unknown.
Mule Deer	5	4	5	Mule deer are widely distributed across the HNF. Habitat is ubiquitous. Barriers to movement are common, but no substantial blocks of mule deer habitat are isolated. In spite of local habitat problems, long-term viability of mule deer populations is not a concern.
American Marten	3	4	4	Marten habitat is patchy but widely distributed in the project area and the HNF. It is increasing as forests age in those areas not affected by mountain pine beetle. Primary habitat is interconnected by forested travel habitat. Population is widely distributed; numbers are unknown.
Northern Goshawk	4	4	4	Mountain pine beetle at the project and Forest scale is likely to reduce habitat. Goshawks are widespread on the HNF and appear well-distributed in forest habitat. Aging forest processes are likely to produce more suitable habitat than would be lost and reduced by fire and timber harvest over the long term in those areas not affected by MPB.
Pileated Woodpecker	2	2	2	Pileated woodpeckers are not common on the Forest; they are most likely at the edge of their range. Habitat is wide spread and abundant across the HNF.
Hairy Woodpecker	5	4	5	Hairy woodpeckers are common and well distributed in all forest habitats with insect-supporting trees and cavity potential on the HNF. Potential for suitable habitat persistence over the long term is excellent.
Black-backed Woodpecker	3	4	3	Occurs across the Forest in burned areas. Potential for suitable habitat over the long term is dependent upon fire frequency and intensity as well as insect outbreaks sufficient to provide a forage base.
Flammulated Owl	1	2	3	Habitat in the project area is declining due to mountain pine beetle and fire exclusion. Flammulated owls are present across the HNF as well as their habitat. Habitat is wide spread across the Forest in those areas not affected by MPB.

Samson (2005; 2006) in A Conservation Assessment of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, and Pileated Woodpecker in the Northern Region and USDA Forest Service Habitat Estimates For Maintaining Viable Populations of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, Pileated Woodpecker, American Marten, and Fisher (Samson 2005; Samson 2006) summarizes the status of viability for northern goshawks, black-backed woodpeckers, flammulated owls, pileated woodpeckers, fishers, and American martens.

- The six species considered in this analysis are ‘secure’ or ‘apparently secure’ in terms of persistence (NatureServe 2011).
- Below (and not above) a threshold of 20–30 percent of habitat amounts, effects of fragmentation (i.e., patch size and isolation) are suggested to have a negative impact on species persistence. Effects of habitat fragmentation on birds are described to be less in the western United States in comparison to those reported in seminal and numerous studies in the Midwest and east.
- No indication exists that forested ecosystems in the Northern Region have reached the 20–30 percent threshold of historic. Forested systems in the Northern Region are more extensive than in historic (approximately 1800) times (Hessburg and Agee 2003; Hessburg et al. 2005).
- Comparison of habitat required for a species-specific minimum viable population to that available indicates well-distributed habitat in far excess to that needed, given the natural distribution of species and their habitats as mapped by the Montana Natural Heritage Program, Idaho Birdnet, and the scientific literature.
- Regionwide habitat modeling for the American marten is restricted by the unavailability of sample-based information on large down woody debris and the variability evident in habitat use by martens. Site-specific models for the American marten may need to be adjusted to include resting site and nest site information (based on point observation data) which may or may not influence habitat amount estimates.

Habitat Analysis and Conclusions

Samson (2006) (updated USDA 2008) identifies critical thresholds needed to maintain population viability for selected species within the Northern Region of the Forest Service (table E- 4). Estimates derived from the Helena National Forest Intensified Grid Summary Database (June 2013) indicate that habitat for these selected species exceeds the critical thresholds identified by Samson. The models used to generate estimates are based on Samson (2005, 2006) and USDA (2008).

Table E- 4. Summary[1] of Habitat Thresholds (acres) to Maintain Minimum Viable Populations for Six Species in Northern Region on the HNF compared with Existing Conditions and Post-treatment Conditions Associated with Alternatives 2 and 4 (Based on Intensified Grid Data)

Species	Critical Habitat Thresholds from Samson (2006)	Current Habitat Estimates for the HNF based on Intensified Grid Data
Northern Goshawk	133,436[2] (nesting and foraging)	361,963 (nesting and foraging)
Black-backed Woodpecker	29,405	108,399 [3]
Flammulated Owl	8,895	25,231
Pileated Woodpecker	91,923[2]	193,112
American Marten	3,459	293,064
Fisher	74,378	199,905 (summer and winter)

Project impacts to the aforementioned species' habitats are expected to be. Therefore, habitat would remain abundant and widespread Forestwide. Viability for these species appears sound and would remain so upon implementation of proposed treatments.

Viability for other sensitive and MIS species (e.g. wolverine, elk and mule deer, hairy woodpeckers, Townsend's big-eared bats, boreal toads, and wolves) also appears sound although critical thresholds have not been identified. The size of the proposed project area is much smaller than an average wolverine home range. Elk and mule deer habitat is abundant and well-distributed across the Forest and viability is largely determined through hunting quotas, which are outside the scope of this project. Hairy woodpeckers use similar habitats as black-backed woodpeckers as well as unburned forests. Given the widespread availability of forage habitat—i.e., acres infested with mountain pine beetle—and subsequent increases in nesting habitat associated with insect-related tree mortality, abundant habitat exists Forestwide for hairy woodpeckers. Project impacts on these species are also minimal or non-existent.

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[1] Current habitat estimates are based on the HNF Summary Database (June 2013 Data).

[2] Samson (2006) critical habitat thresholds for goshawks and pileated woodpeckers does not distinguish between nesting or foraging habitat but rather provides total habitat estimates based on the respective species' needs at the home range scale which includes both nesting and foraging habitat.

[3] Estimates of black-backed woodpecker habitat are based on data contained in the the 2012 internal report *Geospatial Post-Burn Habitat Analysis – Helena National Forest*. That report indicates that there are 103,699 acres of forest within the Helena National Forest that burned between 1999 and 2010. An additional 4,700 acres have burned since 2010 (Source: Fire History spatial data located electronically at T:\FS\Reference\GIS\r01_hel\LayerFile) totaling 108,399 acres of burned forest created between 1999 and present. (Some of these burned areas may no longer provide black-backed woodpecker habitat, however.) Samson's (2006) habitat estimates include both insect and fire-created habitats. Therefore the figures reported as black-backed woodpecker habitat on the Helena National forest underestimate the available habitat as described by Samson (2006).

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