



United States
Department of
Agriculture

Forest
Service

June 2013



Decision Notice

and

Finding of No Significant

Impact

Middle Bugs

**North Fork Ranger District, Clearwater National Forest
Idaho and Clearwater Counties, Idaho**

For More Information Contact:

Kathy Rodriguez, North Fork District Ranger
12730 Highway 12
Orofino, Idaho
Phone (208) 476-8223

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDAs TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202)720-6382 (TDD). USDA is an equal opportunity provider and employer.

**MIDDLE BUGS
DECISION NOTICE
AND
FINDING OF NO SIGNIFICANT EFFECT
NORTH FORK RANGER DISTRICT
CLEARWATER NATIONAL FOREST
NORTHERN REGION, USDA FOREST SERVICE**

JUNE 2013

Responsible Agency:

USDA Forest Service

Responsible Official:

Rick Brazell, Forest Supervisor
Clearwater National Forest
12730 Highway 12
Orofino, Idaho 83544

For further information, contact:

Tammy Harding, Interdisciplinary Team Leader
Kamiah Ranger Station
1012 Highway 64
Kamiah, ID 83536

TABLE OF CONTENTS

I. DECISION SUMMARY	1
II. PROJECT BACKGROUND	1
III. PURPOSE AND NEED FOR ACTION	1
GOODS AND SERVICE	2
VEGETATION IMPROVEMENT	2
WATERSHED IMPROVEMENT	2
IV. DECISION	2
MANAGEMENT ACTIVITIES	3
DESIGN FEATURES	3
MONITORING REQUIREMENTS	7
V. RATIONALE FOR THE DECISION	7
MEETING THE PURPOSE AND NEED	8
CONSIDERATION OF ISSUES AND CONCERNS	10
CONSIDERATION OF PUBLIC AND OTHER AGENCY COMMENTS	13
FOREST PLAN CONSISTENCY	13
VI. ALTERNATIVES CONSIDERED	14
ALTERNATIVE A: NO ACTION	15
ALTERNATIVE B: PROPOSED ACTION	15
ALTERNATIVE C: SELECTED ALTERNATIVE	15
ALTERNATIVE D: WATERSHED IMPROVEMENT ONLY	15
ALTERNATIVE E: NO NEW ROADS – TEMPORARY AND PERMANENT	16
ALTERNATIVE F: NO LARGE OPENINGS	16
ALTERNATIVE G: PRECOMMERCIAL THIN	17
ALTERNATIVE H: DECOMMISSION ADDITIONAL ROADS	17
VII. PUBLIC INVOLVEMENT	17
VIII. FINDING OF NO SIGNIFICANT IMPACT	18
CONTEXT	18
INTENSITY	18
IX. FINDINGS REQUIRED BY OTHER LAWS AND REGULATIONS	20
WATERSHED AND FISHERIES RESOURCES REGULATORY FRAMEWORK	20
ENDANGERED SPECIES ACT	20
NORTHERN ROCKIES LYNX MANAGEMENT DIRECTION	21
IDAHO ROADLESS RULE AND ROADLESS AREAS	21
ENVIRONMENTAL JUSTICE	22
NATIONAL FOREST MANAGEMENT ACT	22
NATIONAL HISTORIC PRESERVATION ACT	26
NATIONAL ENVIRONMENTAL POLICY ACT	26
TRAVEL MANAGEMENT RULE (NOVEMBER 2, 2005)	27
X. BEST AVAILABLE SCIENCE	27
XI. IMPLEMENTATION DATE	27

XII. ADMINISTRATIVE REVIEW OR APPEAL OPPORTUNITIES 27

XII. CONTACT 29

APPENDIX A – BIOLOGICAL EVALUATION AND BIOLOGICAL ASSESSMENT..... **ERROR! BOOKMARK NOT DEFINED.**

APPENDIX B –RESPONSE TO COMMENTS.....81

APPENDIX C –PROJECT MAPS.....114

APPENDIX D –CONSIDERATION OF SCIENCE AND LITERATURE SUBMITTED BY THE PUBLIC122

I. DECISION SUMMARY

This Decision Notice documents my decision and rationale for implementation of the Middle Bugs Project. I have decided to implement Alternative C, as described in the Middle Bugs Project Environmental Assessment (EA), issued on August 31, 2012. The selected alternative will implement forest management and watershed improvement activities in the Middle Bugs Project area located approximately 11 miles east of Pierce, Idaho in Township 36N, R7E, Sections 2, 11-15, 17, 20-23, 26-28 and 34; T36N, R8E, Section 4-9, Boise Meridian, Idaho and Clearwater Counties, Idaho. The project area encompasses approximately 5,540 acres in the Middle Creek drainage between Lean-to Ridge and Beaver Dam Creek. The area is accessed by Forest Roads 100, 103, 104, 500 and 555. The project area is bounded on three sides by the Bighorn Weitas Roadless Area. It is bounded to the southwest by the NeeMeePoo Trail which is part of the historic Lolo Trail system.

II. PROJECT BACKGROUND

Much of the project area is comprised of mature, 80 to 90 year old lodgepole pine stands initiated by large wildfires in 1919. Over the last five years, mountain pine beetle infestations in these aging lodgepole pine stands have increased, with several patches of beetle caused mortality present. Overstocked mixed conifer stands are declining in health and vigor and becoming increasingly susceptible to insect and disease infestations. Mountain pine beetle outbreaks can be prevented by creating a mosaic of age and size classes, which reduces the acreage susceptible to mountain pine beetles at one time (Amman and Safranyik 1984).

There are 37 miles of road in the Middle Creek drainage. Approximately 16 miles are currently open to motorized traffic with the remaining 21 miles closed to motorized use. Many of the closed roads are overgrown with vegetation and several roads have unstable segments and deteriorating or nonfunctional culverts and drainage ditches. Many roads are no longer needed to conduct management activities and many are, or have the potential to, add sediment to streams through road surface erosion or stream crossing failures.

The Clearwater National Forest (CNF) Plan identifies the majority of this area as Management Area (MA) C8S Big Game Summer Range. The primary goals for this MA are to manage to maintain high quality wildlife and fishery objectives while producing timber from the productive forest land. Wildlife objectives are primarily oriented at elk habitat management. The Big Game Habitat Restoration on a Watershed Scale Assessment (BHROWS 1999) recommendations for this area include reductions in road densities and vegetation manipulations that would restore or expand forage areas for big game. Recommendations from the BHROWS Assessment are based on and supported by the Forest Plan.

III. PURPOSE AND NEED FOR ACTION

The following resource management opportunities were identified for the project area based on the existing condition of the area, applicable Forest Plan (FP) management direction (FP, II-2, 25, 26) and opportunities identified in the BHROWS Assessment (page 123).

Goods and Service

Purpose: To provide goods and services important to society and recover the economic value of dead and dying trees.

Need: Lodgepole pine stands dominate the treatment areas. Mountain pine beetle infestations are contributing to increased mortality in the area. There is a need to capture the commercial value of the timber in infested stands before it is lost due to mortality and decay. Harvest of the timber would provide materials to local industries consistent with Forest Plan (FP) direction.

Vegetation Improvement

Purpose: Improve species diversity in the project area to create conditions that are resilient and allow for rapid recovery after disturbances.

Need: Proposed treatment areas are dominated by homogenous stands of lodgepole pine of similar age. Homogenous stands are less resilient to disturbances such as insects, disease and fire. There is a need to reduce the lodgepole pine component while increasing white pine and larch which would increase biodiversity and tolerance to disturbance within individual stands, as well as the project area.

Purpose: Reduce stand densities in overstocked stands to promote tree growth and vigor.

Need: Competition from excessive vegetation in mixed grand fir, Douglas fir and western larch stands has reduced stand vigor and increased susceptibility to mortality from insects and disease. These overstocked areas are slowly declining in health and vigor. Reducing stand density by thinning would improve the resiliency of older mixed conifer timber stands to better withstand the effects of fire and potential insect and disease outbreaks.

Watershed Improvement

Purpose: Reduce potential sediment inputs into the aquatic ecosystem and improve passage for aquatic species.

Need: Sediment input from gravel and native surface roads can flow into streams, negatively affecting fish habitat and water quality. Watershed function and stream conditions can be improved by reducing road densities and repairing existing roads and culverts which would reduce sediment, and improve drainage and aquatic organism passage.

IV. DECISION

After careful consideration of the analyses, applicable laws, and public comments, I have decided to implement Alternative C, as described in the EA.

This decision is based on information contained in the project record including the EA and the effects analysis described in Chapter 3, the resource specialist reports, the management requirements of the applicable laws and policies, the mitigation measures and design features described below and the comments received during the public involvement process for this project.

Alternative C will implement the following management activities, design features and monitoring activities.

Management Activities

Project activities to provide goods and services, improve forest health and reduce potential sediment production will consist of the following:

- Harvest timber on 705 acres consisting of:
 - Regeneration harvest on 642 acres, and commercial thin on 63 acres.
- Precommercial thin on up to 114 acres.
- Conduct post-harvest burning on 642 acres to reduce fuel hazards and prepare harvested sites for planting. Of those acres, employ excavator piling and burning on approximately 464 acres to protect leave trees.
- Construct approximately 5.2 miles of temporary roads to facilitate harvest and decommission them after use.
- Reconstruct approximately 1 mile of Road 555.
- Recondition approximately 23 miles of Roads 103, 555 and 556.
- Decommission approximately 3 miles of Roads 103J, 103K, 336, 558, 1610, 3101A, 5159, 5159A and their spurs that are not needed for management.
- Put approximately 11.3 miles of Roads 103, 3100, 3101, 336, 553, 553A, 5159, 5153 and 5153A and their spurs into long-term storage.
- Replace approximately 42 undersized or damaged culverts on Roads 103 and 555.
- Decompact 31 acres of skid trails

Road reconstruction, reconditioning and maintenance activities are consistent with direction and guidance provided in the February 5, 2007 document entitled Clearwater Forest Intermittent Term and Stored Service Life Policy.

Design Features

The design features, monitoring measures and Best Management Practices (BMPs) described below will be implemented as part of my Decision. Note that road decommissioning and culvert replacement is **NOT** required mitigation work needed to offset harvest activities. These activities may be implemented before, during or after harvest activities are completed.

1. Delineate appropriate no-activity buffers around wet areas, stream channels or unstable soils during project layout or implementation. INFISH default buffers will be used to define timber sale unit boundaries. No timber harvest will occur within 300 feet of fish-bearing streams, 150 feet of perennial non-fish bearing water, 100 feet of intermittent streams and landslide-prone areas in priority watershed and 150 feet of wetlands larger than one acre.

During layout, the temporary road location of Road C1 (main temporary road into Unit C from Road 103) will be coordinated with the project hydrologist to insure that road location and design features mesh with watershed mitigation needs and RHCA management.

Clearwater National Forest BMP audits show these measures to be 99% effective in minimizing sediment introduction to streams.

2. No ignition of prescribed fire will take place within riparian areas, but fire may be allowed to back into these areas with low intensities.
3. BMPs found in Rules Pertaining to the Idaho Forest Practices Act Title 38, Chapter 13, Idaho Code, and Soil and Water Conservation Practices Handbook, FSH 2509.22 will be applied to prevent non-channelized sediment delivery from harvest units and roads to streams in the project area.

BMP implementation and effectiveness rates on similar landforms have been found adequate to prevent sediment delivery to streams as noted in the BMP audits conducted on the Forest from 1990 to 2009 (Jones 1999, 2002, 2004, 2005, 2007, 2008, 2009; Idaho Dept. of Environmental Quality, 2005). Vegetated buffer strips located between ground-disturbing activities and streams have been shown to be highly effective at preventing sediment delivery to streams in numerous different locations and conditions (Belt et al. 1992, Megahan and King 2005).

4. Nonmerchantable snags which are not a hazard during the felling or skidding operation will be left for wildlife and long-term site productivity (FP, page II-23).
5. Approximately 5 to 26 trees per acre will be retained as leave trees, dependent upon the size of trees in the unit. Due to the low number of large trees within the harvest units, the leave trees would mostly be in the 10 to 12 inch diameter class, which will equate to 14 to 26 trees per acre (EA, p. 18).
6. Regeneration harvest units will retain 7 to 13 tons per acre of coarse woody material (CWM) greater than three inches in diameter, to maintain soil productivity. (Graham et al. 1994). Where existing CWM does not currently meet this; additional standing trees will be retained for recruitment. In addition, leave tree retention requirements would address future recruitment.
7. Machine trails for timber harvest and fuel treatments will be designed to keep the extent of detrimental soil effects below 15%, using existing skid trails and landings where other resources are not compromised. Skid trails and landings utilized in all harvest units will be decompacted to improve soil productivity and meet soil quality standards. Actions will include decompaction and placement of slash, and may include recontouring and placing wood and duff layers over exposed soil.

Machine trails can accomplish harvest and site preparation and remain within the 15% standard, but if uncontrolled, can lead to extensive trails. Sale administration and equipment operator skills are necessary for success. Re-use of trails and subsequent decompaction minimizes impacts. Decompaction has been shown to decrease bulk density by 30-60% in comparison to compacted areas (Rone 2011, CNF 2005). Vegetative cover increases from 20% in the initial year of decommissioning to 40% in year 5 (CNF, 2005.)

8. Areas of sensitive soils will have 100% canopy retention. Five small areas were initially identified within Units C, D, and E and are identified on Map C-6 in Appendix C of this document. During layout, all areas found meeting criteria for sensitive soils will retain 100% of existing tree canopy. Criteria for sensitive soils include: 1) areas with the combination of slopes exceeding 55%, and erosive parent materials, and on south and southwesterly aspects; or 2) areas showing signs of soil movement as indicated by curved or buttressed tree boles, active soil slumping, leaning trees, tension cracks; or 3) areas with moist seeps or wetland areas with high water tables (indicated by presence of hydrophytic vegetation such as sedges, lady fern, sword fern, Boykina, etc). (EA, page 92)

Retention of root strength is important for reduction of landslide hazard (McClelland et al, 1997) Keeping trees on the landscape will retain the root strength in these steep areas.

9. Project activity will be designed to stay below 15% areal disturbance of the treatment area. Existing skid trails and landings will be utilized where other resources are not compromised. Methods include: designation of skid trails, reuse of skid trails by machines used for piling and placement of slash on existing skid trails where possible, to overlap detrimental effects rather than extending the footprint. Skid trails and landings in all units will be decompacted, following use for timber harvest, in order to improve soil productivity. Actions include decompaction and placement of slash, woody material and/or duff over exposed soil.

Effectiveness of design features are moderate to high based on past monitoring and research (Froehlich and McNabb, 1983; Graham et al., 1994; Graham et al., 1999; Korb, 2004; Neary et al, 2008; Curran 2005).

10. On all new temporary roads, drainage dips and waterbars will be installed and maintained. Surface grading on these roads will maintain an outslope to prevent concentrated flow on road surface to minimize the potential for erosion and sediment delivery to streams.

Road design and mitigation can decrease sediment production (Burroughs and King 1989; Burroughs et al 1984) with use of slash windrows, application of gravel and application of seed to disturbed areas. Design of cut and fill slopes at gentler grades decrease likelihood of surface erosion. Increasing frequency of drainage structures minimizes the contributing area of surface erosion and sediment introduction to streams (Elliot et al. 1999)

- 11A. Temporary roads will be constructed and decommissioned within 3 years following construction with machinery, such as an excavator, that does not need to leave the prism to decompact soil, recontour and place woody material. These roads will be closed to the public until they are decommissioned.
- 11B. Temporary roads will be located outside of sensitive areas with wet or thin soils and will not cross any streams. Portions of temporary roads on steeper slopes or on the margins of RHCAs will be designed under contract provision C5.1 or C5.102 to make sure mitigation measures are achieved.
12. Segments of the temporary road on the north end of Unit E (Temp Road E3) are located upslope of an area with very high sediment delivery efficiency and low slope sediment storage capacity. This temporary road will be constructed, used and decommissioned during one summer/fall season to minimize erosion and the potential for sediment delivery to Middle Creek.
13. During culvert removal and/or replacement, road decommissioning or conversion to intermittent stored service, measures will be taken to prevent damaging levels of sediment from entering streams, such as: (a) placing removable sediment traps below work areas to trap fines; (b) when working instream, removing all fill around pipes prior to bypass and pipe removal (where this is not possible, use non-eroding diversion); (c) revegetating scarified and disturbed soils with grasses (weed free) for short-term erosion protection and with shrubs and trees for long-term soil stability; (d) utilizing erosion control mats on stream channel slopes and slides; (e) mulching with native materials, where available, or using weed-free straw to ensure coverage of exposed soils; (f) dissipating energy in the newly constructed stream channels using log or rock weirs; (g) armoring channel banks and dissipating energy with large rock whenever possible; and (h) timing of the activity to avoid spawning timeframes. (i) placing fill material in stable areas outside of stream

channels and floodplains, (J) cleaning equipment of external oil, grease, dirt and mud, and repairing leaks from equipment used for instream work prior to arriving at the project site.

BMP audits show these measures to have a high effectiveness. Effectiveness of road design and decommissioning applies to both specified roads and temporary roads. Decomposition has been shown to decrease bulk density by 30-60% in comparison to compacted areas (Rone 2011, USDA 2005). Vegetative cover increases from 20% in the initial year of decommissioning to 40% in year 5 (USDA 2005). Monitoring has shown decommissioning and storage treatments to be effective at reducing surface erosion and mass failure risk while increasing water infiltration rates and vegetative ground cover (Foltz 2007, Lloyd et al. 2010, USDA 1999-2009).

14. Timber sale, stewardship or service contracts will include provisions to minimize the risk of an accidental spill of petroleum products, as well as to protect watercourses and aquatic biota from adverse effects in the event of a spill.

BMP audits show this measure to have a Moderate effectiveness. A plan insures foresight, but cannot eliminate the risk of materials being spilled and escaping into waters. (FPA Rule - 060.02.a, b, c and 060.04.a)

15. To minimize the spread of noxious weeds, road equipment will be cleaned of loose debris prior to moving on to the timber sale area (timber sale contract provision CT 6.26).

Effectiveness is expected to be moderate, since it would not be possible to restrict all non-sale related traffic from entering the sale area.

16. If cultural resources are found during implementation of the project, project activities will cease. The Forest Archaeologist will be notified and assess the effect of continued activities on the newly identified cultural resource.

17. No harvesting will occur in old growth and stands within 20 years of achieving old growth status (EA, page 41). If temporary road construction passes through old growth stands 121-09-029 or 121-09-025, trees with a 21-inch or larger Diameter Breast Height (DBH) may be felled for right of way clearing, but will be left on site for down woody debris to be placed on the recontoured road bed.

18. All post-sale fuel reduction treatments will be conducted according to the requirements of the Montana/North Idaho Smoke Management Guidelines and the Idaho Emergency Episode Rule.

19. To prevent conflicts with snowmobile use, snow plowing on Roads 103 and 555 will not be permitted except when necessary to facilitate reforestation efforts.

20. The Forest Service will ensure that the Trail 112 prism is left intact at any point where a section of the trail intersects with Road 553. Portions of this trail may follow segments of the road that are planned to be put into intermittent storage. Storage procedures will not eliminate use of the trail.

21. Log hauling will be restricted on Road 555 during weekends to reduce impacts to recreation.

22. Any active goshawk nests found during harvest activities will be protected by establishing a post fledging area (PFA) of 420 acres where a no-activity buffer zone will be implemented from April 15 to August 15 (EA, page 49).

23. The commercial and pre-commercial thinning proposed within the documented elk calving area (Units A, B and adjacent stands proposed for precommercial thinning) will not occur during the elk calving season (about May 15 through June 15) (Wildlife Report, page 77).
24. All areas, 5 acres or larger, of multi-storied snowshoe hare habitat in units B, C, D or E will be left intact for maintaining suitable habitat quality within the harvest units (EA, page 55).
25. Because a few mature whitebark pine, an ESA Candidate species, were discovered at the edge of Unit C, the Forest will protect individuals of the species by marking and retaining all merchantable-sized whitebark pine encountered during sale layout.

Monitoring Requirements

The Middle Bugs Project will include the following monitoring activities.

1. Unit E will be monitored within one year after planting activities are completed to verify assumptions made about the extent of detrimental soil disturbance from mechanical site preparation.
2. Forestwide INFISH compliance monitoring will be conducted annually by the Forest Fisheries Biologist in conjunction with BMP audits with the Forest Hydrologist. The monitoring is done on a sample of the completed activities

V. RATIONALE FOR THE DECISION

My criteria for making a decision on this project was based on how well the management actions analyzed in the EA address the purpose and need of the project, and considerations of issues that were raised during the scoping process and the comment period on the EA. I considered Forest Plan and Record of Decision standards and guidance for the project area, and took into account competing interests and values of the public.

I have reviewed the alternatives considered in detail (EA page 16-20), and have found that they are responsive to the issues and concerns as well as purpose and need for action. Issues (EA, pages 6-9) developed are based on public comments and an interdisciplinary review of existing conditions in the project area. The purpose and need for action (EA, page 5) is consistent with the goals and objectives of the Forest Plan (EA, pages 9-11). I reviewed project area needs, issues and opportunities identified in the 1999 Big Game Habitat Restoration on a Watershed Scale Assessment (BHROWS) 1999. I find the Purpose and Need is supported by the scientific information found in this document. In addition, I have read and considered actions analyzed in the Forest Plan as amended, the Forest Plan Final Environmental Impact Statement, the Forest Plan Record of Decision and the Forest Plan Stipulation of Dismissal.

I reviewed those alternatives analyzed, but not considered in detail (EA, pages 24-26), to ensure that we considered an adequate range of alternatives. I reviewed public comments from the scoping period as well as those received for the EA. I find that all issues raised during the scoping process were appropriately considered and addressed by project design, the development of mitigation measures or alternative development. I modified the proposed action to address some of these concerns. For example, in response to a request to consider further road decommissioning, I revisited our roads analysis and decided to decommission Roads 103J and 103K as they are not needed for future land management. I dropped 105 acres of proposed

precommercial thinning because they were located in modeled potential lynx habitat. I considered public comments about the use of prescribed fire to achieve vegetation goals; however, I determined that prescribed fire in lieu of timber harvest was not consistent with Forest Plan direction for this management area and would not meet the project purpose and need to provide goods and services or improve species diversity. Post-harvest prescribed burning will be conducted to reduce fuel hazards and prepare harvested sites for planting.

Regeneration treatments are proposed for areas of high-risk lodgepole pine where mortality is occurring, and mountain pine beetle outbreak is imminent. Due to concerns with regard to the size and extent of these proposed regeneration harvest units, I requested and received Regional Forester approval for the proposed 416 and 191-acre openings. The Regional Forester based her approval on the analysis presented in the EA. In addition, due to concerns about impacts to wilderness characteristics from proposed harvest in Unit E, I have provided detailed clarification on this in my response to comments (See Appendix B).

The interdisciplinary team (IDT) considered all the public scoping comments received when developing the EA. Eight alternatives were analyzed, three in detail. I find that the range of alternatives considered was thorough and complete, and reflects public comments and concerns.

In summary, environmental effects to overall ecosystem health are determined to be neutral or beneficial in this analysis (EA, Chapter 3), with potentially detrimental effects mitigated through project design measures described on pages 21 through 24. Alternative C was designed to respond to the purpose and need described in Chapter 1 of the EA, to comply with Forest Plan direction and regulatory framework, and address public concerns about the miles of roads in the project area and visual impacts from leave tree mortality potentially caused by post-harvest fuel treatments.

Meeting the Purpose and Need

I have selected Alternative C because it best meets the Purpose and Need for action while being responsive to public comments and other agency concerns (EA, pages 5-8, 16-26), Decision Notice, Appendix B; and project file, comment letters).

Much of the project area is comprised of mature, 80 to 90 year old lodgepole pine stands initiated by large wildfires in 1919. Over the last five years, mountain pine beetle infestations in these aging lodgepole pine stands have increased, with several patches of beetle caused mortality present. Overstocked mixed conifer stands are declining in health and vigor and becoming increasingly susceptible to insect and disease infestations. There are 37 miles of roads in the Middle Creek drainage. Approximately 16 miles are currently open to motorized traffic with the remaining 21 miles closed to motorized use. Many of the closed roads are overgrown with vegetation and several roads have unstable segments and deteriorating or nonfunctional culverts and drainage ditches. Many roads are no longer needed to conduct management activities and are, or have the potential to, add sediment to streams through road surface erosion or stream crossing failures.

The environment in the project area can be improved and moved toward desired conditions with implementation of this project. Specifically, Alternative C meets the Purpose and Need because:

- It will provide goods and services and capture timber values before they deteriorate due to bark beetle infestations. Construction of temporary roads rather than permanent roads and use

of post-harvest mechanical site preparation methods instead of prescribed burning in some areas makes Alternative C the most cost effective alternative (EA, page 107).

- Alternative C will protect leave tree clumps better than Alternative B or the other alternatives by mechanically treating activity fuels in areas harvested with ground based systems. While post-harvest mechanical treatments could cause additional detrimental soil disturbance, impacts will be less than 15% areal disturbance. Design criteria, Best Management Practices and site-specific mitigations will eliminate or minimize soil displacement and compaction and impacts to the forest floor and organic matter, reduce the extent of disturbance and maintain soil productivity (EA, page 86, 91, 92).
- It will increase western white pine and western larch on about 642 acres (11%) of the project area, thereby increasing species diversity and resilience. Treated areas will become less susceptible to insect and disease caused mortality. By shifting 642 acres from the late to the early successional stage and creating a mosaic of age and size classes, both alternatives will reduce susceptibility to mountain pine beetle outbreaks in this area (EA, page 33, 34) .
- It will create three patches of early successional forest ranging from 35 to 416 acres and decrease landscape homogeneity. Proposed treatments will create larger openings that will move the area closer to desired conditions by increasing the diversity of successional stages of the lodgepole pine forest types and thereby increase resiliency (EA, page 33).
- Commercial thinning will reduce stand densities on 63 acres, which will increase vigor and improve resistance to insect-caused mortality. Improved vigor will maintain the overstory and delay encroachment by grand fir (EA, page 34).
- Vegetation treatments will increase forage areas for big game. Commercial thinning will improve the ability of elk to move through the existing dense vegetation. Currently, cover is abundant while forage habitat is somewhat limited. Subsequent post-harvest fuel treatments will also improve big game cover and forage growth. Alternative C will maintain or increase elk habitat effectiveness. Forestwide, Forest Plan standards for elk habitat effectiveness in MA C8S will continue to be met in Alternative C. Fuels treatment following harvest will improve cover and forage growth and will improve accessibility to the units compared with harvest without fuels treatment. The BHROWS assessment (CNF 1999) noted that the Weitas Creek watershed in particular, and most of the other watersheds in Game Management Unit 10, were below the natural range for early-seral habitat. Alternative C is consistent with BHROWS recommendations of vegetation manipulation that would restore or expand forage areas for big game (EA, pages 43, 45).
- It will construct and use temporary roads that will be fully decommissioned after use. Therefore, visual impacts from road construction and loss of wildlife cover and forage will be temporary (EA, pages 43,100). There will be no increase in road densities because no permanent road will be constructed. Modeled sediment yield is lower for temporary roads than permanent roads (EA, page 74).
- It will decrease road densities more than all other alternatives; because it will not build any permanent road and will decommission all temporary roads after use. Alternative C will decrease road densities from 2.9 to 2.6 miles/mile² in Upper Middle Creek and from 1.5 to 1.4 mile/mile² in Rocky Ridge Creek. At the Middle Creek HUC 6 scale, road density would not change in Alternative B, but would decrease from 1.3 mile/mile² to 1.2 mile/mile² in Alternative C (EA, page 73).
- It will improve existing fish habitat conditions by reducing potential sediment inputs, and installing stream crossings that will accommodate a 100-year flow event, as well as provide for aquatic organism passage (EA, page 149).

Consideration of Issues and Concerns

Issues were generated internally, by the Interdisciplinary Team, and externally, through public comments. Involvement of all interested individuals, businesses, organizations, county, state and federal agencies and the Nez Perce Tribe was sought to define the issues, concerns, mitigations and treatment options. The interdisciplinary team designed the project to minimize effects on resources. Some issues were used to develop the range of alternatives, while site-specific project design features alleviated other issues.

Issues used to develop alternatives to the proposed action (EA, pages 6, 7) include road construction, visual concerns, economic viability, large openings, road decommissioning and funding for watershed improvement activities. These issues are discussed in detail below. Other issues were raised and discussed in the EA (pages 7, 8), but were not evaluated in detail because the alternatives already mitigated the issue (such as noxious weed treatments, recreation impacts, and obliteration of skid trails, log landings and temporary roads). Discussion of other issues, such as impacts to water quality, soils, fisheries, wildlife (including elk habitat potential) and opening size, cultural resources, tribal treaty rights, impacts to roadless and unroaded areas and dispersed campsite access were carried through the analysis for all alternatives. I find that the range of alternatives considered accurately reflects the issues raised during the scoping process and is thorough and complete.

Road Construction

Some people were concerned about the amount of road construction in the Proposed Action (Alternative B), given the miles of existing roads present in the area and Forest Plan C8S management area direction to maintain high quality wildlife and fishery objectives. Some commentors did not want to see any road construction, temporary or permanent. While Alternatives C, D and E would not construct permanent roads, Alternative C is the only one that would meet all aspects of the purpose and need for action.

I believe that Selected Alternative C is a good compromise on this issue. No permanent road construction will occur in Alternative C; only temporary roads will be built. After use, these roads will be decommissioned and recontoured to original slopes. Design features #10 through #13 are included to minimize the potential for erosion and sediment delivery to streams, potential impacts to sensitive soils and to restrict public access until these temporary roads are decommissioned.

Alternative D would not construct any roads; it would not address vegetative needs or provide goods and services. Additionally, all activities proposed in Alternative D are included in all other action alternatives.

Alternative E would not construct any roads and would restrict vegetation treatments to those areas that could be reached from existing roads with tractor and skyline systems. While harvest could be economically viable and provide goods and services, it would not meet the project purpose and need to improve vegetative conditions by improving species diversity and creating openings that would help better distribute successional stages. Under Alternatives D and E there would still be a need to enter the area in the near future to treat existing vegetative conditions.

Visual Concerns

There was concern that post-harvest activity fuel treatments could kill leave trees and impact views from the Lolo Trail National Historic Landmark Corridor that bounds the project area to

the south. Alternative C will best address this concern by treating post-harvest fuel accumulations by mechanical means, in areas harvested with ground based logging systems, to protect leave trees and limit mortality. Mechanical fuel treatments will consist of excavator piling and burning, mulching, chipping, or mastication to reduce the surface fuels. Unlike Alternative B, which proposes permanent road construction, Alternative C will have temporary visual impacts, because only temporary roads will be constructed. Unit design measures to naturalize unit edges and retain legacy trees will assure that Alternative C meets the scenic quality objectives for all harvest units.

Economic Viability

One commenter requested an alternative that would not harvest trees because the low value of the timber and long haul distances would make this project economically infeasible. Alternative D would not harvest timber; but would conduct watershed improvement activities such as decommissioning unneeded roads, replacing undersized or damaged culverts and placing roads needed for future management into long-term storage. Both Alternative B and C are economically viable and will generate enough stumpage value to cover all sale costs, including reforestation. Alternatives B and C also include the watershed improvement activities proposed in Alternative D.

The temporary road construction in Alternative C will entail less cost than the permanent road proposed in Alternative B. Also, Alternative C will employ burning and purchaser mechanical site preparation methods that are more economical than the overhead costs and additional leave tree protection measures necessary in Alternative B, to meet visual objectives.

I have selected Alternative C because it will best meet the purpose and need to provide goods and services, improve vegetative conditions as well as authorize implementation of watershed restoration activities that will reduce potential sediment inputs into area streams.

Funding for Watershed Improvement Activities

Various commentors were concerned that the proposed watershed improvement activities would not be completed because they are not currently funded. The Middle Bugs Project will complete a portion of the proposed sediment reduction activities (road reconditioning and replacement of one culvert on Rd 555) during implementation of the proposed harvest activities. However, timber values will not generate enough funds to cover all nontimber costs. I recognize that additional funding will be needed to complete all other watershed restoration activities. This is true regardless of the alternative I choose. Integrating the analysis of the watershed rehabilitation activities into this EA is a much more timely and cost-effective approach than analyzing the effects of individual watershed improvement activities in separate NEPA projects. In compliance with NEPA, I considered the potential impacts on the environment of all proposed actions and I select Alternative C, for the reasons stated in this Decision Notice.

Watershed improvement activities are not required as mitigation for the effects of other activities such as road construction, decommissioning or timber harvest (EA, pages 10 and 21). Watershed improvement activities and timber harvest activities in Alternative C may be implemented independently of each other. I intend to complete the remaining approved sediment reduction activities before, during or after harvest activities-either concurrent with the proposed timber sale or when other funds become available (EA, pages 20 and 21). It is important to recognize that implementation of any activities approved in the NEPA process are dependent upon available funding and that NEPA approved projects compete better for available funding. The Forest

acknowledges funds are limited and provides no guarantee when this work will occur. However, the Clearwater National Forest has been successful in funding watershed improvement projects, including the North Fork District where watershed restoration funds are relatively limited compared to other areas of the Forest where more funding is available for restoration of anadromous fish habitat. On the North Fork District, substantial watershed improvement activities have been implemented, including over 230 miles of road decommissioning (1992 to present) and 16 large culvert/bridge replacements for aquatic organism passage (2004-2011). The Forest intends to continue accomplishing watershed restoration as funding allows.

Large Openings

The Middle Bugs project regeneration harvest that will create two openings, 416 and 191-acres respectively. According to the National Forest Management Act (NFMA), all openings created by regeneration type cuts shall be 40 acres or less in size unless they meet certain criteria for exception, or approval to exceed this size is granted by the Regional Forester. Some people were concerned that the size and scope of some of the proposed harvest units would violate NFMA direction by exceeding 40 acres. Others questioned what design features would be used to mitigate potential effects from these large openings. To address these concerns, the IDT developed Alternative F, which would restrict vegetative treatments to areas that did not exceed 40 acres. However, I feel that Alternative F would not meet project objectives to improve species diversity to create conditions that are resilient and allow for rapid recovery after disturbances. Also, this alternative would not recover the economic value of the extensive projected bark beetle caused mortality in this area (EA, page 7, 25).

Because of public concern about size and extent of the proposed regeneration harvest units, I requested and received Regional Forester approval for the proposed 416 and 191-acre openings. I analyzed the impacts of these larger openings in the EA (pages 32-34) and they are discussed in Section IX (Findings Required by other Laws and Regulations) of this document. Proposed regeneration treatments are located in lodgepole pine stands where mountain pine beetle mortality has occurred and an outbreak is imminent (EA, page 7, 34). Alternatives B and C creates 3 openings (ranging from 35 to 416 acres) that will move the area closer than all other alternatives to desired conditions by increasing the diversity of successional stages of the lodgepole pine forest type. Alternatives B and C will plant these openings with early seral species to increase long term resiliency, species diversity, and help restore forest cover types of these species to their historic levels, more than all other alternatives.

Alternative C will increase early seral species of western larch and western white pine on 12% of the project area, as opposed to 2% under Alternative F. Currently, the early successional stage in the moist frost churned ridges Landtype Association (LTA) is 4%; far less than historic levels of 20 to 50%. Unlike Alternative F, Alternative C will treat Unit C, comprising 416 acres, which offers the best opportunity to meet the purpose and need to balance successional stages. Project design features include leave tree retention and tree restocking requirements for these areas.

Road Decommissioning

One commenter suggested that more roads be decommissioned to reduce road densities in the area. Another commenter suggested inclusion of additional road decommissioning to offset impacts to elk habitat potential; specifically decommissioning Roads 3100, 3101 and Roads 103J and 103K. As identified in the project area roads analysis, Alternative C approves implementation of all known road decommissioning and long-term storage opportunities. These

activities will reduce current road densities, help remove the potential for sediment input into area streams and help to maintain high quality wildlife objectives.

I believe the issues and concerns identified throughout the scoping and planning process were fully addressed during alternative development and analysis.

Consideration of Public and Other Agency Comments

A summary of the comments received for the Middle Bugs proposal, and my response to those comments, is attached to this document as Appendix B. The original comment letters and all other comments received are included in the project file.

The formal scoping period for this project ended on July 31, 2011. Comments received during the scoping period were used to develop the issues and alternatives that were included in the NEPA document, and to ensure that those issues and alternatives were adequately analyzed.

The comment period for the EA ended on October 1, 2012. I considered submitted comments when making my Decision, and find that the selected alternative responds to the issues and concerns that were brought forward by the public and other agencies.

Five alternatives were developed and analyzed in response to public comments, but eliminated from detailed study for the following reasons.

- Alternative D would only address aquatic needs and would not meet the primary purpose to provide goods and services or address vegetative needs.
- Alternatives E and F would not meet project objectives to improve species diversity or create openings that would help better distribute successional stages.
- Alternative G was dropped because it proposed precommercial thinning in areas of modeled potential lynx habitat.
- Alternative H was dismissed because it would decommission some roads that are needed for future land management. However, review of this alternative prompted a road reassessment. Other roads were determined to be excess to management needs and were included in the Selected Alternative to be decommissioned to maximize potential benefits to all resources.

Forest Plan Consistency

The forestwide goals, standards, and guidelines most applicable to this project pertain to timber management, big game summer range, and protection of soil and water resources (EA, Page 9). Goals, objectives and standards for MA C8S, M2, A6 and US are described on pages III-1 through III-74 of the Clearwater Forest Plan. All proposed treatments will occur in MA C8S. Alternative C will comply with Forest Plan direction for MA C8S, which is to manage these areas to maintain high quality wildlife and fishery objectives while producing timber from the productive forest land. Wildlife objectives are primarily oriented at elk habitat management. Alternative C will create a mosaic of vegetation age and size classes, which will reduce susceptibility to mountain pine beetle outbreaks. It will also re-establish western larch and white pine on the landscape, increasing species diversity and resilience. It will provide wood products for local industries. Alternative C will reduce potential sediment inputs into the aquatic ecosystem and improve passage for aquatic species through road decommissioning, culvert

removal, replacement and repair. Alternative C is designed to achieve management objectives while ensuring that no adverse effects to fish or fish habitat would occur. This alternative complies with all Forest Plan water standards and guidelines, as amended by INFISH (CFP II-27; water quality report, project file).

There will be no adverse effects on Threatened, Endangered or Sensitive species. Habitat will be maintained for all indigenous wildlife species. Snag, riparian and old growth habitat will be protected through project design and implementation of site-specific mitigations and Best Management Practices (DN, EA pages 21-24 and Appendix C). Alternative C will not harvest old growth or 130 to 150 year (stepdown) mature habitat. All proposed harvest units were field reviewed by qualified specialists to ensure that they were not old growth. All existing old growth in the project area will be retained. Alternative C complies with Forest Plan direction to maintain at least 10% of the forest in old growth habitat and to manage at least 5% of each Old Growth Analysis Unit (OGAU) within forested, nonwilderness areas as old-growth habitat (FP, II-23). Old growth habitat is used to determine if viable populations of old growth associated management indicator species (goshawk, pileated woodpecker and pine marten) can be maintained. Alternative C does not treat any old growth and will not affect mature or old growth forest habitats. Design feature #17 addresses potential temporary road construction (200 to 400 feet) in old growth.

Regeneration treatments are proposed in lodgepole pine stands where mountain pine beetle mortality has occurred and an outbreak is imminent. Regeneration harvest in Alternative C will create three patches of early successional forest, ranging from 35 to 416 acres, and decrease landscape homogeneity. Two of these openings would be larger than 40 acres and help trend landscape patterns toward historic conditions by increasing the diversity of successional stages of the lodgepole pine forest type and increasing resilience by emulating historic disturbance patterns. These two openings encompass 416 and 191 acres. (The 191-acre unit will be adjacent to 26 acres that were harvested in 1991 and are no longer considered an opening.) The increase in patch size for the young successional stage will establish western larch and white pine where appropriate. This will increase long-term resiliency and maintain the potential for desired patch sizes in the future. Because of concern about size and extent of these proposed regeneration harvest units, and in compliance with the Forest Plan (II-25, III-54) and NFMA requirements (See 36 CFR 219.11), I requested and received Regional Forester approval for the proposed 416 and 191-acre openings. This approval was based on the analysis presented in the EA. Project design features include leave tree retention and tree restocking requirements for these areas. The environmental analysis presented in the EA supports my decision to select Alternative C.

VI. ALTERNATIVES CONSIDERED

I considered two action alternatives (B and C) and a no action alternative (A) in detail. Additionally, I analyzed five other alternatives (D through H) but did not consider them in detail for reasons described below. I selected Alternative C after considering how each alternative would respond to the purpose and need to provide goods and services and recover the economic value of dead and dying trees, improve species diversity, reduce stand densities, reduce potential sediment inputs and improve passage for aquatic species.

I considered how each alternative would respond to the issues used to develop design criteria and/or mitigation and issues carried through the analysis. I also considered the potential direct, indirect and cumulative effects of resources, such as vegetation, water quality, fisheries, soils, recreation, and wildlife for each of the alternatives. Specialist reports in the Middle Bugs Project

file include analysis that is more detailed. The features that I considered when making my Decision are briefly discussed below for each alternative.

Alternative A: No Action

This alternative provided a baseline for comparison of environmental consequences of the proposed action to the existing condition. The results of the No Action Alternative would be the current condition as it changes over time due to natural forces. No vegetation management or watershed improvement activities would occur at this time. Alternative A does not meet the purpose and need for action (EA, page 16).

Alternative B: Proposed Action

Alternative B is the Proposed Action described in the EA and was developed to meet the purpose and need. Project activities to provide goods and services, improve forest health and reduce potential sediment production would consist of the following:

- Harvest timber on 705 acres consisting of:
 - Regeneration harvest on 642 acres, and commercial thin on 63 acres.
- Precommercial thin on up to 114 acres.
- Conduct post-harvest burning and/or slashing on 642 acres to reduce fuel hazards and prepare harvested sites for planting.
- Construct approximately 4.0 miles of temporary roads to facilitate harvest and decommission them after use.
- Construct approximately 2.0 miles of permanent road to access proposed harvest areas. Roads would be closed to motorized access after use.
- Reconstruct approximately 1 mile of Road 555.
- Recondition approximately 23 miles of Roads 103, 555 and 556.
- Decommission approximately 3 miles of Roads 103J, 103K, 336, 558, 1610, 3101A, 5159, 5159A and their spurs that are not needed for management.
- Put approximately 11.3 miles of Roads 103, 3100, 3101, 336, 553, 553A, 5159, 5153 and 5153A and their spurs into long-term storage.
- Replace approximately 42 undersized or damaged culverts on Roads 103 and 555.
- Decompact 31 acres of skid trails

Alternative C: Selected Alternative

This alternative will fully meet all aspects of the purpose and need and is described in detail on pages 3 through 7 of this document. Alternative C responds to concerns about the miles of roads in the project area and visual impacts from leave tree mortality potentially caused by post-harvest fuel treatments. This alternative will not build any permanent road, only temporary roads that will be decommissioned after use. Where ground based logging systems are used, it will mechanically treat activity fuels to protect leave tree clumps.

Alternative D: Watershed Improvement Only

This alternative was developed and analyzed in response to a commenter who wanted an alternative that would not harvest trees. The commenter thought the proposed project was

impractical due to low timber values and long haul distances. Alternative D would consider the aquatic needs but would not address vegetative needs, or provide goods and services as stated in the purpose and need for action. Alternative D does not address the needs in this area to reduce tree densities, shift species composition, capture tree mortality and commercial value, and reduce insect and disease problems. An economic analysis completed for this project determined the project was economically viable (EA, page 107). The Clearwater Forest Plan allocates the majority of this project area to MA C8S, with goals to manage these areas to maintain high quality wildlife and fishery objectives while producing timber from the productive forest land. Watershed conditions do not preclude these types of actions; therefore, Alternative D was dismissed from further consideration. All proposed watershed improvement activities are authorized under the Selected Alternative.

Alternative E: No New Roads – Temporary or Permanent

This alternative was developed to address a request that no permanent or temporary roads be constructed for this project. This would restrict vegetative treatments to about 187 acres in harvest Units A, B, C and E that could be reached from existing roads with tractor and skyline systems. This would consist of about 63 acres of commercial thinning and 125 acres of regeneration harvest. Longer skidding distances would be required in some areas, which could result in more soil disturbance. This alternative would not treat all areas with evident bark beetle activity.

While harvest could be economically viable, and provide goods and services, it would not meet the project purpose and need to improve vegetative conditions by improving species diversity and creating openings that would help better distribute successional stages. This alternative would create one approximate 100 acre opening as compared to the three openings ranging in size from 35 to 416 acres created by Alternatives B and C. Alternative E would only increase early seral species of western larch and western white pine on 125 acres (2%) of the project area as opposed to 12% under Alternatives B and C. Currently, the early successional stage in the moist frost churned ridges LTA is 4%; far less than historic levels of 20 to 50%. Unit C, comprising 416 acres, offers the best opportunity to meet the purpose and need to balance successional stages but would not be treated under this alternative. Alternative E would not change successional stages in this LTA and would not meet project objectives to increase species diversity.

Alternative C will construct temporary roads to achieve project objectives. These roads will be decommissioned after use. Regional soil standards and water quality standards will be met.

Alternative F: No Large Openings

An alternative with treatments that do not exceed 40 acres was analyzed, but dismissed from further consideration because treating patches less than or equal to 40 acres would not meet project vegetative objectives to improve species diversity to create conditions that are resilient and allow for rapid recovery after disturbances. Mountain pine beetle impacts can be reduced by creating a mosaic of age and size classes, which reduces the acreage susceptible to mountain pine beetles at one time (Amman and Safranvik 1984). Conversion to early seral species such as western larch and white pine in these larger openings would increase resilience and move the landscape closer to historic conditions. That would not be accomplished under Alternative F.

Within 10 to 20 years, stand replacing bark beetle-caused mortality could affect up to 1,465 acres (95%) of the lodgepole pine stands within the project area. Treating patches less than 40 acres

would not meet the purpose and need to recover the economic value of these dead and dying trees.

In Alternative C, regeneration treatments will be implemented in lodgepole pine stands where mountain pine beetle mortality has occurred and/or an outbreak is imminent. On November 14, 2012, the Regional Forester approved creation of openings larger than 40 acres.

Alternative G: Precommercial Thin

All of the action alternatives originally included an additional 105 acres of precommercial thinning. Further analysis revealed that these acres were located in areas of modeled potential lynx habitat; consequently, they were dropped from further consideration. Alternative C will not authorize precommercial thinning activities in modeled potential lynx habitat.

Alternative H: Decommission Additional Roads

Decommissioning of Roads 3100, 3101 103J and 103K was requested by a commenter as a means of offsetting potential impacts to elk habitat potential. A roads analysis determined that Roads 3100 and 3101 are needed for future management; all but 0.3 miles of Road 3100 would be placed into long-term intermittent storage. I determined that decommissioning of Roads 103J and 103K would be included in all action alternatives to reduce current road densities, help remove the potential for sediment input into area streams and help to maintain high quality wildlife objectives. All proposed road decommissioning and 11.3 miles of long-term storage opportunities identified in the roads analysis were included in all action alternatives to maximize potential benefits to all resources. Possible impacts to elk habitat potential were analyzed for all action alternatives. The project was designed to assure that Forest Plan standards for MA C8S would be met. Therefore, Alternative H was dismissed from detailed analysis.

VII. PUBLIC INVOLVEMENT

This proposal was first listed on the Clearwater National Forest website (<http://www.fs.fed.us/sopa/>) in the Schedule of Proposed Actions on January 1, 2011. On June 29, 2011, scoping letters describing the proposed action, location and purpose and need were sent to the Nez Perce Tribe and all interested individuals, businesses, organizations and agencies. A legal notice and request for public comment appeared in the Lewiston Tribune on July 1, 2011. On July 22, 2011, Forest Service specialists presented this project to tribal staff members for comment and discussion. On September 20, 2011, the project proposal was presented to the Clearwater Basin Collaborative.

The IDT used the comments received from the public and other agencies to formulate the issues to be addressed in the EA. To address these issues, the IDT created the alternatives described above.

A 30-day comment period for the EA was advertised in the Lewiston Tribune on August 31, 2012. Copies of the Middle Bugs EA were mailed on August 28, 2012 to individuals who had provided comments during the 30-day scoping period. Five comment letters were received. I considered all of the public comments that were submitted before reaching my Decision to select Alternative C. Responses to public comments are included in Appendix B of this document.

VIII. FINDING OF NO SIGNIFICANT IMPACT

After considering the environmental effects described in the EA, I have determined that these actions will not have a significant effect on the quality of the human environment considering the context and intensity of impacts (40 CFR 1508.27). Thus, an environmental impact statement will not be prepared. I base my finding on the following:

Context

The setting of the project is in an intensively managed roaded area. The resources affected by the proposal are described in the EA. The Selected Alternative is consistent with the management direction, standards and guidelines outlined in the Clearwater Forest Plan. Local issues were identified through the scoping process and considered in alternative development and analysis. The project area is limited in size and the activities are limited in duration. Effects are local in nature and not likely to significantly affect regional or national resources.

Intensity

I have determined the following with regard to the intensity of this project as identified in 40 CFR 1508.27.

1. *Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.* There are no significant beneficial or adverse impacts on the physical, biological, or social portions of the human environment. The beneficial and adverse impacts of this decision are addressed in Chapter 3 of the EA and the BE/BA (DN, Appendix A). The adverse effects of regeneration harvest, road obliteration, and temporary road construction are minor in nature and will not impair land productivity. These impacts are short-term noise, human disturbance to wildlife and short-term soil disturbance that is not expected to cause soil erosion beyond the project area and is expected to primarily remain on-site. Long-term impacts are beneficial for forest ecosystem health. Habitat, including the amount and location of forage and cover is improved for many species.
2. *The degree to which the proposed action affects public health or safety.* My decision will have no significant or unacceptable effects on public health or safety, because OSHA safety regulations will be met during implementation and Forest Service inspectors will monitor all aspects of implementation to ensure public safety. Timber purchasers are required to comply with all State and Federal fire requirements and regulations. These types of activities (logging and hauling) have historically occurred on roads and near developed properties in the North Fork area without creating public safety or health problems. The risk of effects on public health and safety are low.
3. *Unique characteristics of the geographic area such as proximity to historic or cultural resources, parklands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.* There will be no significant effects on unique characteristics of the area because of protection measures integrated into the design of the project (EA, pages 21-24). This determination is based on the discussion of effects found in the EA, Chapter 3. The project does not enter any roadless areas and does not impact any parklands, prime farmlands, ecologically critical areas or wild and scenic rivers. There are no adverse effects to wetlands within the affected area due to avoidance and other design criteria. The project archeologist surveyed the areas of potential effects and determined, with

concurrence from the Idaho State Historic Preservation Office, there would be no effect to any cultural resources.

4. *The degree to which the effects on the quality of the human environment are likely to be highly controversial.* The effects of the project are limited to the Middle Bugs project area. While some people have disagreed with certain parts of the project, no person has provided evidence that the environmental effects of the project have been wrongly predicted; therefore, the effects are not controversial. I believe we have addressed the known significant biological, social, and economic issues sufficiently to avoid scientific controversy over the scope and intensity of effects. Based upon reports and discussions with professional resource specialists, there is agreement by my staff and other professionals and agencies consulted about the effects and conclusions identified in the analysis. I conclude that the effects of this project do not represent a controversial impact upon the quality of the human environment, provided the design features outlined in the EA are implemented.
5. *The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.* The actions described in this Decision are not new. The Forest Service has a long history of implementing these activities on this and other areas of the Clearwater National Forest. These actions have been applied elsewhere on similar soil and vegetation types. The effects analysis shows the effects are not uncertain, and do not involve unique or unknown risk. Chapter 3 of the EA discloses the direct, indirect and cumulative effects of the selected actions. Pertinent scientific literature has been reviewed and incorporated into the analysis process and the technical analyses conducted for determinations on the impacts to the resources are supportable with use of accepted techniques, reliable data, and professional judgment.
6. *The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.* The action is not likely to establish a precedent for future actions with significant effects because it conforms to all existing Forest Plan direction and is applicable only to the project area. Any future proposals for this area will be subject to NEPA requirements and will require a new Decision.
7. *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.* These actions are not related to other actions that, when combined, will have significant impacts. Cumulative effects are documented in Chapter 3 of the EA. There is no off-site soil erosion, impacts to the overall watershed or changes to forest vegetation that would be cumulative to impacts from other activities. Effects to wildlife habitat are described in detail in Chapter 3 of the EA, are generally minor, and do not cause significant effects when considered with other activities in the general area.
8. *The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.* Field surveys have identified no scientific, cultural, or historic resources in the area that would be adversely affected by this Decision. All known cultural resource sites have been identified in the project area and will be avoided.

9. *The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.* A Biological Evaluation and Biological Assessment documenting potential effects of the selected actions on plant and animal populations and their habitats was completed and can be found in Appendix A of this Decision Notice
10. *Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.* Applicable laws and regulations were considered in the EA (see EA pages 11-15, 111). The action is also consistent with the Clearwater Forest Plan (See EA pages 9-10). There is no conflict with any Federal or State or local laws.

IX. FINDINGS REQUIRED BY OTHER LAWS AND REGULATIONS

I have determined that my decision is consistent with the laws, regulations, and agency policies related to this project. The following summarizes findings required by major environmental laws. Compliance with other laws, regulations, and policies are listed in various sections of the EA, the Project Record, and the Forest Plan.

Watershed and Fisheries Resources Regulatory Framework

All Federal and State laws and regulations applicable to water quality will be applied to the Middle Bugs project, including 36 CFR 219.20, the Clean Water Act, and Idaho State Water Quality Standards, Idaho Forest Practices Act, Idaho Stream Channel Protection Act, and BMPs (see Fish and Watershed reports, project file). In addition, laws and regulations require the maintenance of viable populations of aquatic species including the National Forest Management Act (36 CFR 219.19), subsequent Forest Service direction (Fish and Wildlife Policy, 9500-4) and Forest Service Manual direction (FSM 2470, 2600).

Section 404 of the Clean Water Act requires permits to dredge or fill within waters of the United States. The US Army Corps of Engineers administers these provisions. Culvert removal and replacement activities proposed under this project will require authorization under Section 404 before project implementation.

Authorization with the Idaho Department of Water Resources under the Stream Channel Protection Act will also be obtained before implementation of proposed culvert removal and replacement.

Under Section 402 of the Clean Water Act, should it be determined that a National Pollution Discharge Elimination System (NPDES) permit is required for this project to address storm water discharges from logging roads, the Forest Service will comply with any applicable NPDES permitting requirements.

Endangered Species Act

I have reviewed the Biological Evaluation and Biological Assessment (Appendix A) for this project and the IDT Wildlife Biologist has surveyed the area. The BE and BA are included in Appendix A of this Decision Notice. The wildlife biologist used the latest science available in determining impacts to species.

The most recent U.S. Fish and Wildlife Service threatened and endangered species list for the Clearwater National Forest, Idaho and Clearwater Counties, (dated November 28, 2012) includes Canada lynx, steelhead trout, bull trout, Snake River fall Chinook Salmon and Spalding's catchfly and MacFarlane's four o'clock. The BA determined there would be "no effect" to steelhead trout or fall Chinook salmon or designated critical habitat for these species because they do not exist in the North Fork Clearwater drainage. Bull trout exist downstream of the project area in Weitas Creek which is designated as critical habitat for bull trout. Project activities are "not likely to adversely affect" bull trout. This project "may affect, not likely to adversely affect" Canada lynx based on compliance with the standards and guides described in the Northern Rockies Lynx Management Direction Record of Decision (NRLMD ROD), March 2007. There will be no effect to Spalding's catchfly and MacFarlane's four o'clock because known locations are well separated from the project area and no suitable habitat is present.

The effects analysis was documented in the biological assessment and was completed under the Section 7 regulations of the Endangered Species Act. These regulations can be viewed in the Federal Register, December 8, 2003 and on the web at http://www.fs.fed.us/biology/resources/pubs/tes/ForestServiceACA_3Mar04.pdf.

My Decision complies with the findings of the Biological Assessment and the Endangered Species Act.

Northern Rockies Lynx Management Direction

The contiguous United States distinct population segment of the Canada lynx is listed as threatened (USFWS 2000). Critical habitat has been proposed for the Canada lynx (USFWS 2008); however, none of the proposed critical habitat is on the Clearwater National Forest. The U.S. Fish and Wildlife Service (USFWS) lists Canada lynx as threatened on the Clearwater National Forest (CNF). The CNF is recognized as secondary, occupied Canada lynx habitat (USFWS 2005) but none of the CNF has been identified as critical habitat by the USFWS. Management of lynx in the Northern Rocky Mountains, including the Clearwater National Forest and North Fork Ranger District, is governed by the Record of Decision for the Northern Rockies Lynx Management Direction (USFS 2007b), which contains a set of objectives, goals, standards and guidelines for managing lynx and their habitats in the Northern Rockies. This management direction applies only to mapped lynx habitats on National Forest lands that are presently occupied by Canada lynx. The Middle Bugs Project is consistent with applicable objectives and guidelines as described in the EA. A determination of May Affect, not Likely To Adversely Affect is based on compliance with the standards and guides described in the Northern Rockies Lynx Management Direction Record of Decision (NRLMD ROD), March 2007.

Idaho Roadless Rule and Roadless Areas

The Middle Bugs project lies adjacent to the Bighorn Weitas Roadless Area (B-WRA) which is managed under the Backcountry Restoration theme as identified under the Idaho Roadless Rule (36 CFR 294 Subpart C). Roads have existed along the boundary since the 1987 Forest Plan went into effect. None of the project area lies within the roadless area. No treatments are proposed in roadless areas. Project activities would not change any roadless area boundary, location or size or shape. Roaded access to the roadless area already exists. The project area is currently roaded. Any existing wilderness attributes within the B-WRA would remain unchanged as a result of this project. The B-WRA would not be impacted by this project.

The EA analyzed the effects of project activities on the roadless resource and disclosed potential effects to roadless and wilderness attributes and determined project activities would not affect future consideration for wilderness recommendations. The analysis focuses on the potential effects of project activities on wilderness characteristics as defined in the Forest Service Handbook (FSH) 1909.12 (72.1).

Consistent with FSH 1909.12, this project also considered potential impacts to those unroaded areas within the project area contiguous to the B-WRA. This analysis considered the effects of this project on wilderness characteristics including natural integrity, undeveloped characteristics, outstanding opportunities for solitude and primitive recreation, special features and values, and manageability on the unroaded areas. No management activities will occur in the B-WRA. Potential impacts to wilderness characteristics from project activities in unroaded areas contiguous to the roadless area were considered.

Environmental Justice

The Selected Alternative was assessed to determine whether it would disproportionately impact minority or low-income populations, in accordance with Executive Order 12898 (EA, page 13). No impacts to minority or low income populations were identified during scoping or effects assessment.

National Forest Management Act

On April 9, 2012, the Department of Agriculture issued a final planning rule for National Forest system land management planning (2012 Rule) 77 FR 68 [21162-21276]). None of the requirements of the 2012 Rule apply to projects and activities on the Clearwater National Forest, as the Clearwater Forest Plan was developed under a prior planning rule (36 CFR 219.17(c)). Furthermore, the 2012 Rule explains, “[The 2012 Rule] supersedes any prior planning regulation. No obligations remain from any prior planning regulation, except those that are specifically included in a unit’s existing plan. Existing plans will remain in effect until revised” (36 CFR 219.17).

The National Forest Management Act and accompanying regulations require that specific findings be documented at the project level. These findings are as follows:

- A. Forest Plan Consistency:** NFMA requires that projects and activities be consistent with the governing Forest Plan (16 USC 1604(i)).

I have evaluated the alternatives and compared them to the Forest Plan standards, goals and objectives within the Middle Bugs project area. I have determined that the Selected Alternative will meet Forest Plan standards and will contribute toward reaching Forest Plan goals and objectives as described in the EA, pages 9 and 10. Alternative C will comply with Forest Plan direction for MA C8S to manage this area to maintain high quality wildlife and fishery objectives while producing timber from the productive forest land.

Vegetation treatments in the Selected Alternative will create patches of early successional forest in these lodgepole pine forest types that emulate historic disturbance patterns, and establish early seral western white pine and western larch to increase species diversity and resilience. After treatment, these areas should be less susceptible to insect and disease. The Selected Alternative will also provide goods and service to help support the economic structure of local communities. It will recover the value of dead and dying lodgepole pine in this mountain pine beetle infested area.

Alternative C will authorize road improvement, decommissioning and long-term storage activities, and culvert replacement and removal activities that will improve watershed function and stream conditions.

Forest Plan Standards to manage MA C8S Forestwide for a minimum of 75 percent of elk habitat potential will continue to be met. The Selected Alternative will implement vegetation treatments, road decommissioning, and long-term storage activities that will improve cover and forage for elk.

Alternative C is consistent with the requirements for vegetative manipulation found at 36 CFR 219.11. The action will contribute to meeting the multiple-use goals established for the area without undue effect on soil, water, or other resources (16 USC 1604 (g)(3)(B)).

B. Other NFMA consistency requirements (findings): The record clearly supports that this Decision is consistent with the following NFMA provisions.

1. **Suitability for Timber Production (16 USC 1604(k)):** 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)). Guidelines for determining suitability are found in the Forest Service Handbook 2409.13. Proposed harvest units are within the productive habitat types as described in Cooper et al. 1991. An analysis of suitability for resource management was completed for the resource area. Areas of unsuitability within treatment units would have design features that prevent harvesting and burning in them. This standard is met under the Selected Alternative.

2. **Timber Harvest on National Forest Lands (16 USC 1604(g)(3)(E)):** A Responsible Official may authorize site-specific projects and activities to harvest timber on National Forest System lands only where:

a. Soil, slope, or other watershed conditions will not be irreversibly damaged (16 USC 1604(g)(3)(E)(i)).

The effects of the Selected Alternative are disclosed in Chapter 3 of the EA. I find that harvest unit locations, silvicultural systems, riparian protection, logging technology, and post-harvest activities, in relationship with the soil and water conservation practices planned, will minimize impairment of site productivity and ensure conservation of soil and water resources. The Selected Alternative will protect the organic matter, soil porosity, and topsoil through the use of BMP's and design features. Localized and limited losses would occur on landings, skid trails, temporary roads, or where the soil is sterilized with fire. However, over the majority of the unit and the landscape, the processes that contribute to productive soils would be preserved. BMP's (EA, Appendix C) and design features (EA, pages 21-24) assure that no irreversible damage to the watershed or stream channel considerations would occur.

b. There is assurance that the lands can be adequately restocked within five years after final regeneration harvest (16 USC 1604(g)(3)(E)(ii)).

All regeneration harvested stands will be site prepared and planted with long-lived early seral species as required by the silvicultural prescription. Survival examinations will be completed at 1, 3 and 5 years to document regeneration success. Assurance is given that all suited lands in Alternative C will be adequately restocked within five years after final harvest. This conclusion is based on experience and regeneration status reports in the annual Clearwater Forest Plan

Monitoring and Evaluation Report where 98% of the acres treated since 1976 were satisfactorily stocked within five years of final harvest.

c. Protection is provided for streams, streambanks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water temperatures, blockages of water courses, and deposits of sediment, where harvests are likely to seriously and adversely affect water conditions or fish habitat (16 USC 1604(g)(3)(E)(iii)).

Project area streams have stable channels and banks and the ability to accommodate potential flow increases; therefore, any potential increases in water yield or peak flows from project activities are expected to be within the natural range of variability in these watersheds. The extent of vegetation removal proposed in this project is not expected to produce increases in canopy openings or streamflows that would exceed those that resulted from past natural disturbances.

Project adherence to INFISH standards and guidelines, programmatic agreements made with the US Fish and Wildlife Service, project design features and BMPs listed in the EA, Appendix C will maintain or improve water quality, channel conditions, and fish habitat.

d. The harvesting system to be used is not selected primarily because it will give the greatest dollar return or the greatest unit output of timber (16 USC 1604(g)(3)(E)(iv)).

For this project, harvesting systems were selected to appropriately balance treatment efficiency with minimizing resource impacts.

3. Clearcutting and Even-aged Management (16 USC 1604(g)(3)(F): Insure that clearcutting, seed tree cutting, shelterwood cutting, 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:

a. For clearcutting, it is determined to be the optimum method, and for other such cuts it is determined to be appropriate, to meet the objectives and requirements of the relevant land management plan (16 USC 1604(g)(3)(F)(i)).

The silviculturist determined that the regeneration harvest proposed in the Selected Alternative is appropriate due to high mortality and low growth rates. These even aged harvest prescriptions will create structure and composition similar to natural successional processes for these habitat types. All proposed treatments meet objectives and requirements of the Forest Plan.

b. The interdisciplinary review as determined by the Secretary has been completed and the potential environmental, biological, esthetic, engineering, and economic impacts on each advertised sale area have been assessed, as well as the consistency of the sale with the multiple use of the general area (16 USC 1604(g)(3)(F)(ii)).

c. Cut blocks, patches, or strips are shaped and blended to the extent practicable with the natural terrain (16 USC 1604(g)(3)(F)(iii)).

d. Cuts are carried out according to the maximum size limit requirements for areas to be cut during one harvest operation, provided, that such limits shall not apply to the size of areas harvested as a result of natural catastrophic conditions such as fire, insect and disease attack, or windstorm (FSM R1 supplement 2400-2001-2 2471.1, 16 USC 1604(g)(3)(F)(iv)).

Alternative C will implement regeneration treatments in lodgepole pine stands where mountain pine beetle mortality has occurred and/or an outbreak is imminent. These treatments will create two openings encompassing 416 and 191 acres. (The 191-acre unit will be adjacent to 26 acres harvested in 1992 and planted in 1993. Further analysis determined that this 20-year old stand is stocked and no longer considered an opening as described in the EA.) The Forest Service provided for a 60-day public review of the proposed openings over 40 acres in the Middle Bugs Scoping Notice dated 7/1/2011, thus, the 60-day public review requirement was met. On November 14, 2012, the Regional Forester approved creation of these openings for the following reasons. Proposed treatments will minimize insect and disease caused mortality and capture the economic value of these trees consistent with Management Area C8S goals of “producing timber from the productive forest land” (Clearwater National Forest, Forest Plan, page III-53).

These larger (40+ acre) openings will move the area closer to historic landscape disturbance features and vegetative conditions. The Northern Region Overview, lodgepole pine assessment portion, states, “In some areas of the type where lethal fire regime was most prevalent, previous clear-cutting over extensive areas has resulted in a landscape highly fragmented when compared to the historical pattern”. It is precisely this pattern that the Middle Bugs project seeks to avoid. Within this project area landtype association groups can be used to determine patch sizes that are consistent with historical patterns. These proposed units are located within the Moist Frost Churned Ridge LTA. In this LTA, fires historically created even-aged patches ranging in size from 500-1,000 acres (Landtype Association Group Description). The two proposed openings would trend the landscape toward these historic patch sizes that would have been created by natural disturbance regimes.

These larger openings will promote MA C8S goals to “Manage these areas to maintain high quality wildlife and fishery objectives while producing timber from the productive forest land... Wildlife objectives are primarily oriented at elk habitat management...” (LRMP III-53). Unit C, in particular, will provide a high quality elk security area. For elk security areas, Hillis et al (1991) recommended patch sizes of 250 acres or greater located ½ mile from an open road. Unit C is greater than 250 acres and much of the unit is located beyond ½ mile from an open road. Regeneration of these larger areas will limit the need for timber management in the relatively near future; this will allow for more road storage and road decommissioning which will benefit watershed and fisheries resources. Treating the larger area cost-effectively with this entry will allow for a longer recovery period before the next necessary entry to these areas.

All proposed regeneration harvest units lie within the middle ground viewing zone of the Lolo Trail National Historic Landmark Corridor (EA, page 99). The size and shape of these larger units will match historic patch sizes and patterns and meet Forest Plan Visual Quality objectives.

e. Such cuts are carried out in a manner consistent with the protection of soil, watershed, fish, wildlife, recreation, and esthetic resources, and the regeneration of the timber resource (16 USC 1604(g)(3)(F)(v)).

The Selected Alternative will implement even-aged regeneration harvest systems on 642 acres. All vegetative treatments will have prescriptions prepared or reviewed by a certified silviculturist, who has determined that regeneration harvest is the optimum harvest method, given the mix of species and management objectives on these sites. The project area displays high mortality and low growth rates. Reforestation will be accomplished through tree planting. Site indicators and previous experience in this area indicate that reforestation will be accomplished within five years of harvest. All proposed treatments meet Forest Plan objectives and requirements.

The National Forest Management Act provides that timber harvest and other silvicultural practices shall be used to prevent population increases of damaging forest pest organisms and treatments shall not make stands susceptible to pest-caused damage levels inconsistent with management objectives. Harvest of trees provides social and economic benefits. It also reduces potential losses attributed to insects and disease, losses from inter-tree competition and manipulates forest vegetation to enhance wildlife habitat and increase vegetation resiliency. The potential short and long-term negative effects of proposed activities on adjacent trees were considered. Retention areas were designed to minimize mortality during site preparation activities.

4. Stands of trees are harvested according to requirements for culmination of mean annual increment of growth (16 USC 1604(m)). All stands proposed for regeneration harvest are within the 95% of culmination of mean annual increment.

5. Construction of temporary roadways in connection with timber contracts, and other permits or leases: Unless the necessity for a permanent road is set forth in the forest development road system plan, any road constructed on land of the National Forest System in connection with a timber contract or other permit or lease shall be designed with the goal of reestablishing vegetative cover on the roadway and areas where the vegetative cover has been disturbed by the construction of the road, within ten years after the termination of the contract, permit, or lease either through artificial or natural means. Such action shall be taken unless it is later determined that the road is needed for use as a part of the National Forest Transportation System (16 USC 1608(b)).

The IDT completed a transportation plan, including a Roads Analysis for the Middle Bugs Project area. It analyzed current and future transportation needs. Alternative C will construct only temporary roads and they will be obliterated after use. Road reconstruction, reconditioning, decommissioning and culvert replacement proposed under this alternative are consistent with and meet the intent of NFMA road requirements.

6. Standards of roadway construction: Roads constructed on National Forest System lands shall be designed to standards appropriate for the intended uses, considering safety, cost of transportation, and impacts on land and resources (16 USC 1608(c)).

Only temporary roads will be constructed with this project. They will be obliterated after use.

National Historic Preservation Act

This project complies with the regulations implementing the National Historic Preservation Act. The Forest Service has completed cultural resource surveys in areas potentially affected by proposed actions. No properties eligible or potentially eligible for listing in the National Register of Historic places were found. If heritage values are identified during project implementation, they will be protected according to provisions of State and Federal law. Concurrence with cultural resource findings described in the Middle Bugs EA has been obtained from the Idaho State Historic Preservation Office.

National Environmental Policy Act

National Environmental Policy Act (NEPA) provisions have been followed as required in 40 CFR 1500. The proposed actions comply with the intent and requirements of NEPA. The EA analyzes a reasonable range of alternatives, including a No Action Alternative. It also discloses the expected effects of each alternative and discusses the identified issues and concerns. This

Decision Notice describes the actions I have selected and my rationale for making these Decisions.

Travel Management Rule (November 2, 2005)

The Clearwater National Forest has completed a Forest-wide analysis to implement the 2005 Travel Management Rule on the Clearwater NF. The decision for the analysis was upheld in April 2012. The Middle Bugs Project is consistent with the 2005 Travel Management Rule and the 2012 Travel Management Plan.

X. Best Available Science

I am confident that the analysis of this project was conducted using the best available science. My conclusion is based on a review of the record that shows my staff conducted a thorough review of relevant scientific information, considered responsible opposing views, and acknowledged incomplete or unavailable information, scientific uncertainty, and risk. Please refer to the specialist reports in the project file for specific discussions of the science and methods used for analysis and for literature reviewed and referenced.

XI. Implementation Date

If no appeals are filed within the 45-day time period, implementation of the decision may occur on, but not before, five business days from the close of the appeal filing period. When appeals are filed, implementation may occur on, but not before, the fifteenth business day following the date of the last appeal disposition.

XII. Administrative Review or Appeal Opportunities

This decision is subject to appeal pursuant to 36 CFR 215. Only individuals or organizations that submitted comments during the comment period may appeal. Notice of Appeal must meet the requirements of 36 CFR 215.14. A written appeal must be postmarked or received within 45 days following the publication date of the legal notice of this decision in the Lewiston Tribune, Lewiston, Idaho. It is the responsibility of the appellant to ensure their appeal is received in a timely manner. The publication date of the legal notice of the decision in the Lewiston Tribune is the *exclusive* means for calculating the time to file an appeal. Appellants should not rely on date or timeframe information provided by any other source.

Paper appeals must be submitted to:

USDA Forest Service, Northern Region
ATTN: Appeal Deciding Officer
P.O. Box 7669
Missoula, MT 59807

Or

USDA Forest Service, Northern Region

ATNN: Appeal Deciding Officer
200 East Broadway
Missoula, MT 59802

Office hours: 7:30 a.m. to 4:00 p.m.

Electronic appeals must be submitted to:

appeals-northern-regional-office@fs.fed.us

Faxed appeals must be submitted to:

FAX: (406) 329-3411

In electronic appeals, the subject line should contain the name of the project (Middle Bugs) being appealed. An automated response will confirm your electronic appeal has been received. Electronic appeals must be submitted in MS Word, Word Perfect, or Rich Text Format (RTF).

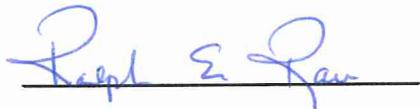
It is the appellant's responsibility to provide sufficient project- or activity-specific evidence and rationale, focusing on the decision, to show why my decision should be reversed. The appeal must be filed with the Appeal Deciding Officer in writing. At a minimum, the appeal must meet the content requirements of 36 CFR 215.14, and include the following information:

- The appellant's name and address, with a telephone number, if available;
- A signature, or other verification of authorship upon request (a scanned signature for electronic mail may be filed with the appeal);
- When multiple names are listed on an appeal, identification of the lead appellant and verification of the identity of the lead appellant upon request;
- The name of the project or activity for which the decision was made, the name and title of the Responsible Official, and the date of the decision;
- The regulation under which the appeal is being filed, when there is an option to appeal under either 36 CFR 215 or 36 CFR 251, subpart C;
- Any specific change(s) in the decision that the appellant seeks and rationale for those changes;
- Any portion(s) of the decision with which the appellant disagrees, and explanation for the disagreement;
- Why the appellant believes the Responsible Official's decision failed to consider the comments; and
- How the appellant believes the decision specifically violates law, regulation, or policy.

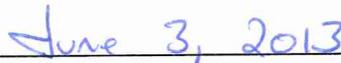
If an appeal is received on this project there may be informal resolution meetings and/or conference calls between the Responsible Official and the appellant. These discussions would take place within 15 days after the closing date for filing an appeal. All such meetings are open to the public. If you are interested in attending any informal resolution discussions, please contact the Responsible Official or monitor the following website for postings about current appeals in the Northern Region of the Forest Service: http://www.fs.fed.us/r1/projects/appeal_index.shtml.

XII. Contact

For further information concerning this decision or the Forest Service appeal process, contact Tammy Harding, Project Interdisciplinary Team Leader, Kamiah Ranger Station, 1012 Highway 64, Kamiah, Idaho 83536, during normal business hours by phone (208) 935-4263, or by e-mail tharding@fs.fed.us.



 RICK BRAZELL
Forest Supervisor
Nez Perce Clearwater National Forests



Date

Appendix A –Biological Assessment, Biological Evaluation
and FWS Concurrence

**BIOLOGICAL ASSESSMENT AND BIOLOGICAL EVALUATION OF
THE MIDDLE BUGS PROJECT**

North Fork Ranger District
Nez Perce-Clearwater National Forests
Potlatch, Idaho

Prepared by: *Daniel R. Kenney* Date: *17 July 2012*
Dan Kenney
Fisheries Biologist

Prepared by: *Michael Hays* Date: *17 July 2012*
Michael Hays
Botanist

9 April 2013: Revised to update lynx and wolverine analyses and address USFWS recent questions

I. INTRODUCTION

This document is a combination Biological Assessment (for Endangered Species Act (ESA)-listed species) and Biological Evaluation (for Forest Service Region 1 “sensitive” species) which evaluates the potential effects of the proposed Middle Bugs project (project) on aquatic, wildlife, and plant species with ESA or Region 1 special status.

The District will obtain all necessary Clear Water Act permits for the proposed activities, and intends that this BA should be sufficient to meet the Section 7 requirements of the Corps of Engineers and any other Federal agency.

The North Fork District, Nez Perce - Clearwater National Forests is proposing to conduct vegetation treatments and watershed improvement activities in the Middle and Hemlock Creek subwatersheds of Clearwater and Idaho counties, Idaho (Figure 1). The legal description of the activity area is T36N, R7E, Sec. 1, 2, 11-15, 17, 20-23, 26-28 and 34; T36N, R8E, Sec. 4-9. Implementation would begin in 2014.

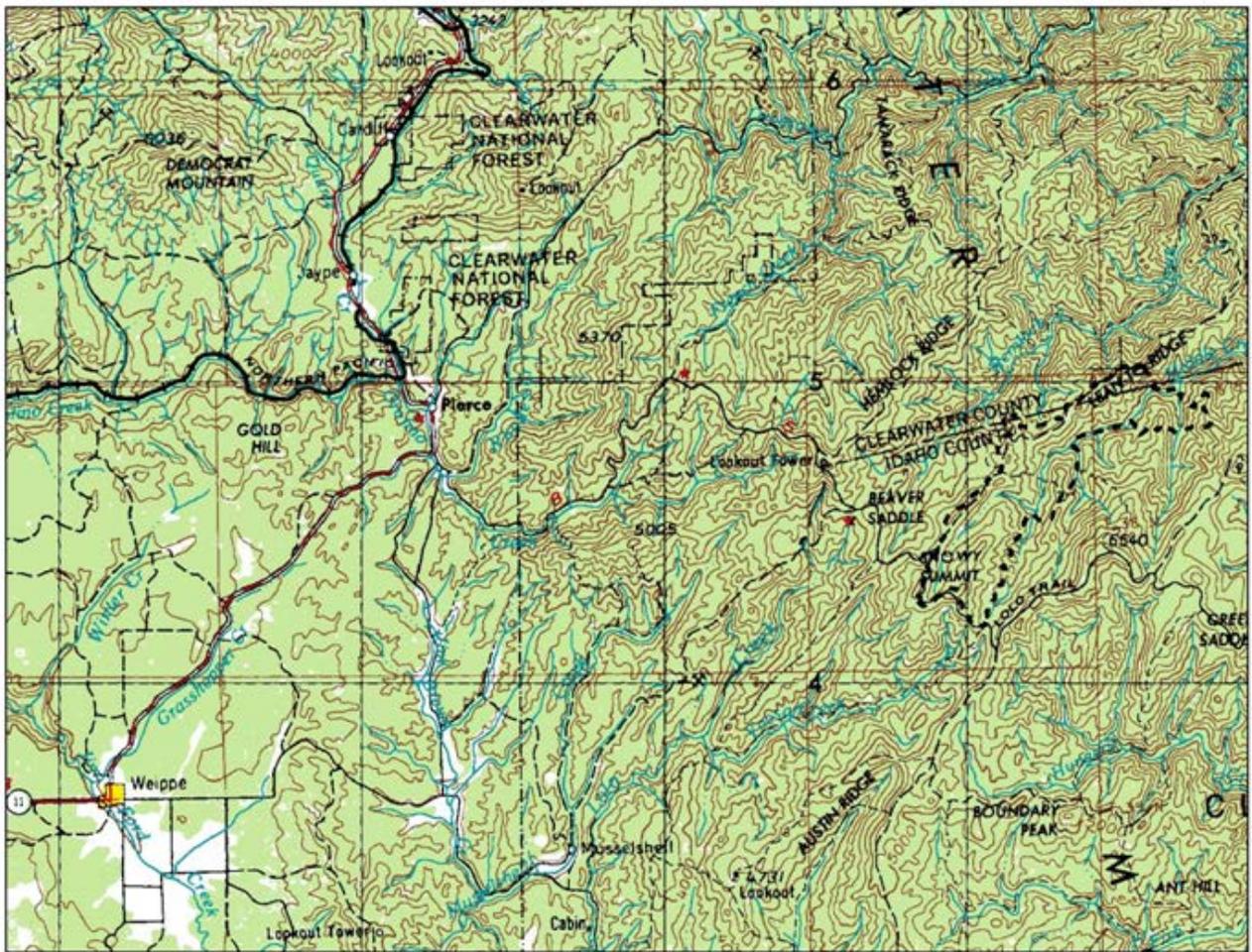


Figure 1. Middle Bugs project vicinity (project area is black dashed line on right side of map)

II. SPECIES ANALYZED

Species considered in this analysis include species listed as Threatened or Endangered under the ESA as well as candidates for Federal listing as Threatened or Endangered in the project area and those on the Northern Region Sensitive Species List.

The current USFWS species list for Clearwater and Idaho counties, Idaho (dated February 19, 2013, and available online at www.fws.gov/idaho/species/IdahoSpeciesList.pdf), includes seven listed, proposed, or candidate species: Canada lynx, wolverine, yellow-billed cuckoo, bull trout, McFarlane’s four-o’clock, Spalding’s catchfly, and whitebark pine. No evidence exists that any other listed, proposed, or candidate species may occur in the project area. NOAA Fisheries does not provide routine county- or Forest-specific ESA-relevant species lists, but shows maps on its website that includes Snake River steelhead and Snake River fall Chinook salmon as present within portions of the Clearwater National Forest.

The Northern Region Sensitive Species List, which contains those species identified as sensitive by the Regional Forester, was last updated in February 2011.

Table 3 lists each of the ESA-status species and Tables 4, 5, and 6 sensitive species. For each species, these tables provide information on occurrence, habitat, whether the species is considered in detail, and an effects determination. The primary references for information on species not considered in detail are the Clearwater N.F. web site: <http://www.fs.fed.us/r1/clearwater/Aquatics/aquatics.htm> and http://www.fs.fed.us/r1/clearwater/terra_org/terra.htm) and the Idaho Conservation Data Center (ICDC, now IFWIS, IDFG 2011). Those species for which more detail is provided are signified by a bolded effects determination, and the text description for that species is provided in Section VI.

III. DESCRIPTION OF PROPOSED PROJECT

This project area (Figure 1) encompasses 5,540 acres in the Middle Creek drainage between Lean-to Ridge and Beaver Dam Creek. It is located approximately 11 air miles east of Pierce and is accessed by Roads 100, 103, 104, 500 and 555. The proposed action would include regeneration harvest, commercial thinning, pre-commercial thinning, road construction and reconstruction, road decommissioning and storage, and replacement of aging/failing culverts on roads that would remain open to traffic. Figure 2 provides a graphical representation of the proposed action, while the draft Environmental Assessment for the project, as well as the Fisheries and Wildlife specialist reports (available electronically upon request) provide considerably more-detailed treatments of the proposed activities, current conditions, and effects analyses. The Proposed Action is Alternative C. See Tables 1 and 2 for specifics:

Unit	Treatment	Acres	Logging System Acres	
			Tractor	Skyline
A	Commercial Thin	15	14	1
B	Commercial Thin	48	48	0
C	Regeneration	416	256	160
D	Regeneration	35	18	17
E	Regeneration	191	128	63
Total		705 63 CT 642 Regen	464	241

Table 1. Proposed timber harvest and commercial thinning

Regeneration Harvest: This harvest method would remove most of the existing mature stand, producing a site with high sun exposure that would provide optimum growing conditions for the new stand. Restocking of the harvest unit would occur through the planting of western larch and western white pine, with some natural regeneration of lodgepole pine, Douglas-fir, grand fir, and mountain hemlock. Varying numbers of trees would be retained for future snag recruitment, wildlife habitat, and soil productivity. This would ensure that snag levels would meet Northern Region Snag Management protocol.

Activity	<u>Alt. C Proposed Action</u>	<u>Comments</u>
Regeneration Site Preparation	Prescribed burn	
Reforestation	642	Plant a mix of seral species.
System Road Construction (miles)	0	Permanent road proposed to reach ridge and placed in storage after use—under Alternative B, but Alternative C chosen
System Road Reconstuction. (miles)	1	Spot surfacing and shaping on the 555 road, surfacing on the 103
System Road Reconditioning (miles)	23	Road maint.; blading (18 miles), brushing, ditch clearing and drainage establishment
Temporary Road (miles)	5.2	Obliterated following use
Precommercial Thin (acres)	114	None in mapped lynx habitat
Road Intermittent Stored Service	11.3	All are existing system roads
Road Decommission (system)	3.01	All are existing system roads
Watershed Improvements	Culvert replacement on 555 and 103 roads--42 culverts; prioritized by urgency to replace due to amount of culvert deterioration.	
Soil Rehab Acres	31	Skidtrail Decompaction- approx. 10% of tractor ground and 2/3 of skid trails

Table 2. Other proposed activities

Approximately five or more snags greater than or equal to 15 inches in diameter would be left to meet Regional snag guidelines in addition to three live tree snag replacements greater than or equal to 15 inches in diameter would be left per acre. Retention objectives are to leave tree structure within the units through a combination of clumps and scattered individual live cull trees. Full default RHCA no-cut buffers (not fully reflected in harvest unit boundaries in Figure 2) would be applied for regeneration harvest units.

Commercial Thinning: This intermediate harvest method reduces tree density to improve growth and enhance forest health by retaining as many early seral tree species as possible. All commercial thinning units would be thinned to a 16-18-foot spacing (170 to 130 trees per acre). The intent is to leave 100-140 ft² of basal area on each acre. This prescription results in the fairly uniform retention of trees across the unit. Some limbs and tops would be retained in the unit for nutrient retention, but not to the level that would pose a fire hazard. Whole tree yarding would be used in these units to help reduce post-harvest fuels to acceptable levels. Approximately five to nine snags per acre greater than or equal to 15 inches in diameter would be left to meet Regional snag guidelines for intermediate harvest treatments, as safety guidelines allow. Retention objectives are to leave snag tree structure within the units through a

combination of clumps and scattered individual live cull trees. Full default RHCA no-cut buffers (not fully reflected in harvest unit boundaries in Figure 2) would be applied for commercial thinning units.

Precommercial Thinning: With this treatment, trees less than 8” dbh would be thinned retaining western white pine and western larch, where possible. Spacing of retained trees would range from 9'x9' to 12'x12', depending upon stand objectives. Trees would be selected for retention based upon phenotypic superiority, species, and apparent vigor rather than a strict adherence to spacing. Full default RHCA no-cut buffers (not fully reflected in harvest unit boundaries in Figure 2) would be applied for pre-commercial thinning units.

Table 3. ESA-listed Species Considered and Effects Determinations

Species	Status*	Considered in Detail	Effects Determination**	Rationale
Snake River steelhead trout <i>Oncorhynchus mykiss gairdneri</i>	T	No	NE	Native to Middle and Hemlock creeks, but blocked by Dworshak Dam for 40+ years
Snake River fall Chinook salmon <i>Oncorhynchus tshawytscha</i>	T	No	NE	Native to Clearwater River, but blocked from all but the lowest 1 mile of the NF Clearwater R. by Dworshak Dam for 40+ years
Bull trout <i>Salvelinus confluentus</i>	T	Yes	NLAA	Native and present in Weitas Creek and many of its tributaries, although no confirmed record in project area subwatersheds (Isabella Wildlife Works 1998).
Bull trout Critical Habitat	n/a	Yes	NE	CH not designated in project area streams/subwatersheds. Project area streams tributary to Weitas Creek, which is designated CH, as are some other streams in the Weitas Creek watershed.
Canada lynx <i>Lynx canadensis</i>	T	Yes	NLAA	Secondary occupied habitat present in project area, relatively recent sightings on District. Dispersing individuals may occur, but critical habitat been designated (74 FR 8616). Stray individuals would not be negatively affected by activities.
North American wolverine <i>Gulo gulo</i>	C	Yes	NLJE	Remote areas where human disturbance is minimal, often in timber near rockslides, avalanche areas, cliffs, swamps, and meadows. Modeled suitable foraging habitat, but no denning habitat, occurs in project area; stray individuals would not be negatively affected by activities.
Yellow-billed cuckoo <i>Coccyzus americanus</i>	C	No	NE	Habitat is low-elevation, dense deciduous riparian forests (usually cottonwood); no preferred habitats present, no documented sightings, and no known or suspected nest sites in project area.
MacFarlane's four-o'clock <i>Mirabilis macfarlanei</i>	T	No	NE	Individuals of this species are found only in low elevation grass and shrublands on warm aspects; only in the Snake and Salmon River canyons (Colket et. al 2006).
Spalding's catchfly <i>Silene spaldingii</i>	T	No	NE	Individuals of this species are found in rich, relatively mesic fescue grasslands and associated open forest and shrublands; in Idaho County it is found in canyon grasslands (Colket et. al 2006).
Whitebark pine <i>Pinus albicaulis</i>	C	Yes	NE	Typically found in Idaho on high elevation ridges; present on Clearwater N.F., but typically not below about 7,000 feet above msl. Activity sites top out at about 6,000 feet, but several individuals identified near or in Unit C, which mitigation measures would protect

Status Abbreviations:** T = ESA Threatened, C = ESA Candidate. *Threatened and Candidate Species Determination:** NE = No Effect; NLJE = Not Likely to Jeopardize the continued Existence; NLAA = Not Likely to Adversely Affect; LAA = Likely to Adversely Affect.

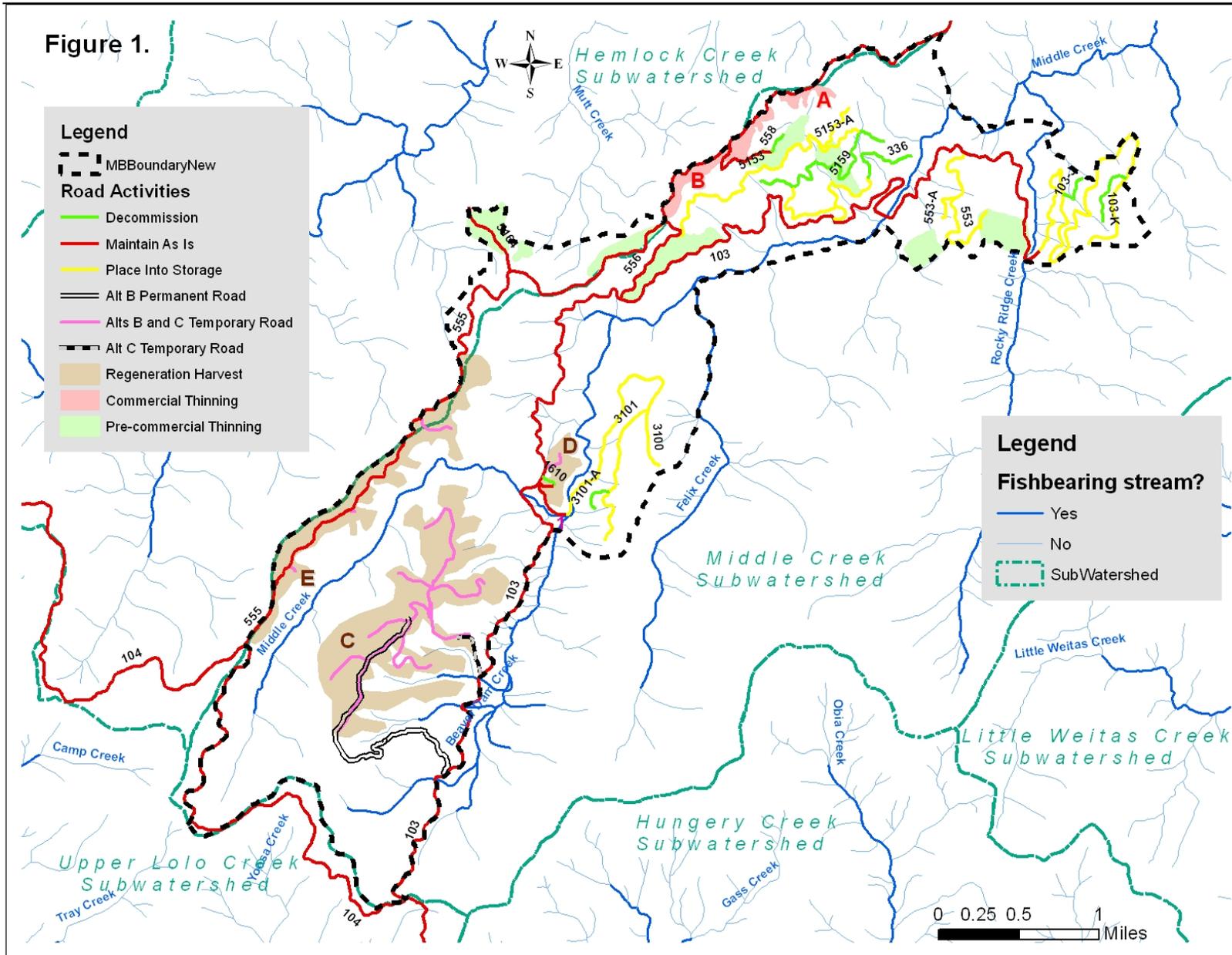


Figure 2. Middle Bugs Project Area and proposed activities.

Precommercial thinning may cause short-term increases in surface fuel loading. However, the long-term benefits to fuels management would be the reduction of stand density and the shift in stand composition to long-lived, insect and disease resistant seral species. These benefits would outweigh the short-term hazard created by thinning slash.

Burning following Regeneration Harvest: This would consist of broadcast burning, underburning, jackpot burning, or mechanical or hand piling followed by pile burning. This treatment uses the silvicultural treatment of regeneration harvest to restore early-seral, fire-resilient species to the site. The vertical fuel profile is primarily removed with the harvest. Surface fuels are treated as described below to reduce the horizontal fuel profile to acceptable limits. Post-harvest fuels in regeneration units are expected to be 50 – 80 tons per acre. Prior to burning, some slashing of residual non-merchantable component may occur to ensure a more continuous fuel bed. The burning and/or mechanical treatments would reduce fuel loading to approximately 7 – 33 tons per acre, depending on the coarse woody debris guidelines for the site. Wetter sites would have retention on the upper end of the spectrum, while drier sites would retain less fuel. Activity slash would be retained on the site over the winter before slash treatment occurs as required to mitigate soil resource concerns. Some mortality in leave trees is expected, especially if they are less fire-resilient species. This mortality is acceptable for snag recruitment. Hand surface fuel reduction would be done at the base of some leave trees to protect them better from potential high fire intensity during burning operations.

Units with moderate slopes of less than 35% would likely be machine piled to reduce fuels and achieve adequate site preparation. Units with steeper slopes would be broadcast or underburned to achieve objectives. Units with a mix of slopes may have a mix of piling and burning in order to maximize the effective burn window and ensure units are treated and reforested in a timely manner. Prescribed fire burning windows are unpredictable, and smoke emission concerns can further limit that window. This mix of treatment methods for post-regeneration harvest fuel provides managers with alternatives to accommodate burn windows and achieve objectives.

Road Decommissioning: Roads identified as no longer needed for management would be decommissioned either through obliteration or abandonment to: (1) decrease soil erosion and instream sediment deposition; (2) help restore channel structure and function; and (3) restore hillslope hydrologic processes to a more natural condition. Roads proposed for abandonment are often ridge top roads with few if any stream crossings, where road surveys show minimal risk of soil erosion or mass failure. Abandonment would leave the road in place and allow vegetation to reclaim the road surface. The mileage of abandoned vs. decommissioned road is not currently known, and will depend on site logistics, funding, etc.

Intermittent Storage: Existing roads projected not to be used for the next 20 years or longer would be put into intermittent stored service. Practices used are intended to assure that the road is placed into a self-maintaining condition that removes all high risks of failure. Although these roads are to be retained on the transportation system and closed to full-size motorized vehicles, they may or may not be closed to motorcycles and ATVs – depending on future analyses. Road decommissioning and placing roads into intermittent storage are proposed to correct existing resource problems and not to mitigate for other elements of this project. In decommissioning, the road segment would be recontoured to or near its former gradient and engineered drainage features would be removed, while outsloping but not full recontouring would typically be implemented in intermittent storage. The road prisms would be hydrologically inactivated with both activities, and activities that would enhance the establishment of vegetation implemented. All roads proposed for decommissioning or storage are currently system roads.

IV. DESIGN FEATURES, MITIGATION MEASURES, AND MONITORING

Mitigation measures are designed to eliminate or reduce to acceptable levels the effects of proposed activities, and design measures are aimed at avoiding specific resource issues. A majority of these are derived from site specific best management practices (BMPs) from the Idaho Forest Practices Act and Stream Channel Alteration Handbook, with comparable practices from the FS R1/R4 Soil and Water Conservation Practices Handbook (FSH 2509.22). Both measures are listed below, and the effectiveness of the each measure is also included, where applicable.

1. INFISH default buffers are to be used to define timber sale unit boundaries. No timber harvest is to occur within 300 feet of fish-bearing streams, 150 feet of perennial non-fish bearing water, 100 feet of intermittent streams, and 150-foot slope distance from the edge of wetlands larger than one acre, or in landslide-prone areas. Ignition points for prescribed fire are to be located outside of the INFISH riparian buffers.

Clearwater National Forest audits show this measure to be 99% effective.

2. Best Management Practices as found in Rules Pertaining to the Idaho Forest Practices Act Title 38, Chapter 13, Idaho Code, and Soil and Water Conservation Practices Handbook, FSH 2509.22 would be applied to prevent non-channelized sediment delivery from harvest units to streams in the Middle Bugs Project area.

BMP implementation and effectiveness rates on similar landforms have been found adequate to prevent sediment delivery to streams as noted in the BMP audits conducted on the Forest from 1990 to 2005.

3. The Purchaser/Contractor shall take all reasonable precautions to prevent pollution of air, soil and water by Purchaser/Contractors operations. The Contracting Officer Representative will designate the location, size and allowable uses of service and refueling areas. The criteria below will be followed at a minimum:

a. The Purchaser/Contractor shall maintain all equipment operating on Contract Area in good repair and free of substantial leakage of lubricants, fuel, coolants, and hydraulic fluid. Petroleum product storage containers holding more than 120 gallons, stationary or mobile, will be located no closer than 300 feet from stream, watercourse, or area of open water when not actually being used during the working day.

b. Transferring petroleum products: During fueling operations or petroleum product transfer to other containers, there shall be a person attending such operations at all times.

c. Contractor shall not service tractors, trucks, or other equipment on National Forest lands where servicing can possibly result in transmission to streams or other water bodies. Contractor shall furnish oil-absorbing mats for use under all stationary equipment or equipment being serviced to prevent leaking or spilled petroleum-based products from contaminating soil and water resources. Contractor shall remove from National Forest lands all contaminated soil, vegetation, debris, vehicle oil filters (drained of free-flowing oil), batteries, oily rags, and waste oil resulting from use, servicing, repair, or abandonment of equipment.

d. Construction of an engineered containment structure (excavated sump and constructed berms) is required to huse fuel storage containers when fuel storage exceeds 1320 gal.

e. In the event any leakage or spillage enters any stream, water course or area of open water, the operator will immediately (in TSC B6.342 or SC G.3.4.1) notify the COR. In the event that Contractor's Operations or servicing of equipment result in pollution to soil or water, Contractor shall conduct cleanup and restoration of the polluted site to the satisfaction of Forest Service.

Moderate effectiveness. Planning ensures foresight, but cannot eliminate the risk of materials being spilled and escaping into waters.

4. Prescriptions for regeneration harvest units retain coarse woody material appropriate to the site for nutrient cycling and maintaining soil physical and biological properties. Regional guidance for organic matter (USDA 1999) recommends following guidelines, such as retaining coarse (> 3" diameter) woody material to maintain soil productivity (Graham et al. 1994).

Coarse woody material remaining after fuels treatment is expected to be 7-13 tons/acre after site preparation. Where existing CWM does not currently meet this, additional standing trees will be retained for recruitment.

5. This design measure has the following two parts: (a) Machine trails for timber harvest and fuel treatments would be designed to keep the extent of detrimental soil effects below 15%, using existing skid trails and landings where other resources are not compromised; and (b) Skid trails and landings utilized in all harvest units would be obliterated following slash treatment activities in order to improve soil productivity and meet soil quality standards. Actions would include decompaction and placement of slash, and may include recontouring and placing wood and duff layers over exposed soil.

Machine trails can accomplish harvest and site preparation and remain within the 15% standard, but if uncontrolled, can lead to extensive trails. Sale administration and equipment operator skills are necessary for success. Re-use of trails and subsequent decompaction minimizes impacts. Decompaction has been shown to decrease bulk density by 30-60% in comparison to compacted areas (Rone 2011, CNF 2005). Vegetative cover increases from 20% in the initial year of decommissioning to 40% in year 5 (CNF 2005.)

6. Few areas within the project boundary have high mass wasting or landslide potential. Of those areas identified in harvest/fuels treatment units, Units C, D and E would have 100% canopy retention in the 5 small areas that total 2 acres with slopes greater than 55 percent.

Retention of root strength is important for reduction of landslide hazard (McClelland et al, 1997) Keeping trees on the landscape will retain the root strength in these steep areas.

7. No road construction would occur in areas of high mass wasting potential, other projects would have additional measures applied in such circumstances as: (a) cut slopes would be 1:1, and fillslopes would be 1.5:1; (b) increased drainage density in areas having erosive parent materials; (c) slash windrows placed below the road prism; (d) seed would be applied to all disturbed areas; and (e) closure to motorized use after the timber sale. Any required permits for disturbance of water or wetlands would be obtained prior to initiating work (Army Corps of Engineers 404 permit, Idaho Department of Water Resources Stream Alteration Permit). Any mitigation measures identified in the permitting process would be incorporated into the project plans.

Road design and mitigation can decrease sediment production (Burroughs and King 1989; Burroughs et al 1983) with use of slash windrows, application of gravel and application of seed to disturbed areas. Design of cut and fill slopes at gentler grades decrease likelihood of surface erosion. Increasing frequency of drainage structures minimizes the contributing area of surface erosion and sediment introduction to streams (Elliot, 2000).

8. Temporary roads would be constructed and decommissioned within 3 calendar years following use with machinery that does not need to leave the prism to decompact soil, replace topsoil and place woody material. Include timber sale contract provision C(T) 6.632# (Temporary Road and Tractor Road Obliteration) or similar provisions for other types of contracts.

Effectiveness of road design and decommissioning applies to both specified roads and temporary roads. Decompaction has been shown to decrease bulk density by 30-60% in

comparison to compacted areas (Rone 2011, CNF 2005). Vegetative cover increases from 20% in the initial year of decommissioning to 40% in year 5 (CNF 2005.)

9. Soil improvement activities would be implemented if units currently meeting soil quality standards are found to exceed 15% detrimental disturbance during post-treatment monitoring. Actions would include decompaction, recontouring, and placement of slash, woody material, and duff over exposed soil.

10. During road decommissioning or conversion to intermittent stored service, measures are to be taken to prevent damaging levels of sediment from entering streams, such as: (a) placing removable sediment traps below work areas to trap fines; (b) when working instream, removing all fill around pipes prior to bypass and pipe removal (where this is not possible, use non-eroding diversion); (c) revegetating scarified and disturbed soils with grasses (weed free) for short-term erosion protection and with shrubs and trees for long-term soil stability; (d) utilizing erosion control on stream channel slopes and slides; (e) mulching with native materials, where available, or using weed-free straw to ensure coverage of exposed soils; (f) dissipating energy in the newly constructed stream channels using log or rock weirs; and (g) armoring channel banks and dissipating energy with large rock whenever possible.

Any required permits for disturbance of water or wetlands would be obtained prior to initiating work (Army Corps of Engineers 404 permit, Idaho Department of Water Resources Stream Alteration Permit). Any mitigation measures identified in the permitting process would be incorporated into the project plans.

The Forest Road (FR) Decommissioning Monitoring Program will continue to assess the effectiveness of decommissioning, long-term storage and culvert removal techniques used on the Forest. Since 1998, the Forest has annually monitored road segments and crossing sites across the Forest (USDA 1999-2009). This monitoring has provided feedback used to refine techniques to minimize erosion and maximize hydrologic stability and restored productivity on decommissioned or stored roads.

BMP audits show these measures to have a High effectiveness.

11. For the purpose of maintaining snag habitat, timber harvest prescriptions would follow Regional guidance (Bollenbacher et al. 2009) on project level snag/live tree retention estimates in early seral and mid-seral conditions. The larger legacy/relic tree species (ponderosa pine, western larch, Douglas-fir) would be selected for retention. In regeneration harvest units, snags/live trees would be retained in ¼ to 5 acre groups, with preference to snags or damaged trees that are greater than 21 inches in diameter, greater than 20 feet tall, and with broken tops. Leave clumps of snags mixed with green trees, or lone snags that have little potential to cause safety issues during timber felling. The retention of snags would be avoided near log landings and firelines and within 100 feet below and 200 feet above a road opened to any motorized vehicle.

Effectiveness is expected to be high, if tree marking guides are properly implemented.

12. If activities impact previously unknown sensitive plant occurrences, the Botanist would be notified, who would direct appropriate measures depending upon the ecology of the plant species involved and the nature of the activity.

Effectiveness is expected to be high, based on monitoring and past experience.

13. Noxious weed prevention measures (FSM 2080):

a. Remove the seed source. Objective: to remove the seed source that could be picked up by passing vehicles and limit seed transport in new and reconstruction areas. Implementation: remove all mud, dirt and plant parts from all off road equipment before moving into project areas. Tsc c6.351# requires washing of machinery to be used in the project area.

b. Re-establish vegetation. Objective: re-establish vegetation on bare ground due to construction

and reconstruction activity to minimize weed spread. Implementation: revegetate all disturbed soil, except the travel way on surfaced roads, in a manner that optimizes plant establishment for that specific site. Use native material where appropriate and available. Use a seed mix that includes fast, early season species to provide quick, dense revegetation. Use local seeding guidelines.

c. Minimize the movement of ... weed species. Objective: minimize the movement of existing and new weed species caused by moving infested gravel and fill material; ensure that weed prevention is considered in all pre-harvest timber projects.. Implementation: remove all mud, dirt and plant parts from all off road equipment before moving into project area. Tsc c6.351# requires washing of machinery to be used in the project area.

d. Minimize creation of sites suitable for weed establishment. Implementation: revegetate bare soil in a manner that optimizes plant establishment for that specific site. Use native material where appropriate and available. Use a seed mix that includes fast, early season species to provide quick, dense revegetation. Use local seeding guidelines.

Effectiveness is expected to be high, if tree marking guides are properly implemented.

14. Because a few mature whitebark pine were discovered within or at the edge of Unit C, the marking guidelines for this unit will include instructions to retain all merchantable-sized whitebark pine and to mark for removal potentially competing merchantable trees of other species. Similarly, the purchaser of the sale would be informed of the location of identified whitebark pine and required to avoid injury to these individual trees.

Monitoring

The following monitoring activities would continue Forestwide or be initiated with the Middle Bugs project:

1. The Timber Sale Administrator or Contracting Officer Representative will make periodic checks on the progress of the sale to ensure contractual compliance.
2. INFISH compliance monitoring will be conducted annually by the Forest Fisheries Biologist in conjunction with BMP audits and reported in the annual Clearwater National Forest Monitoring and Evaluation Report.
3. Starting this 2012 field season, soils monitoring will be initiated across the Forest in selected treatment units to assess: (a) the accuracy of disturbance estimates; (b) if project design measures were effective; and (c) if units meet Regional soil quality standards. Sampling will cover all combinations of treatment and yarding methods.

V. EXISTING CONDITION

The primary human activities in the project area that would have the potential to affect special-status species have been transportation/road construction, recreational activities, and timber harvest and associated activities.

The project area is approximately 5,540 acres and is delineated primarily by the boundaries Bighorn Weitas Roadless Area on the west, east and north and by the Nee-Mee-Poo Trail on the south. The project area is nearly entirely within the Middle Creek subwatershed of the Weitas Creek watershed of the Upper North Fork Clearwater River subbasin, with small inclusions of the Hemlock Creek subwatershed. The project area is composed entirely of National Forest System

(NFS) lands. All proposed treatments are located on lands managed as big game summer range (Forest Plan Management Area C8S).

The project area is beginning to manifest bark beetle infestations in the lodgepole pine. This wave of bark beetle infestation has been moving to the west from the Idaho-Montana State line for the past few years. In addition, some areas of overstocked second growth grand fir and Douglas-fir exist where the over-crowded stocking levels are beginning to cause mortality in the suppressed and intermediate size class trees. The northern (and a portion of the eastern) sections of the project area were partially logged between 1974 and 1998.

About 8 miles of the engineered and graveled Forest Road 103 travels through the project area from south to northeast mostly paralleling (although generally not closely) Beaverdam and Middle Creeks. A similar distance of the native surfaced and mostly unengineered 556 and 555 roads runs the subwatershed crest between Hemlock and Middle Creeks. There are additional miles of other Forest System roads within the project area, but these are almost entirely not open to motorized travel and many are in various states of disrepair and vegetation growth. The town of Pierce is located approximately 11 air miles west of the project area. The Middle Bugs project area receives relatively low recreational use, primarily hunters in the autumn. Designated trails consist of approximately 2 miles of the non-motorized Nee-Mee-Poo trail and 1 mile of the Rocky Ridge trail, with motorized recreation limited to existing roads.

While a few stands were harvested along the northeast edge of the Weitas Creek watershed in the mid-1960's, timber harvest (generally regeneration prescriptions) converted mid-seral or mature stands to early-seral habitats mostly from the mid-1970's through the late 1990's, including within the Middle Bugs project area. Many stands harvested in the last 20 years have likely grown to mid-seral stages by now, but where still early-seral, timber harvest has increased habitats for species that prefer early-seral conditions. The harvest in the watershed has been relatively minor (accounting for less than 7% of the Middle and Hemlock subwatersheds and a much smaller proportion of the watershed as a whole) and so probably has had little effect on species that use older forests.

Some harvest within the Hemlock Creek subwatershed will likely be proposed under the future (~2017) French Larch Project (which would also occur within Old Growth Units (OGUs) 115 and 116 and Lynx Analysis Unit (LAU) 38), but the exact location and amount of this harvest is currently unknown. The Lolo Insect and Disease and Lochsa Thin projects are also proposed for later this decade in areas in relative proximity to the Middle Bugs project, although outside of the Weitas Creek watershed; they would include portions of OGU 104, LAU 38, and the Yoosa and Camp Elk Analysis Units.

Nearby non-federal lands (most is 5 or more miles to the west of the project area) have had large areas of regeneration harvest in the recent past and more will undoubtedly occur in the future. Early-seral habitats are abundant on non-federal lands, while old forest habitats occur at levels much below the long-term historical average.

Approximately 87% of the Weitas Creek watershed was subject to wildfire from 1910-1938 and these fires are the predominant determinant of the vegetation structure of the watershed (CNF 1999). Fire suppression has occurred on the Forest since before its organization, but was fairly ineffective until the mid- to late 20th century. A combination of vegetation and climatic conditions and more-effective suppression has resulted in a relative lack of wildfire in and near the project area since then (between 1939 and 1998, wildfires consumed practically none of the Weitas Creek forest (CNF 1999)). The Weitas Fuels project has been implemented in the watershed recently (mostly east of the mainstem of Weitas Creek) with about 16,000 acres burned

through 2011. Approximately 4,500 additional acres would be burned in 2013 to complete the project.

Recreational use occurs throughout the summer months, starting around Memorial Day as snow melts off access roads, continuing through the fall hunting seasons. A number of dispersed campsites are located along the road system. The road system is used by full-size vehicles and OHVs. Several system OHV routes exist and OHV use is increasing. Roads are also open to snowmobile use in the winter, which can cause disturbance and/or displacement of wildlife species. Similar or slightly increased motorized and non-motorized winter use is anticipated in the future.

Livestock grazing began at the time of European settlement. Livestock compete for forage with and displace some species of wildlife. Livestock use was concentrated in meadows and riparian areas and reduces the quality of these habitats for wildlife, but no allotments currently existing in the project area.

Ongoing and foreseeable activities that might have the potential to affect wildlife species within the analysis area include primarily include timber harvest and associated road construction, road decommissioning and other rehabilitation, motorized recreational activities, predator control, and firewood gathering. Game species are subject to hunting under State regulations.

VI. EFFECTS ON THREATENED, ENDANGERED AND SENSITIVE SPECIES

A. Endangered Species Act Listed Species

Bull trout and bull trout critical habitat. Background. Bull trout were listed as threatened under the Endangered Species Act on June 10, 1998 by the U.S. Fish and Wildlife Service (USFWS, 63 FR 31693). The USFWS designated critical habitat for Columbia River Basin bull trout in the lower and upper North Fork Clearwater subbasins on November 17, 2010 (75 FR 63898). The critical habitat designation does not include any portion of the Middle Bugs project area, but does include portions of the Weitas Creek watershed, of which the project area is a part (Figure 3).

Distribution. Resident, fluvial and adfluvial populations of bull trout were historically distributed throughout the Pacific Northwest in the United States and western Canada. Resident and fluvial populations occurred throughout the Snake River basin including the North Fork Clearwater River and its tributaries. Bull trout co-evolved with redband trout (*Oncorhynchus mykiss gairdneri*), westslope cutthroat trout (*O. clarki lewisi*), chinook salmon (*O. tshawytscha*), and mountain whitefish (*Prosopium williamsoni*). Recent surveys in the known range of bull trout in Idaho have shown metapopulations in widely scattered segments of river basins (Rieman and McIntyre 1993), as well as in isolated catchments. Bull trout populations are present in about a dozen subwatersheds in the combined upper and lower North Fork Clearwater River subbasin on the Clearwater National Forest (CNF).

In relationship to the proposed action, bull trout presently occur in the NFCR drainage on the North Fork Ranger District. These fish spawn and rear young in many of the tributaries the NFCR (USFWS 2002), but the mainstem of the river and the lower reaches of many of the tributaries are not considered to be spawning or early (i.e., first year) rearing habitat. The mainstem of the NFCR is thought to harbor adult and advanced juvenile fluvial (i.e., large-river dwelling) bull trout year-around and is known to serve as a migratory corridor for adult and advanced juvenile fluvial and adfluvial (lake-dwelling) bull trout during the spring and fall. In

addition, some subadult fluvial and adfluvial bull trout (typically 175-300 mm in length) are known to “wander” into habitat which may not be suitable for spawning or early rearing (as opposed to migration to or from spawning and/or early rearing habitat) and may exist for short or long periods in streams reaches that otherwise would be unoccupied or used only as a migratory corridor (Personal communication, Bruce Rieman, Fisheries Research Biologist, RMRS). Full-time residents of the tributary streams where fluvial and adfluvial fish spawn and conduct early rearing are the third bull trout life history type known to occur in the NFCR drainage.

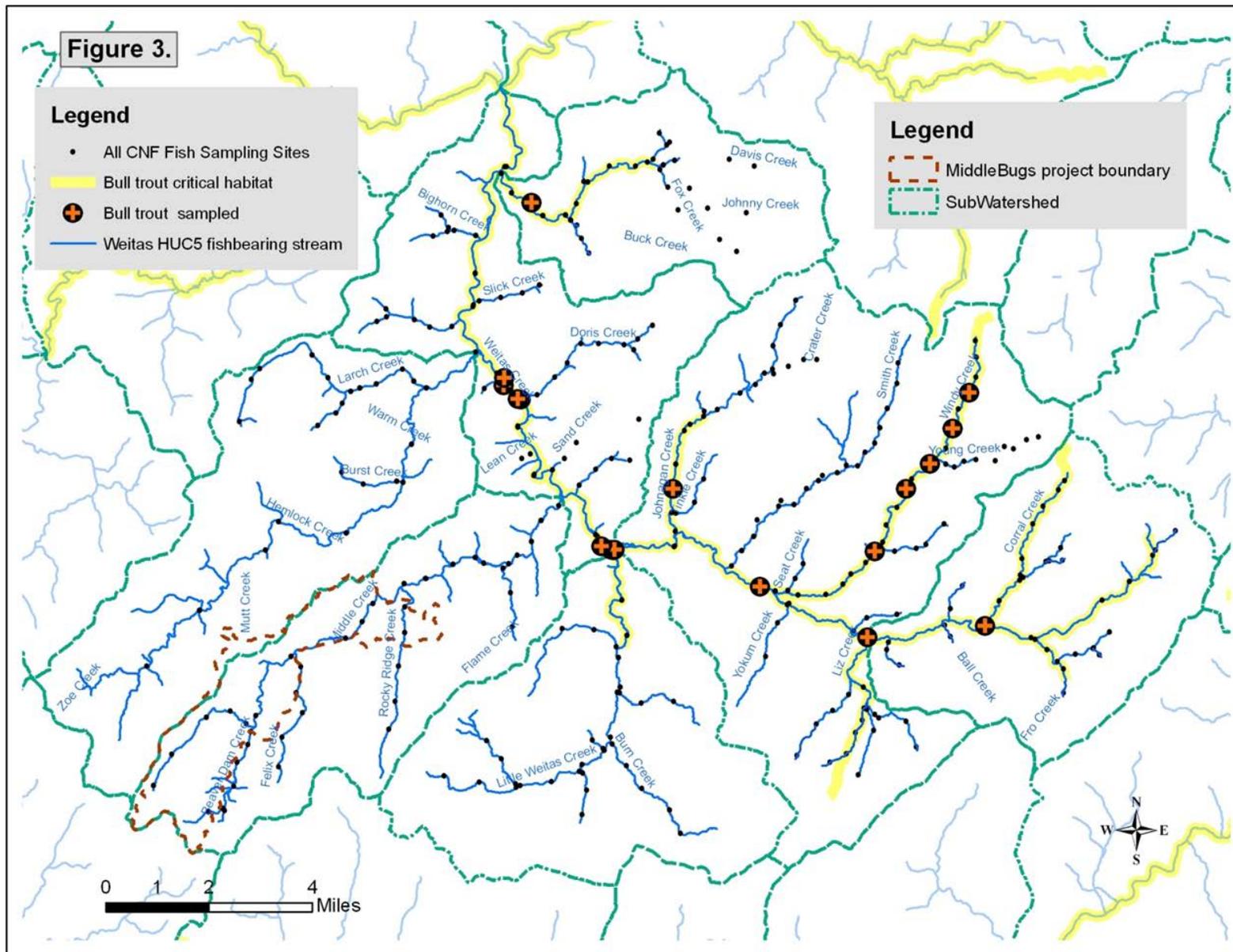


Figure 3. Middle Bugs Project Area with fish sampling sites and bull trout information.

Presence in Action Area. Native fish species in streams within the project area and its subwatersheds (Figure 5). include westslope cutthroat trout and redband rainbow trout. Anadromous aquatic species originally inhabited the North Fork of the Clearwater River and tributaries, but have been blocked from accessing the project area for about 40 years by Dworshak Dam. Introduced kokanee (*O. nerka*) make spawning migrations to the mouth of at least Hemlock Creek in some years.

Extensive fish sampling commissioned by the CNF in the Middle Creek and Hemlock Creek subwatersheds, including the project area, was conducted by Clearwater BioStudies in 1991 and by Isabella Wildlife Works in 1997, respectively, but no bull trout were detected (CBS 1992, IWW 1998, Figure 3). The North Fork Clearwater River Recovery Plan Chapter in USFWS (2002) does list bull trout as currently or historically occurring in the Weitas Creek watershed and the 2010 critical habitat designation (75 FR 63898, Figure 3) includes much of the Weitas Creek drainage (but not Middle or Hemlock creeks). Surveys commissioned by the CNF (and converted to GIS layers, Figure 3) in other Weitas Creek drainages and in the Weitas Creek mainstem show that bull trout have been detected within the last two decades in Johnny, Johnagan, Liz, and Windy creeks and in the Weitas Creek mainstem. So while the project area subwatersheds do not appear to support bull trout reproduction or early rearing, individuals of the species are present in the watershed.

Although a portion of the project area is in the Hemlock Creek subwatershed, essentially all of the activities proposed would be at the ridgetop and at least 300 feet from headwater, and likely fishless, streams. On the other hand, the mainstem of Middle Creek and several fishbearing tributaries flow through or close to the project area. Based on the proven presence of bull trout in Weitas Creek near the mouths of Hemlock and Middle Creek, stray adults and subadults may enter these streams temporarily and could potentially be present in Middle Creek or in its larger tributaries within the Middle Bugs project area during project implementation.

To summarize, bull trout apparently do not reproduce in Hemlock or Middle creeks, but do so in other Weitas Creek tributaries, so individuals migrate up and down Weitas Creek and have access to streams in the project area subwatersheds. Transient adults or subadults originating from breeding populations elsewhere in the watershed could be present in project area fishbearing streams. Weitas Creek at and near the mouth of Hemlock and Middle creeks support migratory and fluvial individuals some of the year and is designated critical habitat.

Potential Project Impacts. Potential adverse effects to bull trout can be direct, as in redd disturbance by heavy equipment, or indirect, as in increases in fine sediment due to ground disturbance. For this specific proposed project, activities proposed within the stream channel that have the potential for direct injury to individual fish present include excavation of culverts and other stream crossings on road prisms and the crossing of vehicles and heavy equipment at fords or sites with recently-removed culverts. Vegetation treatments and associated activities can theoretically have indirect effects on bull trout related to stream sedimentation, channel modification, and reduction in shade and large woody debris, but project design and mitigation measures are intended to prevent or reduce such effects.

Direct effects. Some of the road-related activities associated with the proposed action (especially culvert replacement, storage, and decommissioning) would take place within stream channels, and in-water work would have some potential to cause direct injury or mortality to individual bull trout through mechanical injury or localized and brief changes in water quality, especially high turbidity, if individuals are in proximity to the project sites. There is also some potential for fuel or other contaminant spills into stream channels from vehicles or heavy equipment used for the road-related activities of the action alternatives, including log yarding and hauling. The impacts of road-related activities within RHCAs would be minimized and mitigated through design features (Section IV) and BMPs (Snyder 2012) to reduce potential direct impacts on bull trout and other stream and riparian species.

Existing road crossings of streams in the project area are mostly made with culverts, although there a bridge at the lowest crossing of Middle Creek by the 103 road. In the proposed project some of the culverts on the roads to be decommissioned or stored would be removed, and several dozen culverts would potentially be replaced on the 103 and 555 roads, but no culverts would be replaced on the 1 mile of road reconstruction proposed, and none of the proposed temporary ~~or permanent~~ new road construction would cross stream channels.

Of the 42 culverts proposed for replacement on either the retained portion of the 103 road or the 555 road), 2 are on small fish-bearing perennial streams; 4 more are on small non-fishbearing streams prominent enough to be portrayed on the USGS 7.5' quad; 2 are on small-to-tiny non-fishbearing perennial streams which are shown in the CNF GIS system, but are not prominent enough to be shown by the USGS; 10 are on apparently perennial, but tiny streams which are not prominent enough to be shown on the USGS quads, or the CNF GIS coverage; 17 were for water features termed perennial seeps, seeps, or trickles by the project hydrologist, but which are not prominent for the USGS quads or CNF GIS coverage, and the rest (7) are normally dry ditch relief culverts.



Culverts would be removed from the prisms of existing system roads that are proposed for decommissioning or storage: there are 8 streams (4 perennial, 4 intermittent) shown on the USGS 7.5' quad that cross these roads, along with an additional 15 crossings that are shown on the CNF GIS system by nonfishbearing streams (not specified as perennial or intermittent). There are presumably many additional culverts that pass the flow from very small drainages/seeps and that drain ditches that would be removed in the storage/ decommissioning of existing roads, but the CNF hasn't catalogued these. There are no stream crossing culverts necessary for proposed temporary road; any ditch relief culverts would be pulled upon decommissioning of these roads.

Figure 4, (left). Unnamed fishbearing stream carried by culvert (to be replaced) under FR 103. Figure 5, (below). Former bridge site at 3100 road "crossing."

Per the discussion above, the proposed in-stream activities in fishbearing streams would occur about 11.5 miles (the crossing of Middle Creek at the 3100 road by an excavator) or more upstream from the nearest likely presence of individual bull trout in Weitas Creek, so no direct mechanical injury would likely occur. The closest instream activity in a non-fishbearing stream (per our GIS layer) is about 6.1 miles upstream from Weitas Creek, and the nearest vegetation management site (a PCT unit) is also about this distance. The closest instream activity at any culvert replacement site (including seeps and trickles) is about 5.8 miles upstream from Weitas Creek.



See Figure 2 to see which streams would be affected by each road-related activity, but briefly, up to three culvert replacements on the 103 road and one storage segment (on the 3100 road) could potentially directly affect individual bull trout through mechanical injury, if individuals are present and not agile and alert enough to avoid harm from activities such as culvert excavation and stream crossings by heavy equipment.

The specific culverts on the 103 road considered for replacement are on very steep and barely-large-enough-to-be-fishbearing tributaries of Beaver Dam Creek (Figure 4). The crossing of Middle Creek by the 3100 road no longer has a bridge (Figure 5) and so the potential direct injury to bull trout at this site would be related to instream crossings of the creek by an excavator or other heavy equipment that would be used in decommissioning and storage activities on the far side of the creek.

Another mechanism for the potential direct injury or mortality to bull trout would be the transmission of toxic substances (gasoline, oil, grease, etc.) into streams from fuel spills or leaky or dirty equipment, or the generation and downstream transmission of very high levels of fine sediment from stream crossing or culvert rehabilitation (Muck 2010). As noted above, there are four sites where heavy equipment would be used to excavate in or ford a fish-bearing stream channel. Because of the Design Features, etc. in Section IV and the large dilution effect of the flow volume of Weitas Creek (the drainage area of Middle Creek in the project area is a tiny fraction of the full Weitas Creek catchment), however, contaminants should have essentially no potential to enter lower Weitas Creek at concentrations that would be harmful bull trout in that stream. If bull trout are present in the project area streams, then the potential for direct harm to individuals from contaminants or very high levels of fines sediment would be higher than to bull trout in Weitas Creek, but still very small because of the likely slight bull trout presence and because substantial attenuation of effects would occur within a few dozen or hundred feet (see Indirect Effects section, below). The remainder of the proposed instream work proposed would be on non-fishbearing tributaries, where sediment transmission and ensuing temporary high turbidity would likely be greatly diluted and attenuated prior to reaching fishbearing streams (CNF 2009).

In the long-term, while in-water work would have the potential to injure or kill individual bull trout during project implementation, storage and decommissioning of roads in riparian areas should benefit individuals by reducing the potential for injury or mortality caused by motor vehicles and by reducing the potential for transmission of large slugs of fine sediment from culvert or fillslope failure.

Individual bull trout would be protected from regeneration harvest, commercial thinning, and pre-commercial thinning (PCT) activities (including yarding and post-harvest fuels reduction) under the

action alternatives through application of default no-cut RHCA buffers, so the risk of direct injury or mortality to bull trout from vegetation management-related project activities would be non-existent. There would be some potential for a toxic spill to occur into a stream channel if a log-hauling truck or yarding equipment were to be disabled in an accident or through vandalism, but such an occurrence is very unlikely and entirely speculative.

Given that bull trout would be only transient and infrequent (at most) strays at the sites where in-water work would occur and that the potential sources of injury would be few and mitigated. Based on the above, direct effects to individual bull trout should be very unlikely.

Indirect effects. Timber harvest and road-related activities can have indirect effects on stream salmonid habitat primarily through changes in water yield, sediment production, and modification of riparian vegetation. Large increases in water yield can destabilize stream channels and banks, increase fine sediment input, and increase water temperature. Timber harvest and road-related activities can disturb soil that would potentially be transmitted to stream channels, where fine sediment can alter stream channel and water quality characteristics. Timber harvest in riparian areas can affect stream shading and large woody debris recruitment. The changes in stream channel, water quality, and riparian characteristics associated with the effects of substantially increased water yield and sediment transmission would tend to reduce aquatic habitat quality, especially through reductions in water and spawning substrate quality and in prey production. It should be remembered that the nearest confirmed bull trout habitat to the project area is in Weitas Creek, which is approximately 6 miles downstream from the nearest vegetation management unit. As a result, indirect effects to streams in the project area are unlikely to have much of an impact on bull trout because individuals of the species would be transient and few and so would not be dependent upon the quality of spawning or early rearing habitat in Middle or Hemlock creeks or their tributaries.

While unmitigated and/or excessive timber harvest can have negative effects on stream organisms, implementation of riparian no-cut buffers, as discussed above, can greatly reduce or eliminate harvest-related indirect effects on bull trout and other aquatic organisms. In the proposed project, fishbearing streams, their tributaries and the riparian areas of both would be protected from regeneration harvest, commercial thinning, and PCT activities (including fuels reduction and yarding) under the action alternatives through application of full RHCA buffers, so the risk of indirect injury through habitat degradation should be minimal to nonexistent. In addition to lack of direct effects in riparian areas described above, the RHCAs will act as “filter strips” to reduce or eliminate sediment transmission to streams from harvest units (Snyder 2012). Snyder (2012) discussed the reasoning behind the likely small magnitude in project related sediment production modeled by and the low likelihood of other indirect effects to project area streams. Regeneration harvest would be avoided on “landslide prone” areas and the route of permanent and temporary roads would be chosen to reduce the risk of mass soil movement (Foltz 2012).

Compared to upland activities, soil disturbed during road decommissioning or storage activities or culvert placement/replacement at stream or seep crossings or in riparian areas would have a greater potential to enter stream channels during project implementation and over time, but BMPs, described in detail in Snyder (2012), that would minimize sediment inputs to streams during instream and riparian work would be implemented. BMPs include dewatering of the site during crossing culvert manipulation and the placement of sediment catching devices (straw bales, brush dams, settling basins) around the work area and in the stream channel. Even with BMPs, however, culvert manipulation would contribute to short-term increases in stream sediment and turbidity levels primarily caused by disturbance of existing instream and road fill sediments during excavation, fill, channel recontouring, and rewatering activities. Monitoring on the Forest has shown that peak sediment input occurs immediately upon culvert manipulation and stream disturbance, followed by a decrease in sediment transport and turbidity within

several hours and with increasing distance downstream, typically within 300 feet due to small stream size and the low flow during the dry season when work would occur. Minor short-term sediment input is expected to occur over a short time frame (1-5 days per site) as the channel adjusts. Subsequent rain and snowmelt events through the following one or two springs are expected to cause short-term increases in sediment and turbidity at the rehabilitated crossing as vegetation reestablishes and stream channels stabilize.

Road related-activities within RHCAs would be performed during the dry season and so would minimize the potential for disturbance of soil. Further, road prisms mostly would cross RHCAs and stream channels relatively perpendicularly, so the area of impact to habitat would be relatively small compared to that of the full amount of RHCAs and stream channels in the project area. Because the area of impact should be relatively small, the reduction in shade and large woody debris recruitment associated with stream crossings of roads should be minor and biologically undetectable at the project area scale. Project mitigation features and BMPs (detailed in the Watershed specialist report, Snyder 2012) would reduce the potential for or minimize soil disturbance and sediment transmission to stream channels associated with road-related activities.

Water temperature can potentially be affected by fine sediment input (which can change stream channel morphology to reduce groundwater input and increase solar radiation) and by vegetative shading (reductions in which can increase solar radiation). The CNF periodically monitors water temperature at stream sites and for Middle Creek and the lower reaches of three tributary sites in proximity to the project area, the range of maximum weekly mean temperature (MWMT) over a minimum of 10 years since 1994 was 13.7 to 15.3° Celsius. Well downstream of the project area, MWMT for Hemlock Creek near its mouth over the same general period was 19.7° C and on Weitas Creek above the Hemlock confluence the MWMT value is 21.3° C. All of these values, when taken in context with stream order, differences in temperature metrics, and bull trout lifestage are suitable for the species (Kenney interpretation of Essig et al. 2003) and are indicative of minimal anthropogenic alteration. The effects of RHCA buffers described above demonstrate that the action alternatives would minimize effects on sediment transmission and stream shading so that effects on existing stream water temperature should not be measurable.

In the long-term, culvert replacement, and storage and decommissioning of roads in riparian areas should benefit bull trout habitat by reducing the potential for sedimentation and water diversion.

Based on the watershed specialist report for this project (Snyder 2012), harvest and road-related activities under the proposed project would slightly increase water yields, but the increase would be well within the range consider natural for the project area and so should not alter stream habitat quality to a measurable or biologically significant degree.

Snyder (2012) also estimates that the road decommissioning and storage proposed for the proposed action would reduce sediment production well in excess of any likely sediment production from harvest treatments and road construction. Because the road decommissioning and storage activities would not necessarily be coincident or shortly following vegetation manipulation and road construction/reconstruction, it cannot be said that the proposed action would result in a net reduction in sediment production in the project area for either action alternative. However, as discussed above, sediment yield from the primary project activities should be minimal and non-measurable, so indirect effects on bull trout should be similarly negligible. When completed, the reduction in sediment production associated with road storage and decommissioning should tend to improve aquatic habitat quality in the long term.

Summary. Few, if any, individual adult or subadult bull trout should be present in the project area or for several miles downstream, and no spawning or juvenile bull trout should occur in either the Hemlock or

Middle Creek subwatersheds. Vegetation management activities (including road construction, reconstruction, and fuels treatments) would have little if any effect on individuals of the species or on aquatic habitat because of project design and riparian buffers.

Other project activities (road decommissioning, storage, and culvert replacement on retained roads) would reduce long-term sedimentation risks to project streams from chronic road prism erosion and culvert failures, such that there would be a long-term beneficial effect to aquatic habitats and species. Project design features, mitigation measures and BMPs would minimize temporary and short-term sediment transmission and suspension, so potential adverse impacts to streams from projects activities would be minor and temporary.

Effects of the proposed action alternatives on individual bull trout in the project area should be limited to possible temporary and site-specific impacts related to road decommissioning, storage, reconstruction, culvert replacement, and log hauling. The road-related activities would be largely harmless to any fish in the project area because of project design, BMPs, and mitigation measures, while bull trout in particular would be very unlikely to be affected by any of the activities because the only individuals present in or for several miles downstream of the project area would be few and transient. Specific to bull trout, turbidity or suspended sediment would enter Middle Creek and a few Middle Creek unnamed tributary channels as the result of proposed project activity, but the degree and duration of these sediment pulses would be moderated or nearly eliminated by the project design and implemented mitigation measures, such that little or no sediment transmission should reach stream segments supporting bull trout. Additionally because of project design and mitigation measures, the proposed activities should have no biologically significant impact on water temperature, large woody debris recruitment, streambank stability, and other riparian and instream indicators in the project area or in Weitas Creek, where bull trout are expected to occur. The road-related activities may affect aquatic habitat in and just downstream of the project at the site-specific and temporary scales, but in aggregate and in the long term should improve watershed conditions and therefore bull trout habitat.

In conclusion, all potential effects on bull trout or bull trout habitat have been eliminated or minimized to biological insignificance through project location, design, and the mitigation measures that would be implemented. No in-water activities would occur in occupied bull trout habitat and because the risk of the transmission of substantial amounts of contaminants to bull trout habitat should be very low, the risk of direct adverse effects on individual bull trout as a result of the proposed activity should be considered to be very low to nil. For similar reasons, no indirect effects to bull trout or bull trout habitat should be manifested.

Because of project location and design, the effects on occupied or potential bull trout habitat in Weitas Creek and downstream should also be biologically negligible at in all temporal scales.

Bull Trout Critical Habitat: The designation of the mainstem of Weitas Creek requires the Forest to consult with the USFWS on any agency action which is likely to result in a may affect determination. The mainstem of Weitas Creek, however, is about 5 miles downstream of the project area and, as discussed above and below, no measurable or discernible effects of the proposed action should be transmitted to Weitas Creek. The nine primary constituent elements (PCEs) listed in the proposed rule and any potential impacts associated with the road decommissioning/storage activities are summarized below:

- *Springs, seeps, groundwater sources, and subsurface water connectivity (hyporheic flows) to contribute to water quality and quantity and provide thermal refugia.* Implementation of the proposed action would tend to restore the natural hydrologic functioning of the project area

through elimination of flow diversion onto some of the roads that would be decommissioned or put in storage and elimination of some potential future diversions. Restoration of hydrologic functioning should positively affect, at a relatively small scale, the quantity and quality of subsurface flows, springs and seeps.

- *Migration habitats with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats, including but not limited to permanent, partial, intermittent or seasonal barriers.* The mitigation measures are expected to avoid or minimize any adverse impacts to spawning, rearing and migratory of bull trout because all of the proposed instream activities would occur in portions of Middle Creek and its unnamed tributaries which are about 5 miles upstream of designated critical habitat in Weitas Creek. No biologically significant effects should be transmitted to portions of Weitas Creek or downstream where bull trout may occur.
- *An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.* With the exception of changes to substrate conditions in small, localized areas associated with road decommissioning and storage and for a few feet downstream of the culvert replacement sites (which may cause small and transitory changes to macroinvertebrate abundance and diversity in a few hundred feet of stream well upstream of known bull trout presence and critical habitat), the project activities are expected to have no adverse impacts to this element.
- *Complex river, stream, lake, reservoir, and marine shoreline aquatic environments and processes that establish and maintain these aquatic environments, with features such as large wood, side channels, pools, undercut banks and unembedded substrates, to provide a variety of depths, gradients, velocities, and structure.* With the exception of vegetation, substrate, channel, and streambank modifications at and adjacent to some of the road decommissioning and storage and at the culvert replacement sites (which may cause small and transitory changes in stream and riparian characteristics to a few hundred feet of stream well upstream of bull trout presence and critical habitat) the proposed activities are expected to have no adverse impacts to this element.
- *Water temperatures ranging from 2 to 15 °C with adequate thermal refugia available for temperatures that exceed the upper end of this range. Specific temperatures within this range will depend on bull trout life-history stage and form; geography; elevation; diurnal and seasonal variation; shading, such as that provided by riparian habitat; streamflow; and local groundwater influence.* Metal culverts on the three unnamed tributaries of Beaverdam Creek would be replaced with metal culverts, so no increase in insolation would occur. Existing culverts on non-fishbearing streams that would be removed as part of decommissioning or storage activities and these culverts currently provide partial to complete shade for their lengths, the proposed daylighting of the 20-40 feet of stream when culverts are removed may cause some immeasurable increase in water temperature in the affected unnamed tributaries and in Middle Creek and named tributaries. Because of the tiny proportion of the length of any of the very small streams that

would be affected by the culvert removal, there should be no measureable or long-term increase in water temperature in bull trout critical habitat (many miles downstream) as a result of the proposed action.

- *In spawning and rearing areas, substrate of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile survival. A minimal amount of fine sediment, generally ranging in size from silt to coarse sand, embedded in larger substrates, is characteristic of these conditions. The size and amounts of fine sediment suitable to bull trout will likely vary from system to system. As noted above, sediment impacts from the proposed project activities will be negligible to nonexistent regarding direct effects to bull trout and direct and indirect effects to existing and potential habitats. Other than localized, short-term changes to water quality (turbidity) and substrate conditions (sediment levels) at and for up to a few hundred feet downstream from the road decommissioning/storage/culvert removal sites (and outside of critical habitat), no significant changes in substrate conditions are expected.*
- *A natural hydrograph, including peak, high, low, and base flows within historic and seasonal ranges or, if flows are controlled, minimal flow departures from a natural hydrograph. The hydrographs for Weitas Creek and its tributaries are un-regulated. The project activities are expected to move hydrologic function of the project area slightly closer to the natural condition than currently existing and so Weitas Creek should maintain or move closer to favorable hydrographs.*
- *Sufficient water quality and quantity such that normal reproduction, growth and survival are not inhibited. As noted in the effects analysis above, proposed project activities will have negligible effects to designated critical habitat because all in-channel activities would occur at least 5 miles upstream of Weitas Creek. The project design and mitigation measures are expected to eliminate or greatly minimize any transmission of effects to critical habitat.*
- *Sufficiently low levels of occurrence of nonnative predatory (e.g., lake trout, walleye, northern pike, smallmouth bass); interbreeding (e.g., brook trout); or competing (e.g., brown trout) species that, if present, are adequately temporally and spatially isolated from bull trout. The proposed activities are expected to have no adverse impacts to this element.*

Canada lynx. Background. Canada lynx in the contiguous United States were listed as threatened under the ESA in 2000 (65 FR 16052) with critical habitat designated in 2006 (71 FR 66008). Canada lynx live in coniferous forests with cold, snowy winters and on a prey base of snowshoe hares. In the western United States lynx are associated with relatively high-elevation moist conifer forest, primarily lodgepole pine, subalpine fir, and Engelmann spruce, although Douglas-fir and cedar-hemlock habitat types may be used in north and north central Idaho (Ruediger et al. 2000). A substantial amount of habitat considered secondary occupied (USFS 2007) by Canada lynx exists on the North Fork Ranger District, although this habitat was not designated as critical (74 FR 8616).

In a literature review, Ruediger et al. (2000) noted that lynx inhabit forest which support their primary prey, snowshoe hares, and that forest disturbance (including both natural mortality and tree harvest) creates dense early successional stage vegetation which is favored by hares. Less-dense, later succession stage vegetation also provides habitat for secondary lynx prey species such as red squirrels, while accumulations of large woody debris (LWD) provide the best maternal denning habitat for lynx.

Ruediger et al. (2000) also cited studies where lynx inhabiting southern montane forests (e.g., Idaho) average home ranges varied from about 10,000 to over 90,000 acres per animal, with female home ranges being typically smaller than those of males. Lynx populations are often controlled by prey availability, with starvation being the most common cause of natural mortality. Some lynx mortality is caused directly by larger predators such as mountain lion and gray wolf, while increased suitability of occupied lynx habitat by competing predators (e.g. coyote and bobcat) may also cause lynx starvation and reduced recruitment. Because the lynx's primary competitive advantage is the ability to efficiently hunt in deep, soft snow, it is possible that road plowing and snow grooming/packing may reduce prey populations where competitors would otherwise be excluded. Lynx appear to be relatively tolerant of human presence and the existence of low-use forest roads does not appear to affect habitat use (Ruediger et al. 2000).

The 2007 Northern Rockies Lynx Management Direction for the Forest Service (NRLMD, USDA FS 2007) applies to mapped lynx habitat on National Forest System land presently occupied by Canada lynx, as defined by the *Amended Lynx Conservation Agreement between the Forest Service and the FWS* (USDA FS and USDI FWS 2006). When National Forests are designing management actions in unoccupied mapped lynx habitat they should consider the lynx direction, especially the direction regarding linkage habitat.

The NRLMD Record of Decision (2007) requires:

- A minimum of 70% of the potentially useable habitat within each Lynx Analysis Unit (LAU) be suitable for habitation,
- Timber management projects shall not regenerate more than 15 percent of lynx habitat on NFS lands in an LAU in a ten-year period.
- With relatively rare, specific exemptions, that pre-commercial thinning not be performed in modeled lynx habitat
- With relatively, rare, specific exceptions, that vegetation management projects not reduce snowshoe hare habitat in multi-story or late successional forests

Distribution and Modeled Habitat. As noted above, in the western United States the ESA-Threatened lynx are associated with relatively high-elevation moist conifer forest. The CNF lynx habitat model credits as foraging habitat all mid- and late-seral stands with at least a portion of the stand between 3,900 and 7,000 feet above msl and in the four Habitat Type Groups which include a majority of the project area. As a result, modeled foraging habitat in the project area is relatively abundant (Figure 6; see Wildlife Specialist Report (Kenney 2012) for information on stand characteristics). The denning habitat model is more restrictive, focusing on relatively dense stands of relatively large trees within the foraging habitat sideboards, so the amount of modeled denning habitat in the project area is a subset of the modeled foraging habitat. Approximately half of the CNF (~930,000 acres) is considered to be suitable lynx habitat (USDA FS 2007).

The CNF has delineated Lynx Analysis Units (LAUs) for analysis purposes and the proposed project is mostly confined to LAU 38 (a total of 26,519 acres); about 4,008 acres of the LAU are within the project

area (Figure 6. LAU 38 is about 89% modeled lynx denning or foraging habitat, with 3,660 acres (about 91%) of the project area modeled as lynx habitat. A small amount of the project area is within LAU 37 (about 220 acres of the 19,648-acre LAU, although only about 8 acres within the LAU and project area are modeled lynx habitat). About 1,312 acres of the project area is too low in elevation to be included within an LAU.

The IDFG's ACD (IDFG 2011) doesn't list any occurrence records within LAU 37 or 38, but there are three records from within about 10 miles of the project area and about a dozen within 25 miles, with one as recent as 2005. No specific population data are available for the lynx, though it is considered critically imperiled (state rank S1) in Idaho (Digital Atlas of Idaho 2012). Based on these and other relatively recent observations on the Forest and on the Idaho Panhandle National Forest, it is possible that individual lynx may occur in proximity to the project area, but there is no evidence that a breeding population exists anywhere within the vicinity.

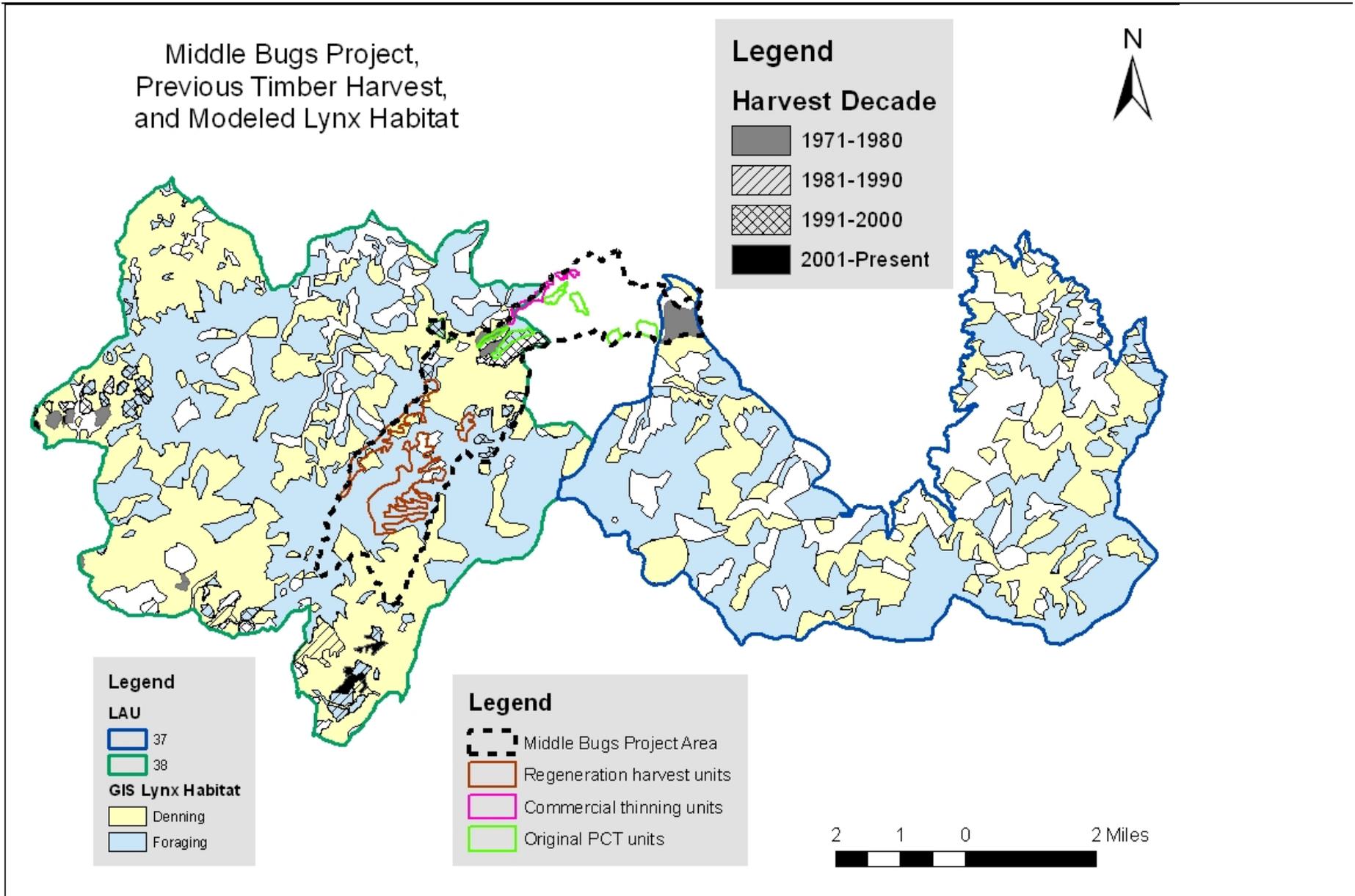


Figure 4. Middle Bugs Project Area with previous timber harvest in relevant Lynx Analysis Units and mapped lynx habitat.

Although timber harvest is not the only variable that affects lynx habitat suitability, it is a major one and the primary one under Forest control. Timber harvest up through the early 2000s slightly decreased the availability of modeled lynx habitat in LAU 38, but many of these harvest units have regenerated enough (15-30 years) that are now classified as foraging habitat in the model: LAU 38 is about 26,500 acres and all but about 95.8% of it has either not been harvested or was harvested more than 30 years ago. Regeneration timber harvest in LAU 38 that was in potential lynx denning habitat eliminated that type of habitat from the harvest unit, but this still leaves 94.2% unmodified by timber harvest.

Despite the potential for past activities to have reduced the extent of lynx habitat, the elevation and dominant vegetation types in the analysis area suggest that this area is as likely as ever to support sufficient habitats to sustain a local lynx population, with the caveat that fire suppression has likely reduced the amount of LWD concentrations.

The French Larch and Lolo Insect and Disease projects are in the foreseeable future actions with in LAU 38. On the order of up to a few thousand acres of timber stands would be treated in the projects. This harvest and treatment would have the potential to affect lynx habitat, but would be constrained by ESA section 7 guidelines (USDA FS 2007) and so should have minimal to beneficial effects on the species.

Direct and Indirect Effects. The proposed action would comply with the Northern Rockies Lynx Management Direction Record of Decision (USFS 2007) in that it would not excessively affect habitat within either LAU 37 or 38, and would not affect designated linkage areas.

Individual lynx may be disturbed by project activities under the action alternatives; however, this disturbance is not expected to measurably affect their survival or reproduction. Individuals would move away from areas of active treatment and would not be injured or killed. Sufficient habitats are available outside the treatment units to support any local population during project implementation.

Regeneration harvest treatments would reduce the quantity of lynx foraging habitats in the short term (~15-30 years) because this amount of time necessary for new conifers or brush to grow above the average snow depth and provide food and cover for snowshoe hares (Ruediger et al. 2000). Conversely, regeneration harvest can improve lynx foraging habitat in the long-term because the resulting early-seral vegetation would benefit snowshoe hares in most circumstances. Regeneration harvest (or subsequent fuel treatment) would eliminate denning habitat in the long-term because it would typically remove existing LWD and would reduce most LWD recruitment and other components of structural diversity for many decades.

Similar to, but to a lesser degree to regeneration harvest, commercial thinning treatments could reduce lynx foraging habitat over the short term and improve it over the long term, or such treatments may have little short or long-term effect if site characteristics are not substantially modified (Ruediger et al. 2000). Effects on denning habitat would be similarly variable with commercial thinning, depending on site-specific effects to LWD and LWD recruitment. Fuels treatment in the harvest units may also reduce the understory structural components, particularly down logs and snags that could be consumed by prescribed fire, but fuels treatment could also enhance or accelerate regeneration of conifers and shrubs.

Up to 614 acres of modeled lynx habitat would be treated depending on the alternative (~16.8% of the project area). Only the regeneration and commercial thinning harvest treatments (and subsequent unit fuels reduction) are expected to substantially change habitat conditions for lynx.

Proposed PCT (114 acres in 5 units not associated with the regeneration or thinning units) would occur entirely outside of LAUs. Four additional PCT units were originally identified; the locations of all nine original units in relation to LAUs is shown in Figure 4.

Up to about 2.3% of modeled denning habitat in the project area would be affected under the proposed action, so the 63 acres of denning habitat proposed for harvest in the action alternatives could constitute a tiny proportion of one female lynx territory. It should be noted that denning habitat in the model would only indicate where LWD or other similar structures most likely exist (based on tree size and density), but the model is not fine-scaled enough to identify where actual suitable den sites occur. There should be no measurable effect on reproductive success in the analysis area because the small and spatially separated harvest areas in modeled denning habitat would occur in close proximity to as large or larger patches of apparently equal quality in mature and old growth timber (Figure 1), so changes of the proposed magnitude should not be biologically meaningful.

Proposed timber harvest in the action alternatives would modify foraging habitat by up to 15.1% in the project area (based on the concept that modeled denning habitat is also suitable as foraging habitat). As noted above, a minimum of about 10,000 acres of suitable foraging habitat is used by a lynx, so the 614 acres of combined denning and foraging habitat proposed for harvest in the action alternatives constitutes a small change in habitat availability which may slightly reduce the overall habitat suitability of one lynx's home range for a period of 15-30 years, after which the harvested areas may provide better quality foraging habitat than now exists. The number of lynx (if any) or the extent of their territories within the project area is unknown, but given that large contiguous swaths of modeled lynx habitat exist in the southern and central portions of the project area and that harvest units would be continuously adjacent to unaltered habitat, neither action alternative should affect the ability of lynx to occupy the analysis area.

Modeled lynx habitat was reviewed in the field in October 2012 (Hill 2013) and the following description of habitat suitability is taken from that reference. Lynx habitat suitability is changing due to the pine beetle outbreak. Because the overstory canopy is being reduced as a result of the beetles, canopy closure values are in decline, and will therefore result in decreases in lynx habitat quality. This is especially noticeable in stands dominated by mature lodgepole pine on flats, ridge tops, and southern exposures. On the north- and east-facing slopes, where soil moisture is higher, temperatures are cooler, and solar exposure is reduced, vegetation is denser, and vegetative and structural diversity is higher. Riparian areas have similar characteristics, and lend habitat connectivity between patches from the project area to adjacent habitat.

Evidence of snowshoe hare foraging is evident in riparian corridors. Indicators of browsing are found on willows (*Salix* sp.), dogwood (*Cornus* sp.), and huckleberry (*Vaccinium* sp.). There was less browse evidence found in conifer stands on ridges and north- and east-facing slopes; however, that may be that it is more difficult to discern in those areas. Needless to say, hare browse was easily identifiable in riparian areas where it existed. Deciduous shrubs are unavailable to snowshoe hares during the winter, however, as they are buried under the snow. When taken into account the average snow depth, the amount of available winter snowshoe hare foraging habitat is noticeably lacking in the project area.

Multi-story mature habitat is also lacking. Multi-story mature habitat has many age classes and vegetation layers present, includes decaying fallen trees, and usually has large trees that form the dominant canopy. Because the project area vegetation is relatively young due to early 20th century fires and timber harvest, there are few areas with large, mature trees. There are areas in and near the project that have multi-story characteristics, but these are uncommon and generally

lack large, mature trees. Multi-layer characteristics are most frequently observed along road edges, where the shrub and sub-dominant tree canopy can get light or in riparian areas. These characteristics rapidly diminish in the interior of most stands. At best, the present multi-story habitat is of low quality and small in geographic coverage, present in a few, scattered, and small (less than one acre) areas. Furthermore, layering and horizontal cover that were observed is at a height that would be buried under snow, which means this type of habitat is not available to snowshoe hares during the winter.

Snowshoe hare home ranges (12-25 acres) are far larger than these stands of multi-story habitat. The small stand size, scattered distribution, and low quality make it unlikely that these stands alone could provide suitable habitat to support a snowshoe hare population of sufficient size to maintain resident lynx in the project area. Furthermore, mid-successional and mature lodgepole pine stands in the project units lack branches in the lower crown such that they could provide snowshoe hare forage during the winter. Taken together, snowshoe hare habitat in the project area units is marginal. Adjacent areas in the project boundary may provide better snowshoe hare habitat, especially in riparian corridors along Middle and Beaver Dam Creeks, and outside the project area along Hemlock Creek.

Large accumulations of down wood, rootwads, and other suitable denning habitat was lacking in much of the project area units. Riparian areas are, in general, the best suited for denning habitat because the trees tend to be denser and larger, thus someday providing more and larger pieces of down wood. There are some extensive blow down areas, mostly lodgepole pine, on the ridge between Middle and Beaver Dam Creeks. These pockets of dead trees, may provide excellent denning security in ten to twenty years, but currently do not because overstory cover is absent.

Construction of permanent road or temporary road could theoretically eliminate lynx habitat in either the short-term or long-term because forested areas would be cut to construct the road. Temporary roads would be decommissioned after use and so should return to foraging habitat in 15 to 30 years, but would not function again as modeled denning habitat for many decades. Implementation of the proposed action would result in about 230 feet of temporary road in denning habitat and 1,770 feet in foraging habitat outside of harvest units (a total of about 1 acre). The total road construction would account for about 0.2% of modeled denning habitat for lynx in the project area, a negligible amount even if real, but given the thin and extended nature of the road clearing it is not obvious that any actual impact on usable habitat would be manifested. Changes to access management and road configurations would have little effect on lynx because few or no substantial trees would be removed in these activities.

At the LAU level, the proposed project would cause decreases of 0.3% in modeled denning habitat and 2.6% in modeled total foraging habitat (denning+foraging) in LAU 38. As noted above, however, past timber harvest has affected well less than 10% of habitat in the LAU and the proposed actions would increase that proportion only slightly. Field review of the project area was completed in the fall of 2012 (Hill 2013). The site visits and GIS aerial imagery of the vegetation were used to review past project effects on lynx habitat and snowshoe hare habitat development. In examining past projects to assess stand re-initiation conditions, it appears that stands are achieving suitable winter snowshoe hare habitat 20 to 30 years after regeneration harvest. This is within the range expected given the climate and elevation. Hill (2013) also reviewed treatment units that may have the potential to meet the NRLMD, Vegetation Standard 6 (VEG S6 - mature, multistory habitat) or provide for dense horizontal cover for snowshoe hares. The field review found the stands do not provide multistory

habitat and do not meet the definition for VEG S6, and so treatments would not be reducing lynx and/or snowshoe hare habitat.

The location of LAU 38 is isolated at the end of a narrow peninsula of four LAUs and is surrounded on three sides by habitats that do not contribute to lynx habitat because the area contains dry cover types at low elevations (Figures 3 and 4 in Hill (2013)). This group of LAUs are themselves surrounded on three sides by Low elevation habitats of the North Fork Clearwater and Middle Fork Clearwater Rivers. Given this location, combined with the marginal habitat quality, LAU 38 is unlikely to be occupied except by transient individuals moving between the core of the range (to the east) and the currently unoccupied Nez Perce NF to the south. Denning habitat is sufficient, but snowshoe hare habitat may limit potential occupancy by lynx.

The nearest linkage area is to the east, at Lolo Pass. Again, the project area is a semi-isolated extension of suitable habitat, surrounded on three sides by vegetation types that do not contribute to lynx habitat.

In the long term for denning habitat and in the short term for foraging habitat, the proposed action alternatives would contribute to a reduction in modeled habitats caused by past timber harvests. As forest succession continues, and assuming no large increase in timber harvest rates and the absence of a large scale wildfire, the amount of denning habitat in the LAU should steadily increase. No measurable effects to lynx populations at the Forest or regional scale, or alteration of current population trend, are expected from the cumulative effects of any of the alternatives, however, based on the widespread availability of suitable habitats across the Forest and region (USDA FS 2007).

Because no other timber management projects are planned or have recently (since 2003) occurred in LAU 38, The proposed project would comply with NRLMD direction to restrict timber management projects to less than 15% of lynx habitat on Forest lands within an LAU in a ten year period. As described above, up to 614 acres of modeled habitat would be treated in the proposed action alternatives, which is less than 3% of the modeled habitat in LAU 38. This amount of harvest would allow on the order of 2,500 acres to be adversely treated in future projects within a decade of the Middle Bugs implementation.

Small changes to modeled lynx foraging or denning habitat, prey species, or probability of occurrence would likely occur as a result of the proposed project at both the project and LAU scales, but the quantity and type of these activities would be consistent with the NRLMD direction. While there would be an increase in human activity in the project area for the duration of the project implementation in comparison to recent years, it is unlikely that this increase will be significant in terms of disturbance of any individual lynx in the unlikely event of occurrence in or near the project area during the period. No snow plowing is being authorized and no snow compacting activities are proposed. No change to migratory or dispersal corridors would occur. Therefore, the proposed action as described in Section III would be **not likely to adversely affect** Canada lynx. No critical habitat has been proposed in the project area, so the proposed project would have **no effect** on Canada lynx designated critical habitat.

Wolverine. Background. The USFWS determined in 2010 (75 FR 78030) that the North American wolverine warranted threatened or endangered status under the ESA, but that such an action was precluded by higher agency priorities and so the species would be classified as a Candidate for ESA protection. The wolverine status changed on February 4, 2013, when the USFWS published a proposed listing rule for the North American wolverine in the Federal Register (78 FR 7863).

In Idaho, wolverines inhabit montane, mature forests associated with subalpine rock/scree habitats in areas of low human occurrence (Copeland and Hudak 1995) and the subalpine rock/scree habitats are used for foraging and for natal denning; none of the subalpine habitat denning habitat occurs in the Middle Bugs project area. However, foraging habitat has been modeled for the wolverine and consists of all areas above about 4,500 feet elevation. As a consequence, the analysis area contains 2,469 acres of modeled foraging habitat, but no modeled denning habitat. Wolverines are opportunistic scavengers and ungulate carrion is considered an important food source. Productivity of habitats and related ungulate carrion availability are important aspects of wolverine habitat management.

Distribution. The IDFG's ACD (2011) lists one occurrence record within the Weitas Creek watershed (in 1976), and about a score of other records exist within a 25 mile radius of the project area over the past few decades. The Weitas Creek watershed has some modeled denning habitat (primarily at the northeast border with the Fourth of July Creek drainage), but it is not known whether it is occupied. Individual wolverines likely travel through the watershed on occasion, but it is not known whether a breeding population exists on the Forest.

Direct and Indirect Effects. The proposed action would include regeneration harvest on about 552 acres (22%) of the potential modeled foraging habitat within the project area. This relatively small change in habitat type would not adversely affect the ability of wolverine to occupy the analysis area now or in the future because regeneration harvest would likely benefit elk and other cervids (major prey species) and because denning habitat is non-existent in the project area and so any wolverine use would almost certainly be transient. Because regeneration harvest would have little if any effect on wolverine, the vegetation management activities in the proposed project would not affect the availability of habitat at the Forest or regional levels.

The most important cumulative effect to wolverine in Idaho is human disturbance. This probability increases with increased road access and more powerful snow machines that are accessing more of the areas inhabited by wolverines. Changes in access management associated with the proposed action could potentially affect wolverine habitat--road decommissioning and storage would generally decrease open road density, increase security areas, and increase habitat effectiveness, all of which would potentially benefit wolverine survival and persistence in the long term. On the other hand, any wolverine use in the project area would almost certainly be transient and the project would not affect the availability of habitat at the Forest or regional levels.

Little or no change to wolverine foraging or denning habitat, prey species, or probability of occurrence would likely occur as a result of the proposed project. While there would be an increase in human activity in the project area for the duration of the project implementation, in comparison to recent years, it is unlikely that this increase would be significant in terms of disturbance of any individual wolverine in the unlikely event of occurrence of an individual in or near the project area during the summer-fall implementation period. No snow plowing is being authorized and no snow compacting activities are proposed. No change to migratory or dispersal corridors would occur.

Therefore, the proposed action as described in Section III would **not be likely to jeopardize** the continued existence of the wolverine. The proposed rule outlines that the threats to wolverine is loss of habitats with persistent snow cover as a result of climate change and increasing temperatures. The proposed rule found that dispersed recreational activities, infrastructure development, transportation corridors, and land management activities do not pose a threat to wolverines. Thus, the land management activities as described in the Middle Bugs project are not

considered a threat to wolverine. No conferencing with US Fish and Wildlife Service will be necessary, since the project will not jeopardize the wolverine.

Yellow-billed cuckoo. The USFWS determined that the yellow-billed cuckoo warranted listing under the ESA, but was precluded from listing by lack of agency resources (66 FR 38611) and is considered a Candidate species.

Yellow-billed cuckoos are listed by the USFWS as present in Idaho County, but not in Clearwater County. Reynolds and Hinckley (2005) noted occurrences of the species near White Bird, ID, but that individuals would be very rare in north Idaho. Habitat for yellow-billed cuckoos in Idaho and the western U.S. as a whole is low-elevation deciduous riparian forest, primarily dense cottonwood stands (Reynolds and Hinckley 2005). Because this species is very unlikely to occur in the project area and no cuckoo habitat is present there, the proposed action as described in Section III would have **no effect** on yellow-billed cuckoo.

Whitebark pine. Listing of whitebark pine as threatened or endangered was found to be warranted by the USFWS, but precluded by higher priority actions, and so the species was added to the candidate list on July 19, 2011 (76 FR 42631).

Whitebark pine are widely distributed at high elevation sites in much of western North America, including sites in Idaho above about 7,000 feet in elevation. The species appears to be in a range-wide decline primarily due to white pine blister rust and, more recently, mountain pine beetle infestations, and climate change. Although the CNF supports stands of this species, and the project activities (at less than 6,000 feet above sea level) are typically not suitable habitat, a few mature whitebark pine individuals were located near the southern boundary of Unit C in October 2012. These individuals, and any additional individuals (in harvest units) identified in the future by tree marking crews, etc. would be marked for retention and competing trees of other species would be cut (See mitigation measure 14, above.) Because of these actions, the proposed the proposed action as described in Section III would have **no effect** on whitebark pine.

B. Region 1 Sensitive Species.

Descriptions of potential impacts on sensitive aquatic and wildlife species are grouped together below by habitat type/niche.

Aquatic/Riparian: Westslope cutthroat trout, redband trout, western pearlshell mussel. Fish surveys confirm the presence of westslope cutthroat trout within the project area in Middle Creek, its named tributaries, and in at least one unnamed tributary (Figure 7, CBS 1992, IWW 1998). Redband trout are present in Middle Creek within a mile downstream of the project area and individuals may occur within the project area. (Figure 7, CBS 1992, IWW 1998). Both trout species are also present in the Hemlock Creek subwatershed, although not within the project area (CBS 1992, IWW 1998, Figure 7).

No mussels are known to occur in the project area, but no surveys specific for this species have been performed there. Past cursory surveys on the Clearwater National Forest have found evidence of western pearlshell mussels in the Lochsa River and North Fork Clearwater River drainages, while more targeted surveys have located populations of the species a few miles to the west of the project area within the mainstem of Lolo and Musselshell creeks, and in Jim Brown and Eldorado creeks. Immobile as adults, these mussels are potentially vulnerable to acute and long-term elevated fine sediment levels.

As described above, proposed vegetation management activities within the project area drainages

of fishbearing streams should not have measurable effects on individual westslope cutthroat trout, redband trout, and western pearlshell mussels in these streams because these activities would be distant from the stream channels (and so transmission of sediment should not occur). Road related activities in or near the channels or riparian zones, nearly entirely restorative in nature, may injure or kill a few individual trout or mussels through mechanical injury or desiccation from excavation of culverts or channel crossing by heavy equipment. Road-related actions, however, would more typically have temporary and transitory effects on individual animals even in fishbearing streams, and activities in non-fishbearing streams should transmit minimal to no impacts to trout or mussels downstream. See the bull trout discussion, above in Section VI, for a more-detailed discussion of potential effects on aquatic organisms and habitat in Middle Creek and its tributaries. Population-level effects should be minimal to beneficial.

Overall, project activities may impact individual cutthroat and redband trout and mussels but are not likely to lead to the listing of any of these species under the Endangered Species Act. In the long term, the proposed road decommissioning/storage should reduce erosion to and sedimentation of Middle Creek and its tributaries and so the project would have a long-term beneficial effect on these sensitive species.

Coeur d'Alene salamander, western toad. Coeur d'Alene salamanders are found in coniferous forests near seeps, waterfalls and along streams. Population of this species have been detected in several locations in the North Fork Clearwater River drainage, primarily along the mainstem of the North Fork Clearwater River and along some of the larger North Fork tributaries such as Skull, Orogrande, and Skull creeks. Individuals of the species have been found in or along smaller streams, too (Cassirer et al. 1994), and so the salamanders may occur within the project area in suitable habitat.

Western toads utilize wet and moist habitats across the CNF, but can also be found on forested slopes. They prefer slow water habitats such as puddles, springs, ponds, lakes, reservoirs, and slow moving streams. Eggs are generally laid in puddles, ponds, and slow moving streams. Although specific surveys have not been conducted and individual toads have not been recorded from the project area, many individuals have been observed on the Forest.

Because portions of the road segments to be stored or decommissioned and some of the culverts to be replaced cross perennial streams or include or are adjacent to puddles or spring seeps, the proposed activities have the potential to affect individual salamanders, toads, and their habitat. In addition, vegetation management activities in upland areas have some potential to affect individual toads and toad habitat when these individuals are present outside of riparian areas.

Road decommissioning and storage and culvert replacement may negatively affect Coeur d'Alene salamander or western toad when stream crossings are removed or when soil is disturbed that could be transmitted to streams or riparian areas. Individual salamanders and toads could be injured or killed or existing habitat reconfigured within 20 feet both upstream and downstream of the crossings for both, and puddle habitat for toads on existing road prisms could be destroyed. The risk to individuals of one or the other species would be high if present at the culvert removal sites or if occupied puddles would be destroyed in the process of road prism manipulation. Modification to stream habitat would be short-term and such habitat would increase in quantity as the stream channels now enclosed in culverts and fill are daylighted. Puddles or other wet areas suitable for toad habitat would potentially re-form at ephemeral stream crossings of manipulated road prism sites. Road decommissioning and storage activities outside of riparian areas are not expected to affect either species due to their preference for wet or moist areas.

Because western toads may sometimes occur in upland areas (especially during wet weather) felling, yarding, fuels treatments and road-related activities remote from prime toad habitat could harm or kill individual western toads through mechanical injury. Upland habitat for western toads should not be greatly adversely affected in the long term because the toads don't require any particular type of vegetation in suitable habitat, but reduction in woody debris associated with some of the vegetation treatments could slightly reduce the quality of upland toad habitat in the short term.

Overall, project activities may impact individual salamanders or toads but are not likely to lead to the listing of either species under the Endangered Species Act. In areas where culverts or unstable road fills may prevent species from utilizing stream habitat or are causing habitat degradation, culvert removal/replacement road fill stabilization and stream channel rehabilitation may provide positive effects for these species, and so the project as a whole should have a beneficial impact.

Mature stands, woody debris, snags: Black-backed woodpecker, flammulated owl, pygmy nuthatch, fisher, fringed myotis, ringneck snake: The proposed project activities should not affect populations or persistence of these species or their habitat, as described in Table 5, although the potential presence of individuals of these species is acknowledged here, and so some level of disturbance associated with the presence and noise of heavy equipment and humans is possible. Modeled habitat for each of these species is present in the project area (and is discussed in the Wildlife Specialist Report for this project (Kenney 2012)). The author found no records of the occurrence of any of these species in the project area or in the project area, with the exception of fishers, which have been observed fairly commonly in the vicinity of the proposed activities, if not within the actual project area.

Many of these species are associated with old growth or the availability of large standing or downed wood for reproduction and foraging. The proposed regeneration harvest and commercial thinning (and associated fuels treatments) would reduce the amount of mature timber and woody debris in the units, as would a small amount of the proposed new road construction. Some of these species have modeled habitat within vegetation management units so that the proposed activities would reduce the amount of modeled habitat available in the short term, but any loss of habitat would be small at the project scale and tiny at the District and Forest scales. Because of forest succession in the remainder of the project area, the amount of modeled habitat available to all of these species would increase in the long term.

Roads proposed for decommissioning or storage usually have some amount of vegetation (sometimes including young trees) growing in/on the prism, but because the subject roads are only a few decades old, no old growth or mature vegetation would be disturbed by excavation or manipulation of the cut or fill slopes or roadbed. Because the roads affected by proposed activities in this project were constructed for timber harvest, they are mostly not directly adjacent to old growth habitat; likely only a few large snags or downed boles are directly adjacent to the roads or have fallen on the road prism. It is possible that a few live or dead trees currently atop or directly adjacent to the subject roads would have to be felled or moved to safely conduct the proposed activities, but existing downed coarse wood or snag/coarse wood recruitment should be little affected by road prism manipulation because these pieces would be left in situ or moved only as far as needed for safe equipment operation.

Overall, project activities may impact individuals of the subject species but are not likely to lead to the listing of any of the subject species under the Endangered Species Act. In the long-term, road segments decommissioned or stored should develop vegetation more suitable to these species than currently exists, and so the project should have a beneficial impact.

Table 4. Aquatic Sensitive Species Considered and Effects Determinations

Species	Status*	Considered in Detail	Effects Determination**	Rationale
Westslope cutthroat trout <i>Oncorhynchus clarki lewisi</i>	S	Yes	MI	Ubiquitous in project area (Isabella Wildlife Works (IWW) 1998).
Yellowstone cutthroat trout (<i>Oncorhynchus clarki bouvieri</i>)	S	No	NI	Present in Idaho, but not native to Clearwater River subbasin.
Redband trout <i>Oncorhynchus mykiss gairdneri</i>	S	Yes	MI	As resident rainbow trout of steelhead origin, native and present in Middle and Hemlock creeks, especially in lower reaches (CBS 1992, IWW 1998).
Snake River spring/summer chinook salmon <i>Oncorhynchus tshawytscha</i>	S	No	NI	Native to Weitas Creek watershed, but native stock extirpated from Clearwater River by Lewiston Dam and re-introduced non-native stock blocked by Dworshak Dam for 40+ years
Pacific lamprey <i>Lampetra tridentata</i>	S	No	NI	Likely native to Weitas Creek watershed, but native stock possibly extirpated from Clearwater River by Lewiston Dam and re-introduced non-native stock blocked by Dworshak Dam for 40+ years
Western pearlshell mussel <i>Margaritifera falcate</i>	S	Yes	MI	May occur in suitable habitats.

Table 5. Terrestrial and Avian Sensitive Species Considered and Effects Determinations

Species	General Habitat	Status*	Considered in Detail?	Effects Determination**	Rationale
Birds					
Bald eagle <i>Haliaeetus leucocephalus</i>	Uses larger fish-bearing streams, rivers, and lakes for foraging, nests nearby.	S	No	NI	No preferred habitats in project area, no documented sightings and, no known or suspected nest sites. Some chance for foraging in Weitas Creek (4 mi NE of project area), but because no harvest would occur in RHCAs, individuals of this species would not be affected.
American peregrine falcon <i>(Falco peregrinus anatum)</i>	This species uses many types of habitat, although not typically in heavy timber, but typically nests on cliffs or other rock faces.	S	No	NI	Not known to occur on Clearwater N.F. (USFS 2011). Little to no suitable nesting habitat exists in the project area.
Common loon <i>(Gavia immer)</i>	Loons nest and feed in lakes.	S	No	NI	Not known to occur on Clearwater N.F. (USFS 2011). Possible habitat in Dworshak Reservoir outside of the project area.
Mountain quail <i>(Oreortyx pictus)</i>	Habitat is typically warm/dry shrub.	S	No	NI	Not known to occur on Clearwater N.F. (USFS 2011) and no habitat likely present in project area.
Black swift <i>(Cypseloides niger)</i>	Neotropical migratory bird which nests in moist cliff environments, typically near or behind waterfalls or in shallow caves.	S	No	NI	Not known to occur on Clearwater N.F. (USFS 2011) and no habitat likely present in project area.
Black-backed woodpecker <i>Picoides arcticus</i>	Abundant in recently burned landscapes or other areas of epidemic bark beetle infestation, uncommon but widespread elsewhere.	S	Yes	MI	May occur in suitable habitats.
White-headed woodpecker <i>(Picoides albolarvatus)</i>	Open canopy mature to old growth ponderosa pine forests.	S	No	NI	Not known to occur on Clearwater N.F. (USFS 2011) and no habitat likely present in project area.

Species	General Habitat	Status*	Considered in Detail?	Effects Determination**	Rationale
Flammulated owl <i>Otus flammeolus</i>	Mature or old growth ponderosa pine and Douglas-fir with open understory, favors south aspects below 4,500 feet in elevation.	S	Yes	MI	May occur in suitable habitats.
Harlequin duck <i>Histrionicus histrionicus</i>	Forested mountain streams with gradient less than three percent, shrub cover greater than 50 percent, and minimal human disturbance.	S	No	NI	Middle Creek in the project area is smaller than streams typical used as nesting and rearing habitat on the CNF. No documented sightings and probably no impact on marginally suitable habitat.
Pygmy nuthatch <i>Sitta pygmaea</i>	Mid- to late-seral ponderosa pine.	S	Yes	MI	Modeled suitable habitat, but amount is likely large overestimate.
Mammals					
Gray wolf <i>Canis lupus</i>	Present mostly in forest areas in Idaho, but adapted to many habitat types.	S	Yes	MI	Project area includes range of one or more packs, but habitat would not be negatively altered.
Fisher <i>Martes pennanti</i>	Diverse, moist, mature forests at low to moderate elevations, with high canopy cover, often along riparian areas, and abundant large diameter woody debris.	S	Yes	MI	May occur in suitable habitats.
Bighorn sheep <i>Ovis canadensis</i>	Found in a variety of open habitats, but not typically in heavy timber	S	No	NI	Not known to occur on Clearwater N.F. (USFS 2011)
Northern bog lemming <i>Synaptomys borealis</i>	These rodents typically occur in sphagnum bogs or fens.	S	No	NI	Not known to occur on Clearwater N.F. (USFS 2011). No known habitat present in project area.

Species	General Habitat	Status*	Considered in Detail?	Effects Determination**	Rationale
Fringed myotis <i>Myotis thysanodes</i>	Open areas (grassland and shrublands) interspersed with mature forest habitats (pinyon-juniper, ponderosa pine, mixed oak and pine, Douglas-fir) in a mosaic pattern with ample edges and abundant snags. Large snags, hollow trees, buildings, mines, rock crevices, and bridges used for roosting.	S	Yes	MI	May occur in suitable habitats.
Townsend's big-eared bat <i>Plecotus townsendii</i>	Dry coniferous forest where cave or cave-like structures for hibernacula and maternity roost sites exist. Often found in abandoned mines and buildings.	S	No	NI	No suitable habitats, no documented sightings. No known potential roost sites.
Amphibians					
Coeur d'Alene salamander <i>Plethodon idahoensis</i>	At spring seeps, waterfall spray zones, and banks of small cascading creeks associated with disjunct coastal biota, below 5,000 feet elevation.	S	Yes	MI/BI	May occur in suitable habitats.
Western toad <i>Bufo boreas</i>	A diversity of aquatic and moist terrestrial habitats, prefers ponds, pools, and slow-moving streams.	S	Yes	MI/BI	May occur in suitable habitats.
Reptiles					
Ringneck snake <i>Diadophis punctatus</i>	Dry forest and shrub habitats; open hillsides with rocks or other debris.	S	Yes	MI	Modeled suitable habitat, but amount is likely large overestimate.

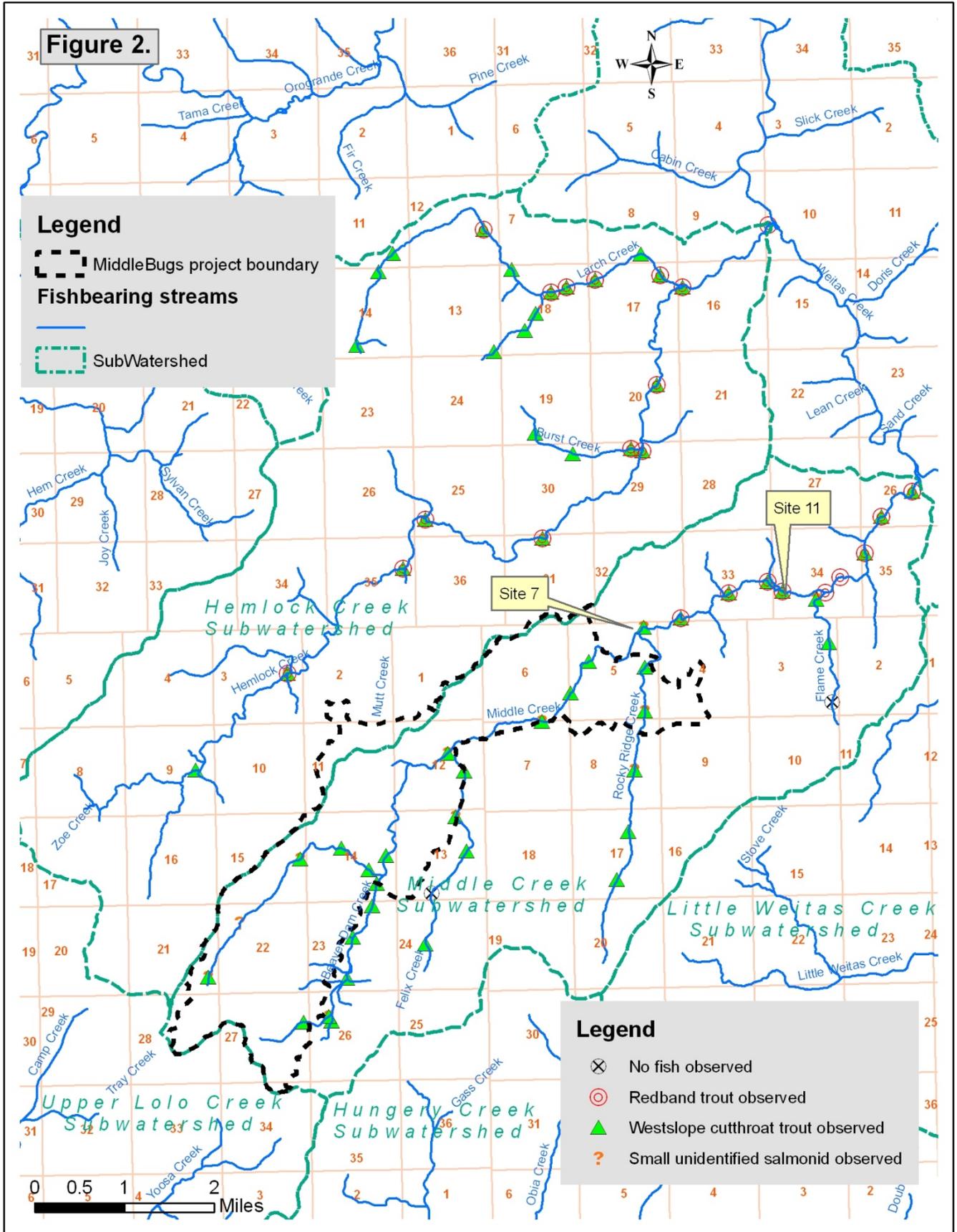
Table 6. Sensitive Plant Species Considered and Effects Determinations

Species	Status*	Known Occurrence	Habitat Present	Effects Determination**
Maidenhair spleenwort <i>Asplenium trichomanes</i>	S	No	No	NI
Deerfern <i>Blechnum spicant</i>	S	No	Yes	MI
Crenulate moonwort <i>Botrychium crenulatum</i>	S	No	Yes	MI
Lance-leaf moonwort <i>Botrychium lanceolatum</i> var. <i>lanceolatum</i>	S	No	Yes	MI
Linear-leaf moonworts <i>Botrychium lineare</i>	S	No	Yes	MI
Mingan moonwort <i>Botrychium minganense</i>	S	No	Yes	MI
Mountain moonwort <i>Botrychium montanum</i>	S	No	Yes	MI
Least moonwort <i>Botrychium simplex</i>	S	No	Yes	MI
Leafless bug-on-a-stick <i>Buxbaumia aphylla</i>	S	No	No	NI
Green bug-on-a-stick <i>Buxbaumia viridis</i>	S	Yes	Yes	MI
Broadfruit mariposa <i>Calochortus nitidus</i>	S	No	No	NI
Constance's bittercress <i>Cardamine constancei</i>	S	Yes	Yes	NI
Bristle stalked sedge <i>Carex leptalea</i>	S	No	No	NI
Anderegg's cladonia <i>Cladonia andereggii</i>	S	No	No	NI
Pacific dogwood <i>Cornus nuttallii</i>	S	No	No	NI
Clustered lady's-slipper <i>Cypripedium fasciculatum</i>	S	Yes	Yes	MI
Dasynotus <i>Dasynotus daubenmirei</i>	S	No	No	NI
Sticky goldenweed <i>Haplopappus hirtus</i> var. <i>sonchifolius</i>	S	No	No	NI
Light moss <i>Hookeria lucens</i>	S	No	Yes	NI
Salmon-flowered desert-parsley <i>Lomatium salmoniflorum</i>	S	No	No	NI
Chickweed monkeyflower <i>Mimulus alsinoides</i>	S	No	Yes	NI
Spacious monkeyflower <i>Mimulus ampliatus</i>	S	No	No	NI

Species	Status*	Known Occurrence	Habitat Present	Effects Determination**
Gold-back fern <i>Pentagramma triangularis</i> var. <i>triangularis</i>	S	No	No	NI
Sweet coltsfoot <i>Petasites frigidus</i> var. <i>palmatus</i>	S	No	Yes	NI
Licorice fern <i>Polypodium glycyrrhiza</i>	S	No	Yes	NI
Naked rhizomnium <i>Rhizomnium nudum</i>	S	No	Yes	MI
Evergreen kittentail <i>Synthyris platycarpa</i>	S	No	Yes	MI/BI
Sierra wood-fern <i>Thelyptris nevadensis</i>	S	No	Yes	NI
Short style toefieldia <i>Triantha occidentalis</i> ssp. <i>Brevistyla</i>	S	No	No	NI
Douglas clover <i>Trifolium douglasii</i>	S	No	No	NI
Idaho barren strawberry <i>Waldsteinia idahoensis</i>	S	No	Yes	NI

***Status Abbreviations:** S = Region 1 Sensitive and present in Idaho

****Sensitive Species Determination:** NI = No Impact; BI = Beneficial Impact; MI = May impact individuals or habitat but not likely to cause trend toward Federal listing or reduce viability for the population or species; LI = Likely to impact individuals or habitat with the consequence that the action may contribute towards federal listing or result in reduced viability for the population or species.



Opportunistic carnivores: Gray wolf. Wolves use a variety of habitats and are known to occur in the analysis area (which is likely within the territory of the Hemlock Ridge, Kelly Creek, Eldorado Creek, and Bimerick Meadow packs (Holyan et al. 2011)).

Diverse habitats, from open meadows to heavily forested stands. Wolves occupy broad territories and travel extensively in search of prey, generally medium to large ungulates, especially elk in Idaho. They are adaptable to human and land management activity in general, but sensitive to disturbance at denning and rendezvous sites.

Considering that the project area is within the known foraging area of at least one wolf pack, it is likely that individuals of the pack are often or sometimes within the project area during implementation of the project. As there would be an increase in human activity in the project area for the duration of the project implementation in comparison to recent years, it is therefore not unlikely that one or more wolves would be present during project implementation and would be disturbed by the presence and noise of heavy equipment and humans. If disturbance of individual wolves occurs, these animals are alert and fleet and would be unlikely to suffer significant harm from any project-caused disturbance.

The timber harvest/vegetation management proposed would affect little mature vegetation or cause little woody debris disturbance relative to the project area, District, or Forest, so little to no wolf or wolverine denning or foraging habitat would be adversely affected. Cervid habitat is predicted to be improved or static with the proposed vegetation and road-related activities, so no adverse effects on the wolf prey base should occur. Road decommissioning/storage should reduce human disturbance and so should be of benefit to individual wolves.

Overall, project activities may impact individual wolves or their habitat, but would not likely to lead to the listing of the species under the Endangered Species Act.

Sensitive plants:

Potentially affected species. See Table 6 for a summary and Hays (2012) for a more detailed treatment. None of the sensitive plants are known to occur in the project area. Twelve species have suitable habitat in the project area – deerfern, lance-leaf moonwort, linear-leaf moonwort, Míngan moonwort, mountain moonwort, northern moonwort, least moonwort, green bug-on-a-stick, clustered lady’s-slipper, light moss, naked rhizomnium, and evergreen kittentail.

The remaining species on the Clearwater NF sensitive species list do not occur in the project area, nor is suitable habitat present.

Light moss would not be affected by proposed project activities because individuals of this species would not be expected to occur in areas subject to management or modification. The effects determination for light moss is NI (no impact).

Species that could be negatively impacted because they could occur in vegetation treatment units or new road constructed to access the treatment units, or on or in immediately adjacent areas that could be affected by road reconstruction, decommissioning, or storage: deerfern, all of the moonwort species, green bug-on-a-stick, clustered lady’s-slipper, and naked rhizomnium. While these species or their habitat may be negatively affected, modeled habitats for the species are extensive and any impacts associated with this project would not affect overall species viability in the area. The effects determination for these species is MI (may impact, but not likely to

contribute to federal listing).

If any individual evergreen kittentails are present in the project area, they could be harmed by the proposed work. However, this species well documented to respond favorably to many forms of disturbance and often does well on road margins or new surfaces such as those created by even-aged management and road decommissioning. The effects determination for evergreen kittentail is mixed - MI/BI (may impact/beneficial impact).

Overall, effects to the sensitive species in the project area are expected to be minimal and not threaten populations or lead to listings under the Endangered Species Act.

Determination of effects on rare plant species from proposed project activities are summarized in Table 6, above. This table includes all plant species on the Clearwater National Forest sensitive plants list.

VII. CUMULATIVE EFFECTS

The Endangered Species Act (ESA) defines cumulative effects (50 CFR 402.2) as the additive effects of state and private activities that are reasonably certain to occur in the watershed where the Federal Action occurs. Under the ESA, an analysis of cumulative effects on ESA-listed species and their critical habitat is relevant only in determining whether the continued existence of a species would be jeopardized or whether critical habitat would be adversely modified or destroyed. No ESA-listed species or critical habitat would be affected by the proposed action to the point that the continued existence of the species would be jeopardized or critical habitat would be modified, so a cumulative effects analysis under the ESA is not relevant to these species.

VIII. DETERMINATION AND RATIONALE

A. Endangered Species Act Listed and Candidate Species

Implementation of the proposed action would be **not likely to adversely affect** bull trout. This determination is based on the conclusion (discussed in Section VI) that individuals of the species would be unlikely to be harmed or harassed by the proposed activities (chiefly because bull trout would be unlikely to occur in proximity to project activities and because transmission of contaminants or fine sediment in any large quantities should not occur) and that habitat for bull trout will be maintained with essentially no biologically significant impacts. Prey base and reproductive success will not be impacted by the proposed project. Although individual bull trout may travel upstream to be within proximity of the project area, designated Critical Habitat for bull trout in Weitas Creek would remain about 5 miles downstream of the project area. So, as described above, no measurable effects of the proposed project should be transmitted the five miles to have adverse impacts on the Primary Constituent Elements and so the proposed project would have **no effect** on bull trout critical habitat.

Implementation of the proposed action would be **not likely to adversely affect** Canada lynx. This determination is based on project adherence to the NRLMD guidelines and lack of likely effect on transient individuals. No portion of the Clearwater National Forest has been designated

critical habitat for Canada lynx and so the proposed action would have **no effect** on this component of lynx conservation.

Implementation of the proposed action will have **no effect** on yellow-billed cuckoo and would **not be likely to jeopardize** the continued existence of the wolverine. These determinations are based on the conclusions (discussed in Section VI) that individuals of the species and their respective habitats, prey base, or reproductive success would not be impacted by the proposed project.

Implementation of the proposed action would have **no effect** on whitebark pine. This determination is based on mitigation measures to avoid impacts to individuals of this species in the project area.

B. Region 1 Sensitive Species

See Tables 4, 5, and 6 and Section VI. Briefly, project activities may impact individuals of the some sensitive species but are not likely to lead to the listing of any species under the Endangered Species Act. In the long-term, the project should have a beneficial impact on several of the subject species.

IX. LITERATURE CITED

Bollenbacher, B., R. Bush, and R. Lundberg. 2009. Estimates of snag densities for Northern Idaho Forests in the Northern Region. USDA Forest Service. Missoula, Montana. 47 pp.

Cassirer, E.F., C.R. Groves, and D.L. Genter. 1994. Coeur d'Alene salamander conservation assessment. U.S.D.A. Forest Service, Region 1. August 1994.

Clearwater BioStudies (CBS). 1992. Habitat conditions and salmonid abundance in selected streams within the Hemlock Creek drainage, Pierce Ranger District, Summer 1991. Prepared for the Clearwater National Forest, Orofino, ID. March 1992.

Clearwater National Forest. 1999. North Fork big game habitat restoration on a watershed scale (BHROWS assessment). North Fork Ranger District, Orofino, Idaho. August 16, 1999.

Clearwater National Forest. Annual Monitoring Report – 2005-6. Road decommissioning section.
http://www.fs.fed.us/r1/clearwater/ResourceProg/me_09/09MonEvalReportFinal.pdf

Clearwater National Forest. Annual Monitoring Report – 2009. Fisheries section.
http://www.fs.fed.us/r1/clearwater/ResourceProg/me_09/09MonEvalReportFinal.pdf

Colket, B., S. Cooke, G. Crymes, and M. Mancuso. 2006. Element occurrence review and update for five rare plant species. Idaho Conservation Data Center, Idaho Department of Fish and Game, Boise. 45 pp. plus appendices.

-
- Copeland, J. P. and H. Hudak. 1995. *The wolverine (Gulo gulo) in Idaho*. The Idaho State Conservation Effort, Idaho Department of Fish and Game, Idaho Department of Parks and Recreation, Bureau of Land Management, Regions 1 and 4 of U.S. Forest Service and U.S. Fish and Wildlife Service. 21 pp.
- Digital Atlas of Idaho. 2012. Located at: <http://imnh.isu.edu/digitalatlas/index.htm>. Accessed March, 2012.
- Elliot, W.J., Foltz, Randy B, Hall, David E. 2000. WEPP: Road Ver 2009.09.17 Moscow, Id. US Dept of Agriculture, Forest Service, Rocky Mountain Research Station. Online at <http://forest.moscowfsl.wsu.edu/fswepp>
- Essig, D. A., C. A. Mebane, and T. W. Hillman. 2003. Update of bull trout temperature requirements. Idaho Department of Environmental Quality, Boise, ID and BioAnalysts, Inc., Eagle, ID, Boise. 48 pp.
- Foltz, M. 2012. Middle Bugs soils report. Nez Perce/Clearwater National Forests. March 2012
- Graham, R. T, A. E. Harvey, M. F. Jurgensen, T. B. Jain, J. R. Tonn, D. S. Page-Dumroese. 1994. Managing Coarse Woody Debris in Forests of the Rocky Mountains. USDA Forest Service. Intermountain Research Station. Research Paper INT-RP-477.
- Idaho Department of Fish and Game. 2011. Idaho Fish and Wildlife Information System (aka Idaho Conservation Data Center and Natural Heritage Database). GIS dataset on the Clearwater National Forest, received in 2011 and stored at:
T:\FS\Reference\GIS\USA_ID\Data\Restricted\NaturalHeritage_Aug2011
- Isabella Wildlife Works (IWW). 1998. Aquatic survey report, Middle Creek drainage, Pierce Ranger District. Prepared for the Clearwater National Forest, Orofino, ID. February 1998.
- Hays, M. Middle Bugs rare plants report. Nez Perce/Clearwater National Forests. June 2012.
- Hill, S. Middle Bugs biological assessment for Canada lynx and North American wolverine. Prepared by Above and Beyond Ecosystems Enterprise Unit for North Fork Ranger District, Nez Perce-Clearwater National Forests. March 25, 2013.
- Holyan, J., K. Holder, J. Cronic, and C. Mack. 2011. Wolf conservation and management in Idaho; progress report 2010. Nez Perce Tribe Wolf Recovery Project, P.O. Box 365, Lapwai, Idaho. 90pp.
- Kenney, D. 2012. Middle Bugs wildlife report. Nez Perce/Clearwater National Forests. June 2012.
- Muck, J. 2010. Biological effects of sediment on bull trout and their habitat—Guidance for evaluating effects. U.S. Fish and Wildlife Service, Washington Fish and Wildlife Office, Lacey, WA.

-
- Reynolds, T.D. and C.I. Hinckley. 2005. A survey for yellow-billed cuckoo in recorded historic and other likely locations in Idaho. TREC final report to the Idaho Department of Fish and Game. August, 2005. Rigby, Idaho.
- Rieman, B.E. and J.D. McIntyre. 1993. Demographic and habitat requirements for conservation of bull trout. Gen. Tech. Rep. INT-302. Ogden, UT: U.S. Dep. of Agriculture, Forest Service, Intermountain Research Station. 38 pp.
- Rone, Gina. 2011. Summary of Soil Monitoring on the IPNF 1980s to 2010.
- Rowland, M. M., Wisdom, M. J., Johnson, D. H., Wales, B. C., Copeland, J. C., and Edelman, F. B. 2003. Evaluation of Landscape Models for Wolverines in the Interior Northwest, United States of America. *Journal of Mammology* 84(1):92-105.
- Ruediger, B., et al. 2000. Canada lynx conservation assessment and strategy, 2nd edition. USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management, and USDI National Park Service. Forest Service Publication #R1-00-53. Missoula, Montana. 142 pp.
- Snyder, A. 2012. Middle Bugs watershed report. Nez Perce/Clearwater National Forests. March 2012
- USDA Forest Service. Northern Region. 1999. Forest Service Manual, R-1 Supplement No. 2500-99-1. Chapter 2550-Soil Management.
- USDA Forest Service, 1999-2009. Clearwater National Forest Annual Monitoring and Evaluation Reports. Clearwater National Forest. Orofino, Idaho.
- USDA Forest Service. 2007. Northern Rockies Lynx Management Direction Record of Decision. National Forests in Montana, and parts of Idaho, Wyoming, and Utah. March 2007
- USDA Forest Service. 2011. Region 1 Sensitive wildlife species list. Missoula, MT.
- USDA Forest Service and USDI USFWS. 2006. Canada lynx conservation agreement. October 2006.
- United States Fish and Wildlife Service (USFWS). 2002. Bull Trout (*Salvelinus confluentus*) Draft Recovery Plan, Chapter 16, Clearwater. Portland, Oregon.



United States Department of the Interior
U.S. Fish and Wildlife Service



Idaho Fish And Wildlife Office

1387 S. Vinnell Way, Room 368

Boise, Idaho 83709

Telephone (208) 378-5243

<http://www.fws.gov/idaho>

Rick Brazell
Forest Supervisor
Nez Perce-Clearwater National Forest
12730 Highway 12
Orofino, Idaho 83544

MAY 24 2013

Subject: Middle Bugs—Clearwater and Idaho Counties, Idaho—Concurrence
In Reply Refer To: 01EIFW00-2013-I-0240

Dear Mr. Brazell:

This letter transmits the U.S. Fish and Wildlife Service's (Service) concurrence on the effects to species listed under the Endangered Species Act (Act) of 1973 (amended) from the proposed Middle Bugs project, Clearwater and Idaho Counties, Idaho. In a letter dated July 24, 2012, and received by the Service on July 27, the Nez Perce-Clearwater National Forest (Forest) requested concurrence with the determination, documented in your Biological Assessment (Assessment), that the proposed action is not likely to adversely affect the Canada lynx (*Lynx canadensis*) and the bull trout (*Salvelinus confluentus*). You determined that the project will have no effect on bull trout critical habitat, MacFarlane's four-o'clock (*Mirabilis macfarlanei*), Spalding's catchfly (*Silene spaldingii*), and the candidate species yellow-billed cuckoo (*Coccyzus americanus*) and whitebark pine (*Pinus albicaulis*). You also determined that the project will not jeopardize the continued existence of the North American wolverine (*Gulo gulo luscus*). We acknowledge these no effect and no jeopardy determinations.

On August 9, 2012, the Forest determined that additional information was needed to analyze the project's effects on lynx. We suspended consultation at that point pending the receipt of a revised lynx analysis. On April 9, 2013 we received, via email, a revised Assessment containing the lynx analysis and clarification on a number of other aspects of the project.

The Forest proposes regeneration harvest, commercial thinning, pre-commercial thinning, road construction and reconstruction, road decommissioning and storage, and replacement of aging/failing culverts on roads that will remain open to traffic. The project area encompasses 5,540 acres in the Middle Creek drainage between Lean-to-Ridge and Beaver Dam Creek in the Weitas Creek watershed (tributary to the North Fork Clearwater River). Implementation will begin in 2014.

Project activities are summarized in Tables 1 and 2 and described below.

Regeneration Harvest: The project proposes 642 acres of regeneration harvest. This harvest method removes most of the existing mature stand, producing a site with high sun exposure that provides optimal growing conditions for a new stand. There will be no harvest in INFISH riparian habitat conservation areas (RHCAs). For restocking the units, the Forest will plant western larch (*Larix occidentalis*) and western white pine (*Pinus monticola*). Some natural regeneration of lodgepole pine (*Pinus contorta*), Douglas-fir (*Pseudotsuga menziesii*), grand fir (*Abies grandis*), and mountain hemlock (*Tsuga mertensiana*) is also expected.

Table 1. Proposed timber harvest activities (modified from Assessment) not including pre-commercial thinning which is displayed in Table 2.

Unit	Treatment	Acres	Logging System Acres	
			Tractor	Skyline
A	Commercial Thin	15	14	1
B	Commercial Thin	48	48	0
C	Regeneration	416	256	160
D	Regeneration	35	18	17
E	Regeneration	191	128	63
Total		705 (63 Commercial Thin) 642 Regeneration)	464	241

Table 2. Other proposed project activities (from Assessment).

Activity	Proposed Action	Comments
Regeneration Site Preparation	Prescribed burn	
Reforestation	642	Plant a mix of seral species.
System Road Construction (miles)	0	
System Road Reconstruction (miles)	1	Spot surfacing and shaping on the 555 road, surfacing on the 103
System Road Reconditioning (miles)	23	Road maint.; blading (18 miles), brushing, ditch clearing and drainage establishment
Temporary Road (miles)	3.9	Obliterated within three years following use
Precommercial Thin (acres)	114	None in mapped lynx habitat
Road Intermittent Stored Service	11.3	All are existing system roads
Road Decommission	3.01	All are existing system roads
Watershed Improvements	Culvert replacement on 555 and 103 roads--42 culverts; prioritized by urgency to replace due to amount of culvert deterioration.	
Soil Rehab Acres	31	Skidtrail Decompaction- approx. percent of tractor ground and 67 percent of skid trails

Commercial Thinning: The project proposes 63 acres of commercial thinning. This intermediate harvest method reduces tree density to improve growth and enhance forest health by retaining as many early seral tree species as possible. All commercial thinning units will be thinned to a 16 to 18-foot spacing (170 to 130 trees per acre). The intent is to leave 100 to 140 ft² of basal area on each acre. This prescription results in the fairly uniform retention of trees across the unit. Some limbs and tops will be retained in the unit for nutrient retention, but not to the level that will pose a fire hazard. There will be no harvest in RHCAs.

Pre-commercial Thinning: The project proposes 114 acres of pre-commercial thinning. With this treatment, trees less than eight inches diameter at breast height will be thinned retaining western white pine and western larch, where possible. Spacing of retained trees will range from nine feet by nine feet to 12 feet by 12 feet, depending upon stand objectives. Trees will be selected for retention based upon phenotypic superiority, species, and apparent vigor rather than a strict adherence to spacing. Pre-commercial thinning units are located outside of the harvest units shown in Table 1 above. Additionally, there will be no pre-commercial thinning in RHCAs or in mapped lynx habitat within Lynx Analysis Units (LAUs).

Burning following Regeneration Harvest: To prepare sites for regeneration after harvest the units will be broadcast burned, underburned, jackpot burned, or pile burned using either mechanical or hand piling.

Road Decommissioning: The project proposes 3.01 miles of road decommissioning. Roads identified as no longer needed for management will be decommissioned either through obliteration or abandonment to (1) decrease soil erosion and instream sediment deposition; (2) help restore channel structure and function; and (3) restore hillslope hydrologic processes to a more natural condition. In decommissioning, the road segment will be recontoured to or near its former gradient and engineered drainage features (e.g., culverts) will be removed.

Roads proposed for abandonment are typically ridge top roads where road surveys show minimal risk of soil erosion or mass failure. Abandonment will leave the road in place and allow vegetation to reclaim the road surface.

Intermittent Storage: The project proposes 11.3 miles for intermittent storage. Existing roads not needed for use in the next 20 years or longer will be put into intermittent stored service. Practices used are intended to assure that the road is placed into a self-maintaining condition that removes all high risks of failure. Although these roads are to be retained on the transportation system, they will be closed to motorized travel. Road decommissioning and placing roads into intermittent storage are proposed to correct existing resource problems and not to mitigate for other elements of this project. As mentioned above, in decommissioning, the road segment will be recontoured to or near its former gradient and engineered drainage features will be removed, while outsloping but not full recontouring will typically be implemented in intermittent storage. The road prisms will be hydrologically inactivated with both activities.

Other Road Related Activities: The project 1.0 mile of road reconstruction, 23 miles of road reconditioning, and 3.9 miles of temporary road construction. Refer to Table 2 above and the Assessment for more details on these activities.

Watershed Improvements: Of the 42 culverts proposed for replacement on the retained portions of the 103 road or the 555 road, two are on small fish-bearing perennial streams; six are on small non-fishbearing streams; 10 are on streams that are too small to be displayed on USGS quads or the Forest GIS coverage; 17 are for water features termed perennial seeps, seeps, or trickles by the project hydrologist; and the remaining seven are normally dry ditch relief culverts.

Conservation measures have been incorporated into the project to reduce resource impacts. These measures include prohibiting timber harvest in RHCAs; storing containers with more than 120 gallons of petroleum products 300 feet or more from streams or open water; prohibiting road construction in areas of high mass wasting potential; decommissioning temporary roads within three years following last use; and for road decommissioning using sediment traps, revegetation, and mulching to control erosion.

Refer to the Assessment for a complete project description including all conservation measures and proposed monitoring.

Canada Lynx

Service concurrence that the project is not likely to adversely affect the Canada lynx is based on the following rationales.

1. The project will comply with all applicable Northern Rockies Lynx Management Direction (NRLMD) objectives, standards, and guidelines¹.
2. The project will not significantly affect lynx foraging and denning habitat nor will it affect connectivity between suitable habitats. Through regeneration harvest and commercial thinning, the project will impact 614 acres of suitable lynx habitat (denning and foraging) in Lynx Analysis Unit (LAU) 38. This represents a 0.3 percent decrease in modeled denning habitat and a 2.6 percent decrease in modeled foraging habitat at the LAU scale. There will be no precommercial thinning in lynx habitat. Road construction will impact 0.2 percent of the modeled lynx habitat in the project area (and a much smaller percentage at the LAU scale).
3. The project will result in no change to existing groomed snowmobile routes. There will be no expansion of snow compacting activities.
4. There have been three lynx observation documented within 10 miles of the project area, but none within the project area or LAU 37 (only 220 acres of LAU 37 are within the project area of which eight acres is modeled lynx habitat) and LAU 38.

¹ Field reviews completed in 2012 found that multi-story snowshoe hare habitat is not present in the project area, so the VEG S6 standard in the NRLMD is not applicable for the project.

No lynx dens or breeding population of lynx have been documented in the project area.

5. Transient individual lynx may potentially be disturbed by project activities. However, this risk is considered discountable because there is sufficient available habitat in the vicinity of the project to enable lynx to avoid the project area. In addition, lynx are known to be generally tolerant of human activity (Ruedigar et al. 2000, p. 16)².

Bull Trout

Service concurrence that the project is not likely to adversely affect the bull trout is based on the following rationales. There is no critical habitat in the project area so none will be affected.

1. The project area is located within the Middle Creek watershed and includes a small amount of the adjacent Hemlock Creek watershed, tributaries to Weitas Creek. While bull trout have been documented in Weitas Creek and tributaries such as Windy, Johnagan, Johnny and Liz Creeks, they have not been found in Middle or Hemlock Creeks. Because of connectivity with Weitas Creek, low numbers of adult and subadult bull may occasionally move into Middle or Hemlock Creeks; however, because of their predicted low numbers and sporadic occurrence, any effects from project implementation are expected to discountable.
2. Conservation measures incorporated into the project are anticipated to reduce any effects to potentially occupied bull trout habitat (e.g., Middle Creek) to an insignificant level. These measures include prohibiting timber harvest in RHCAs; storing containers with more than 120 gallons of petroleum products 300 feet or more from streams or open water; prohibiting road construction in areas of high mass wasting potential; decommissioning temporary roads within three years following last use; and for road decommissioning, using sediment traps, revegetation, and mulching to control erosion.
3. The closest distance from instream activity at any culvert replacement site to occupied bull trout habitat in Weitas Creek is 5.8 miles. Given this distance, the probability of downstream effects to bull trout from any instream work is discountable.

Clean Water Act Requirement:

This letter is also intended to address section 7 consultation requirements for the issuance of any project-related permits required under section 404 of the Clean Water Act. Use of this letter to document that the Army Corps of Engineers (Corps) has fulfilled its responsibilities under section 7 of the Act is contingent upon the following conditions:

² Ruediger, B., J. Claar, S. Gniadek, B. Holt, L. Lewis, S. Mighton, B. Naney, G. Patton, T. Rinaldi, J. Trick, A. Vandehey, F. Wahl, N. Warren, D. Wenger, and A. Williamson. 2000. Canada lynx conservation assessment and strategy. USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management, and USDI National Park Service. Missoula, MT.

1. The action considered by the Corps in their 404 permitting process must be consistent with the proposed project as described in the Assessment such that no detectable difference in the effects of the action on listed species will occur.
2. Any terms applied to the 404 permit must also be consistent with conservation measures as described in the Assessment and addressed in this letter.

This concludes informal consultation on the proposed action under section 7 of the Act. If the proposal addressed in this letter is modified, environmental conditions change, or additional information becomes available regarding potential effects on listed species, you should verify that your conclusions are still valid.

Thank you for your continued interest in the conservation of threatened and endangered species. Please contact Clay Fletcher at (208) 378-5256 if you have questions concerning this letter.

Sincerely,



for Brian T. Kelly
State Supervisor

cc: NMFS, Moscow (Ries)
IDFG, Lewiston (Hennekey)
COE, Boise (Phillips)
USFS, Grangeville (Clark)
NPT, Lapwai (Lopez)
FWS, Spokane (Holt)

Appendix B -Response to Comments

The comment period for the Middle Bugs EA ended on October 4, 2012. Five responses were received. The Decision Maker considered comments about the EA when choosing the selected alternative. The selected alternative responds to the issues and concerns brought forward by the public and other agencies.

This document summarizes and paraphrases all comments received for the Middle Bugs EA. The original comment letters are included in the project file.

List of Those Who Commented on the EA

Richard Artley, 9/09/2012

Dennis Baird, 08/30/2012

Zoanne Anderson, Nez Perce Tribe Watershed Division, 09/21/2012

Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012

Jonathan Oppenheimer, Idaho Conservation League, 10/01/2012

Comments Received and Forest Service Responses

Alternatives

- 1. There is not an adequate range of alternatives in the EA. The two action alternatives are almost identical. Viable options, which would meet part of the purpose and need, are excluded (pages 24 - 26). Thus, the EA seems to be justifying a pre-determined decision, contrary to NEPA. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012*
- 2. We question why the EA failed to consider a broader range of alternatives. NEPA regulations (40 C.F.R. 1502.14) require that agencies “rigorously explore and objectively evaluate all reasonable alternatives ...”. In this instance the slight discrepancy between broadcast burning vs. pile burning hardly achieves this hard look. While we recognize the challenges associated with economical timber sales in this landscape, we still feel that it is appropriate to consider a broader range of alternatives and to base your decision on a more complete assessment of the tradeoffs between varying approaches. Jonathan Oppenheimer, Idaho Conservation League, 10/01/2012*
- 3. The two action alternatives that were analyzed in detail (Alternatives B and C) are not significantly different. The amount of Regeneration Harvest, Commercial thin, Harvest Unit configuration, and Logging systems proposed, are the same for both action alternatives. It appears the Forest has neglected their duty to take a “hard look” at a full range of alternatives although plenty of concerns were brought to their attention (EA pg. 6-7). The Forest developed Alternatives for these concerns, but dismissed them without full consideration (EA pgs. 24 – 26). The Forest made minor and insignificant*

modifications to their proposed action. It appears this is a pre-determined decision rather than an environmental assessment. Nez Perce Tribe Watershed Division, 09/21/2012

4. *Similarly, the purpose and need can't be so narrowly defined so that no other options are viable. Other options such as not reconstructing the primitive 555 routes were not considered. Options like no new road construction were dropped. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012*

Response: The proposed action presented during the scoping process was developed by the Forest Service to meet the purpose and need for action and designed to minimize effects on resources. The public scoping process was used to identify important management and resource issues (cause-effect relationships) and any alternative ways of meeting the project purpose and need. The EA, pages 6 through 9, describes how public comments and concerns were used to modify the proposed alternative and develop new alternatives or design features. No specific number of alternatives is required or prescribed (36 CFR 220.7(b)(2)).

In addition, the Agency's Deciding Official has the discretion to determine the project purpose and need. NEPA regulations state the NEPA document shall, "briefly specify the underlying purpose and need to which the agency is responding..." (40 CFR 1502.13)

In response to public comment and the issues analyzed in detail, eight alternatives were originally considered, providing a reasonable range of alternatives [40 CFR 1502.14(a)]. Some issues were used to develop design criteria and/or mitigation measures while others were carried through the analysis. The Forest Service addressed all concerns and alternatives raised by the public.

NEPA does not require an agency to consider alternatives that are infeasible, ineffective, or inconsistent with the basic objectives for the management of the area. Project design eliminated issues and limited alternatives. Two Action and a No Action alternative were presented in detail. Five other alternatives were analyzed but not considered in detail (EA, pages 24-26). The EA provides detailed descriptions of and rationale for the elimination of alternatives from detailed study.

Road 555 is a ridgetop native surface and aggregate road that provides access for timber management, recreation and fire management in the Middle Bugs project area. It is open yearlong to all vehicles. Road 555 provides the best access to implement vegetative treatments in Unit E. The Middle Bugs project proposes to reconstruct one mile of Road 555; reconstruction activities would consist of surface gravelling and replacement of one culvert to reduce erosion potential. During scoping, the public did not express concern regarding the one mile of proposed road reconstruction on Road 555. The project roads analysis determined that this road is needed for future management. We developed Alternative E to address the request that no temporary or permanent roads be constructed. As discussed in the EA on page 25, this alternative would not meet the purpose and need, and dropped from further consideration.

5. *No consideration was given to the utilization of prescribed fire to achieve vegetation goals. Jonathan Oppenheimer, Idaho Conservation League, 10/01/2012*

Response: The Forest Service developed a proposal to meet the purpose and need for action and Forest Plan direction. Forest Plan direction for management area C8S is to manage these areas to maintain high quality wildlife and fishery objectives while producing timber from the productive Forest land (III-53). Protection goals for MA C8S are to:

- a) limit the size of wildfires;

- b) treat logging and thinning slash to prepare sites for reforestation, to break up continuous fuel beds, to remove barriers to big-game movement, and to improve forage; and
- c) use prescribed fires from planned and unplanned ignitions as needed to achieve Forest plan direction. (pp III-55 to III-56).

Using prescribed fire would not meet the purpose and need to provide goods and services and recover the economic value of dead and dying trees because it would burn merchantable timber rather than harvest it. Prescribed fire would not meet the purpose and need to improve species diversity. Prescribed fire in this lodgepole pine dominated area would result in a new stand of lodgepole pine due to the lack of a seed source for western white pine or western larch. Timber harvest allows us the opportunity to increase western white pine and western larch, which would increase species diversity and resilience as well as provide goods and services important to society. Lastly, during the scoping process, the public did not suggest prescribed fire as an option to achieve vegetation goals.

6. *Any consideration for decommissioning additional, unneeded roads was given short shrift. The rationale behind dismissal of Alternative H failed to even indicate whether additional roads were identified for decommissioning. Especially since the EA failed to provide a commitment for ANY watershed restoration, a rationale that additional road decommissioning wasn't economically feasible wouldn't even hold water. Instead, the dismissal of Alternative H was apparently predicated upon the notion that the project will meet Forest Plan standards for C8S. Having a single alternative meet Forest Plan standards is not sufficient rationale to dismiss any other alternative. Jonathan Oppenheimer, Idaho Conservation League, 10/01/2012*
7. *The EA notes that there are many roads in the system, two-thirds of the sub-watersheds have densities that exceed one mile per square mile of land. The action alternatives would result in little change. The range of alternatives must be responsive to a minimum roads analysis, and the post-project road system must be sustainable via funding mechanisms that have a high level of certainty. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012*

Response: The IDT completed a roads analysis for the project area that identified all known road-decommissioning opportunities. The analysis is based on the need for the road by a variety of disciplines including: timber, silviculture, fire, recreation, wildlife, water/aquatics, and private access. All roads not needed for future management were included in all action alternatives that were considered in detail. During the scoping process, a commentor requested that other additional roads be decommissioned to improve elk habitat effectiveness. The IDT reviewed these roads again and the Deciding Officer determined that two of these roads would be included in the action alternatives. The IDT determined that the other roads were necessary for future management and would not be decommissioned (EA, page 26).

Alternative H was dropped because decommissioning of all roads *deemed excess to management needs* was included in all action alternatives that were considered in detail. As described in the EA (pages 41, 42), Forest Plan standards (FP, III-54) for elk habitat effectiveness in management area C8S are currently being met. These standards would continue to be met in all alternatives analyzed in detail. Improvement of elk habitat objectives is not part of the purpose and need for

action; however, proposed road decommissioning activities and creation of forage will be beneficial. Alternative H would not meet the purpose and need for action.

The potential economic infeasibility of additional road decommissioning was not an issue and was not discussed in the EA. The purpose of NEPA is to consider the potential impacts on the environment by proposed actions. The Middle Bugs Project proposes vegetative treatments that have been designed to have no measurable effect to water quality or aquatic habitats (EA, page 73) and therefore, are not expected to degrade watershed conditions. The EA clearly states that watershed improvement activities are not required mitigation for proposed vegetation treatments to occur. In fact, any direct sediment delivery to streams would occur from watershed improvement activities, while it is recognized that increases in sediment and turbidity would be minor and short-term.

It is important to recognize that implementation of any activities approved in the NEPA process are dependent upon available funding. Shovel ready or NEPA approved projects compete better for available funding. The EA acknowledges that additional funding would be needed to complete all watershed restoration activities. The EA states that timber values would not generate enough funds to cover the nontimber project costs. Watershed improvement activities and timber harvest activities are not considered a “package” they are not mutually exclusive, they may be implemented independently of each other. Fund decisions for these projects are determined through coordination of resource program leaders, District Rangers, and the Forest Leadership Team.

8. *The USFS refuses to analyze effective means of accomplishing the primary purpose and need goal that does not produce volume. Richard Artley 09/09/2012*

Response: The primary purpose and need for action for the Middle Bugs project are to provide goods and services, improve species diversity and conditions, reduce stand densities and reduce potential sediment inputs into the aquatic system. In response to public comment and the issues analyzed in detail EA, page 6 through 9), eight alternatives were originally considered, providing a reasonable range of alternatives [40 CFR 1502.14(a)].

NEPA does not require an agency to consider alternatives that are infeasible, ineffective, or inconsistent with the basic objectives for the management of the area (36 CFR 220.7(b)(2)). Project design eliminated issues and limited alternatives. Two Action and a No Action alternative were presented in detail.

9. *The Responsible Official does not analyze an alternative in detail that treats the area with the pheromone Verbenone. The effectiveness of this treatment is quite effective. Richard Artley 09/09/2012*

Response: Verbenone is a synthetic anti-aggregation pheromone. It mimics the pheromone that the beetles emit when the tree is full of attacking beetles. The pheromone tells other beetles to find another tree. Verbenone does not kill the insect; it is used as a push-away tactic. Verbenone has been most effectively used to protect high valued trees over a relatively small area when beetle population pressure is low to moderate. Areas of use may include: backyards, resorts, campgrounds, woodlots, ornamental plantings, genetic sites, species at risk, forest stands of high ecological or social value etc. The pheromone is really only effective when there are low populations of the beetle and correct cultivation is carried out. This product is not meant to be used at a large scale or as the sole solution, but rather part of an integrated pest management strategy against mountain pine beetle which includes removal of infested trees, maintaining healthy forest conditions (e.g. thinning), maintain a species mix to reduce the risk to any given

pest, and in some cases spraying trees. In endemic (low population levels) situations, this product has proven to work very well. However, at epidemic (high population levels) situations, the synthetic material is not able to 'fool' the communication system of the beetle. Research has shown mixed results on the use of this anti-aggregant pheromone in a natural forest setting. Verbenone's effectiveness is highly variable (30% to 80%) and lasts two-three months. Gibson (USDAFS, 2009) suggests that if more than 15% of the stand is currently infested and those trees cannot be controlled prior to beetle flight, do not use Verbenone. In such a situation, the results may not be worth the cost of treatment. Use of Verbenone would not be appropriate or feasible for the Middle Bugs Project area. It would not meet the project purpose and need for action and was not suggested during scoping; therefore, it was not addressed as an alternative.

http://www.ehow.com/info_7901028_verbenone-pine-beetle-repellent.html

http://csfs.colostate.edu/pages/documents/Thoughts_about_Verbenone_April_2009.pdf

<http://beetles.mt.gov/Preventing/Verbenone.asp>

<http://www.beetles.mt.gov/Protecting/ForestMgmt.asp>

Kegley, Sandra, K.Gibson, N. Gillette, J. Webster, L. Pederson, S. Mori, 2010, Individual Tree Tests of Verbenone Flakes, Verbenone pouches and Green-Leaf Volatiles to protect lodgepole Pines from Mountain Pine Beetle Attack, USDA Forest Service, R-1, Forest Health Protection, Coeur d'Alene Field Office

Mountain Pine Beetle and Wildfire Forum, May 4, 2011, Verbenone Guidance

10. Site-specific projects are required to comply with the management prescriptions established in the Forest Plan. Thus, the BHROWS analysis cannot preclude meaningful alternatives through a narrow definition of the purpose and need. Further, BHROWS does not set the desired future conditions; those are done through the forest plan. Where in the forest plan is the desired future condition the same as the desired successional stages found in the vegetation section of the EA? Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012

Response: As stated in the Forest Plan (IV-4), "the management direction provided by the Clearwater Forest Plan comprises the sideboards within which project planning and activities take place. It defines management area goals and management standards that guide project activities toward achieving a desired future condition for the management area and, collectively, for the Forest...More specific analysis is required to implement the Plan." Management Area direction is appropriately used to guide development of more site specific, project level desired conditions. Desired conditions for this project are consistent with relevant Forest Plan management area goals as well as Forest Plan.

The Middle Bugs project is primarily located within Management Area C8S (EA, page 3). Forest Plan direction is to "manage these areas to maintain high quality wildlife and fishery objectives while producing timber from the productive Forest land. Wildlife objectives are primarily oriented at elk habitat management..." (FP, p III-53). BHROWS objectives are to help restore elk populations and elk habitat, using information to develop more site-specific desired conditions is consistent with the broader desired conditions for this Management Area given in the Forest Plan.

11. *Is it true this project could go on for 8 years? Isn't that three years beyond the time which site-specific NEPA documents are supposed to be revised? Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012*

Response: The economics section of the EA (page 108) stated that the timeframe considered for cumulative effects is eight years after estimated project implementation as this is the expected life of the project, including post-harvest reforestation, site preparation and road decommissioning.

Cultural Resources

12. *The project is close to the national historic landmark. However, there is no cultural resource analysis that is separate in the EA, though the EA states a survey has been done. Please explain this situation. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012*

Response: The project area is bounded to the south west by the Lolo Trail National Historic Landmark Corridor. This corridor is approximately ½ mile wide and encompasses the historic Lolo Trail system, which consists of the Lolo Trail, NeeMeePoo Trail, Lewis and Clark Trail, Bird-Truax Wagon Road and Lolo Motorway. No project activities are proposed or would occur within this corridor (EA, page 8). All treatment areas are located outside and north of this corridor. In compliance with the National Historic Preservation Act, cultural resource surveys were conducted in proposed treatment areas and State Historic Preservation Office (SHPO) concurrence was obtained. This project complies with the National Historic Preservation Act of 1966, as amended. The EA, page 24 contains design feature #18 to protect cultural resources if found during project implementation.

Although no activities will be conducted within the national historic landmark corridor, the EA analyzed potential impacts to scenic integrity, which included views from the corridor. Project design features will be implemented to assure that the project met scenic quality objectives.

Cumulative Effects

13. *This proposal describes a non-scoped projects (French Larch and Lolo Insect and Disease) as a “reasonably foreseeable” project when describing the cumulative impacts for economic contribution of timber flow to the communities (EA pg. 108) and more fully in Appendix D – Cumulative Impacts (EA pg. 150). This is inconsistent with other project proposals that will only consider another project within an area as “reasonably foreseeable” if it has started the scoping process. For example, the Adams Camp and Doc Denny projects are not considering the cumulative impacts of the Hungry Ridge project. When asked about this, the Forest Service response has been that the cumulative impacts do not need to be assessed because the Hungry Ridge project has not yet been to scoping and is therefore not yet “reasonably foreseeable.” Why is there inconsistency? The Forest is not fully analyzing the potential cumulative impacts of projects. The Forest is inconsistent in their definition and use of “reasonably foreseeable”. Nez Perce Tribe Watershed Division, 09/21/2012*

14. *It is positive to see that some future projects such as French Larch and Lolo Insect-- projects we have never heard of--are evaluated in the cumulative impacts section. Is this*

being done consistently on projects on the Nez Perce-Clearwater National Forests? Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012

Response: The Middle Bugs EA, page 108, simply states that the Lolo Insect and Disease Project is a foreseeable sale that would contribute to the long term timber flow. The EA, Appendix D – Cumulative Effects, page 150, states that the Lolo Insect and Disease and French Larch projects are still in the NFMA stages; NFMA analysis has not been completed. Thus, specific activities, the amount or where they would occur, is not known. The projects have not yet been scoped and all proposed activities have not been identified; therefore, detailed discussions of potential effects is not possible. In conclusion, the EA states, “Not enough information is available about the type, location or extent of potential proposed activities to include them in the analysis” (emphasis added). The EA disclosed all known information about potential foreseeable projects.

Economics

15. There is a lack of clarity in the economics section (pages 106-108) which is mostly aimed at showing if potential buyers might make a profit. The real problem is the low net value (improved, however, by just building temporary roads – a great idea). It’s so low, even with quite optimistic assumptions, that the \$265,000 in what are mysteriously called “stewardship costs” will go unfunded by this project. It is not clear if some part of the many environmental improvements planned for elsewhere in the EA will exist only if this \$265,000 turns up somewhere. The EA could use a nice section linking money, maybe the lack of it, to general environmental improvement within the planning area. What happens if the money never turns up? Dennis Baird 08/30/2012

Response: The economic section is intended to display various aspects of the project’s economic situation. The employment/ community revenue benefits are displayed in Table 3-18 (EA, page 106). The viability of the actual timber harvesting is displayed in Table 3-19 (EA, page 108) and the costs associated with the other items proposed in the project that are not associated with the timber harvest are displayed in Table 3-20.

Each table has some connection to the other tables. The community benefits table shows that the proposed timber harvest activities would provide jobs and revenue to the area, but only if the timber sells (only timber harvest was used for this project to represent jobs generated versus including the non-harvest/stewardship projects, because the non-timber projects have a minor contribution to the job market). Within Table 3-19, we show that the proposed harvest areas are economically feasible and should sell, and therefore supports information provided in Table 3-18. In addition Table 3-19 shows that the timber harvest is not a below cost proposal in that it does not need to be subsidized to sell. The table also shows that the timber sale generates some additional money above what it would cost to harvest the timber; this money could be used by the Forest to fund non-timber harvest activities (stewardship projects) or be sent to the U.S. Treasury to support National needs; the Forest based on resource funding needs, would make this decision.

The EA, page 108, Table 3-20 displays the estimated costs of the non-timber projects and is used for budgeting purposes to display funding needs. Funding solicitation generally cannot take place until a project has been NEPA approved since funding is tied to annual accomplishments. However, some targets like pre-commercial thinning are funded annually through appropriated dollars to achieve the Forest’s annual target. As discussed on EA page 107, other items have to compete for funding based on priorities across the Forest. However, looking back on past

Clearwater National Forest NEPA projects, all the proposed activities have ultimately received funding for completion through various sources, which include stewardship timber sale receipts, appropriated funds, and collaborative partners, such as the Nez Perce Tribe and Rocky Mountain Elk Foundation.

16. Under Alternatives Analyzed but Not Considered in Detail – Alternative D: Watershed Improvement Only; the EA (pg. 25) states, “An economic analysis completed for this project determined the project was economically viable.” This statement is clearly refuted in the economics section (pgs. 105-109) of the EA. The project only shows a positive present net value for implementation of the HARVEST portions of the proposal. Costs for implementation of the any Non-timber Sale or Stewardship projects (road decommissioning, road storage, culvert replacement, and pre-commercial thinning) are estimated to be approximately \$265,000 (EA pg. 108). These costs were NOT included in the stumpage equation (EA pg. 107, para. 3). Nez Perce Tribe Watershed Division, 09/21/2012

Response: As outlined in the previous comment, the economic feasibility is based on the timber harvest, since it carries the greatest costs for this particular NEPA decision and has been of greatest interest to those concerned about timber subsidies. Once the actual timber harvest revenue can be calculated when it is implemented, additional funding for the non-timber harvest activities can be determined and solicited. This project was not designed to cover all the costs of the non-timber harvest activities with timber stumpage revenue; if it was, the simple answer is there would be a need to cut more timber or higher value timber to generate more money. To avoid this dilemma as discussed on EA page 107, the National Stewardship Contracting incentive was developed, which may use revenue from other sales within the Forest to pay for non-timber activities in lower value areas.

17. The EA also indicates that NEPA preparation costs are \$174,000.00 and this amount is NOT covered by the project (EA pg. 107, para. 5). Nez Perce Tribe Watershed Division, 09/21/2012

Response: Planning costs (NEPA) were not included in any of the alternatives since they are sunk costs at the point of alternative selection and are not a result of the NEPA decision. The NEPA costs are shown only because of past public input requesting this information.

18. The Forest is providing mis-leading and contrary information regarding the economics of this proposal. The Forest has proposed sediment reduction activities with no known budget to complete. Is there any intention of completing these activities or have they just been included to give the Forest “social license” to conduct timber harvest? Nez Perce Tribe Watershed Division, 09/21/2012

Response: When the sediment reduction activities become NEPA cleared, they are put into a funding pool along with other similar projects across the Forest. The projects are funded based on resource priority on an annual basis and kept on the list until they are funded. The higher the resource priority the quicker the project is funded. The Clearwater National Forest has been successful in funding watershed improvement projects, including the North Fork District where watershed restoration funds are relatively limited compared to other areas of the Forest where more funding is available for restoration of anadromous fish habitat. On the North Fork District, substantial watershed improvement activities have occurred including over 230 miles of road decommissioning (1992 to present) and 16 large culvert/bridge replacements for aquatic

organism passage (2004-2011). The Forest intends to continue accomplishing watershed restoration as funding allows.

19. *This project if implemented as presented represents a total cost to the Forest of approximately \$360,000.00 to \$389,000.00. (See EA pg. 108 – NEPA and Stewardship costs subtracted from Present Net Values for Alternative B and C). Nez Perce Tribe Watershed Division, 09/21/2012*

Response: As stated in the EA and as discussed previously, NEPA costs are not included in the economic analysis, because the costs are not a result of a decision to implement any of the alternatives. We have already spent NEPA costs, regardless of selected alternative.

20. *The Nez Perce Clearwater Forest(s) is not doing calculations consistently between different projects. For example: Iron Mountain (Iron Mountain EA pg. 35) includes NEPA analysis costs in their present net value calculations but this project and Doc Denny (Doc Denny EA pg. 25) do not. The Forest(s) should be consistent from project to project. Nez Perce Tribe Watershed Division, 09/21/2012*

Response: This statement is not correct. The projects mentioned above all exclude NEPA costs from the present net value. The Iron Mountain project, EA page 35 states, "...the pre-decisional NEPA costs are not an outcome of the NEPA decision and therefore are not included in the economic analysis." In addition, see the Iron Mountain EA Table 5, EA page 36.

21. *The economic analysis apparently does not include the cost of the EA. Other recent documents do from the Nez Perce-Clearwater National Forests. Can you explain this seeming inconsistency? Most importantly, there is no analysis of impacts to the US citizen. Will more receipts be received from this sale than it costs? Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012*

Response: The EA analysis should display the results of the NEPA decision. The economic analysis should not include the NEPA costs because these costs are not a result of the NEPA decision. The NEPA costs are an existing condition and are displayed in the Middle Bugs EA because of public input to know what these costs are, but are not included in the present net sale value calculations, which is consistent with other Forest projects.

Old Growth

22. *We appreciate that the project avoids all old growth, roadless and step-down old growth areas. Jonathan Oppenheimer, Idaho Conservation League, 10/01/2012*

Response: Thank you for your comment.

Opposing Science

23. *Address the opposing views attached to my comments which describe the harm inflicted to the forest ecosystem caused by logging and road construction. The Responsible*

Officials response to each of these opposing views is governed by 40 CFR 1502.9(a) and 1502.9(b). It violates the law to give the public a skewed (one sided) description of the environmental effects of a proposed project as you have done in this pre-decisional EA.

Read the Administrative Procedures Act. Richard Artley 09/09/2012

Response: Consideration was given to the literature submitted by the public. The EA, Appendix E lists all scientific literature used and referenced in this document. The Decision Notice, Appendix D also describes how literature submitted by the public was considered and why some scientific literature is inapplicable to this project.

Project Purpose and Need

24. If the Responsible Official chooses to include “promote tree growth and vigor” as part of the P&N final EA document, please explain to the public why vigorous fast growing trees are more important than healthy biodiverse forests. Richard Artley 09/09/2012

Response: The Forest Service is not claiming that vigorous fast growing trees are more important than healthy biodiverse forests; vigorous trees are a part of a healthy biodiverse forest. Forest health, as defined by the Dictionary of Forestry, is “the perceived condition of a forest derived from concerns about such factors as its age, structure, composition, function, vigor, presence of unusual levels of insects or disease, and resilience to disturbance” (Helms, 1998). The intent of this project to promote tree growth and vigor is consistent with the definition of “forest health” in that the Forest Service is attempting to address concerns over tree vigor as well as composition.

25. Please identify the flora and fauna in the forest that thrive in decadent slow-growing forest conditions. Also explain why biodiversity of species is not important in the project area. Richard Artley 09/09/2012

Response: Effects of treatments to improve tree vigor relative to flora and fauna have been disclosed within the EA. This project is not proposing to decrease biodiversity in the project area, nor is there a claim made in this project that biodiversity is not important. Vegetation analysis for the project area shows that biodiversity as measured by forest composition will improve if the project is implemented (EA, page 32).

26. We are interested and willing to support the primary purpose of the project, to provide goods and services and to provide commercial products to the timber industry. We agree that in the roaded front-country, that commercial timber management can be an important tool to achieve various goals. In C8S ground, which dominates the project area, additional consideration is warranted to promote fish and wildlife habitat and considerations that can support diverse plant and animal communities. Jonathan Oppenheimer, Idaho Conservation League, 10/01/2012

Response: The project is consistent with Forest Plan goals and objectives for management area C8S. The project includes Best Management Practices, INFISH buffers and other design features to assure that resource impacts are limited and the protection of resource values.

Rare Plants

27. *The EA notes that activities may impact eleven species of rare plants. However, no surveys have apparently been conducted at all. How does that meet NEPA? How many MI determinations does it take to register a cumulative effect on any given plant species? Similarly, there is no cumulative impact analysis different than the direct impact analysis. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012*

Response: As stated in the EA, page 35, species information is based on the study of aerial photos and topographic and forest habitat maps to determine potential habitat for plants of concern in the project area. Individual species requirements were reviewed and appropriate modeling criteria selected to determine which species or corresponding habitat would be expected to occur in the project area.

Using GIS, the habitat units important to sensitive plants were identified and mapped for the project area. Locations of the proposed activities were evaluated against the habitat groupings to determine which activities would occur in those habitats. Each activity occurring in potential habitat was evaluated based on the criteria important for each species.

The cumulative impacts analysis for rare plants (EA, page 37-38) provides rationale for the geographic boundary and timeframe that was considered and displays impacts from the project alternatives in conjunction with consideration of past, present and foreseeable actions.

Roads

28. *This whole part of the CNF has a real surfeit of roads. Since Alternatives B and C produce about the same number of jobs and community benefits – all good things – then doing the same job in the woods but with a little less impact seems a logical path to follow. That would lead to Alternative C as a final decision. Dennis Baird 08/30/2012*

Response: Thank you for your comment.

29. *Roads (including so called temp roads) cause sediment that enters the streams, fragment wildlife habitat and provide vehicular access to parts of the forest that should only be reached on foot or by horseback. Richard Artley 09/09/2012*

Response: The EA, pages 38-84 considered and analyzed potential impacts of proposed permanent and/or temporary roads to water quality, aquatic habitat and wildlife.

Samson 1997, states “Recent experimental evidence suggest habitat fragmentation in ecosystems with a high natural disturbance has little effect on species survival rates owing to the adaptation of natural disturbance regimes.” Though some less common Rocky Mountain habitats (such as coniferous old growth forest) may become isolated from one another with management (timber harvest), “. . .it is meaningless to evaluate the amount or extent of habitat fragmentation without identifying a species or group of species affected by this fragmentation.” Typical project analysis areas are located on a landscape historically and frequently modified by wildfire. Because project analysis areas are: 1) Within a diverse, high natural disturbance (i.e., “fire-driven”) ecosystem reasons; and 2) Located in a relatively small landscape (similar to the surrounding landscape, disturbance processes and containing shared species habitats and populations), it is not practical that habitat fragmentation could occur. Estill and Samson recommend not addressing the issue of fragmentation at the project level.

30. *We are also concerned with the intensity of the proposed logging, i.e. 414 and 216 acre regeneration units, and the construction of 2.1 miles of new permanent road. Jonathan Oppenheimer, Idaho Conservation League, 10/01/2012*

Response: The proposed regeneration units were designed to emulate historic disturbance patterns and follow natural lodgepole pine timber stand boundaries. The importance of emulating historic disturbance patterns as these patterns relate to vegetation is discussed in the EA, page 31. As outlined in the project purpose and need, the lodgepole pine is becoming impacted by bark beetles, which will eventually kill the trees as discussed on EA pages 32-34 and 85-86. The 416 and 192 acre proposed regeneration harvest units are both located primarily within the moist frost churned ridges LTA (Landtype Association) group. Within this LTA group fires historically created patches ranging in size from 500-1000 acres (EA, page 31). The scale of these proposed regeneration units approaches historic patterns and thereby trends the Forest toward desired conditions (EA page 4). The overall treatment area size has been evaluated by all of the resource specialists and potential impacts have been discussed in the EA. The difficult item to portray to the public is what the treatment areas would look like following harvest. The Forest Service is not proposing units that would lack structure and be devoid of trees; approximately 5 to 26 live trees per acre would be retained on site to provide visual and structural diversity and long term soil nutrients (EA pages 21-24).

Some sort of road access is needed to reach the areas; Alternatives B and C weigh the differences between permanent and temporary roads. Temporary roads would be obliterated and any permanent roads would be put into a stable self-maintaining condition. Potential impacts of all roads were considered in the analysis.

Roadless

31. *The first major issue is that of an apparently changing roadless area boundary in spite of the fact that no logging has recently taken place in the area. We are specifically referring to the boundary location around unit E and between units B and E. The EA says the roadless area is bounded by the roads (page 13) but unit E would log beyond the roadless side of the road. Thus, the question of changing boundaries, though minor, is not answered. The second question, and a related one, is that of contiguous roadless land to the currently identified roadless area. The analysis is the EA does not address that issue at all in chapter 3. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012*

32. *We are concerned that the area northwest of Road 555, and up to the Bighorn Weitas IRA may possess unroaded qualities and/or be within the roadless boundary as per the Idaho Roadless Rule. The EA indicates that all areas proposed for management occur in areas "previously developed." There is no evident timber harvest that is apparent to the northwest of Road 555. As a result, we encourage the Forest Service to determine whether any further analysis may be warranted to ensure that no irretrievable or irreversible commitment of resources may occur if one of the action alternatives is selected. To help illustrate the issue, I would be happy to discuss the issue in greater detail upon request. Jonathan Oppenheimer, Idaho Conservation League, 10/01/2012*

Response: The Middle Bugs EA, pages 101 through 105 analyzes the impact of project activities on roadless and wilderness attributes. Consistent with FSH 1909.12, this analysis considered the

following wilderness characteristics: natural integrity, undeveloped characteristics, outstanding opportunities for solitude and primitive recreation, special features and values, and manageability on the B-WRA. No activities are proposed in the B-WRA as defined by the 2008 Idaho Roadless Rule; however, any project activities that may have some indirect or ephemeral effects on the roadless area were examined and disclosed in the EA.

In addition, there are various unroaded areas within the project area. The following clarifies the analysis of proposed activities located on lands that may be considered unroaded and are contiguous to the B-WRA. This analysis looked for unroaded areas that, because of their size, location, or other attributes may have some of the “wilderness characteristics” or other characteristics normally attributed to “roadless areas” and that may be affected by this proposal.

All action alternatives propose harvest in a portion of Unit E that lies adjacent to the B-WRA, northwest of Road 555. The following clarifies impacts to this area.

About 54 acres of Unit E lie northwest of Road 555 and southeast of Lean To Ridge. As shown on the roadless map and photos in Appendix C, the 2008 Idaho Roadless boundary north of Unit E is defined by Lean To Ridge. This portion of the Roadless area boundary has remained constant on the Idaho Roadless maps (2000, 2008). A four-wheel drive road runs along the Lean To ridgetop; the 2008 Idaho Roadless boundary lies 25 feet west of this ridgetop four wheel drive road. This ridgetop road was originally constructed in 1924 for commercial sheep growers as a stock driveway. This driveway is approximately 30 to 40 feet wide and approximately 80 miles long, and forms a road prism as seen through the trees that adjoin the margins of the driveway. The road-sized swath with its network of side trails was used for 20 years as a travel corridor for bands to reach their allotments; last used in 1952 for cattle. This road or stock driveway is eligible for nomination to the National Register of Historic Places because it is associated with events that have made a significant contribution to the broad patterns of our history and it is associated with the lives of persons significant in our past. SHPO and Forest Cultural Resource Specialist have determined that project activities will have no adverse effect to these properties.

Project activity impacts on the following roadless and wilderness attributes as defined in FSH 1909.12 (72.1) were considered for this area.

Natural Integrity and Undeveloped Characteristics: *The extent to which long-term ecological processes are intact and operating and the degree to which the impacts documented in natural integrity are apparent to most visitors.* That portion of Unit E that lies between Road 555 and the B-WRA boundary as described in the 2008 Idaho Roadless Rule (formed by the Lean Too Ridge and the four-wheel drive road) is about 600 feet at its widest point and consists of about 54 acres. After treatment, stumps and other related disturbances would be noticeable. However, visitors would also notice other past management activities such as past harvest and existing roads. These effects are not anticipated to be apparent to visitors within the core of the roadless area or readily distinguishable from past surrounding developments if they were, because the roadless area lies on the other side of Lean To Ridge. Due to these distances and the units’ surroundings, the proposed harvest would not affect wilderness characteristics directly. The effects of proposed treatments on the expanse’s roadless or wilderness characteristics are expected to be quite minor, particularly when considered in context to the specific location, terrain, and surroundings of the proposed activities as well as the overall capability of the larger expanse.

Outstanding Opportunities for Solitude or Primitive Unconfined Recreation: *Solitude is a personal, subjective value defined as the isolation from sights, sounds, and presence of others and from developments and evidence of humans. Primitive recreation is characterized by meeting nature on its own terms, without comfort and convenience of facilities.* In Unit E, proposed harvest is situated on slopes that largely face away from the core of the roadless expanse, and therefore are not expected to further affect the limited existing opportunities for

feelings of solitude or remoteness present in the interior. While solitude or feeling of remoteness is a personal, subjective value, the sites themselves, adjacent to roads and other development and facing the developed portion of the landscape provide little if any existing opportunity in the wilderness attribute context (which looks for “outstanding opportunities for solitude”). However, sights and sounds may be apparent to recreation uses within this unroaded expanse at these distances. Aside from the ephemeral disruption during actual activities, the proposal would have no effect on the expanse’s capability to provide for primitive unconfined recreation.

Special Features and Values: *Unique ecological, geographical, scenic, and historical features of an area.* As described above, the ridgetop road or stock driveway is associated with events that have made a significant contribution to the broad patterns of our history and with the lives of persons significant in our past. Proposed harvest activities would alter the vegetation back to the condition associated with the use of this stock driveway. No other unique ecological, geographical, scenic, and historical features (wilderness attribute “special features and values”) have been identified and none would be affected.

Manageability: *The ability to manage an area for wilderness consideration and maintain wilderness attributes.* The wilderness attribute “manageability” would not be affected by the proposal given the location, nature, and surroundings of the proposed activities.

As described above, the expected direct and indirect effects of proposed activities on wilderness characteristics are limited to ephemeral effect of sounds and the limited visibility of harvest from the interior of the B-WRA. Cumulatively, the proposed activities are not expected to appreciably add to past effects or to detract from those existing values. The roadless or wilderness values would increase as one moves further from the bounding roads and into the interior of the roadless expanse. Lean Too Ridge and other terrain breaks separate proposed 54 acres of harvest in Unit E on the northwest side of Road 555 from the B-WRA. Roadless edges provide the distance or transition from the roaded environment necessary to allow a core with greater wilderness or roadless attributes to exist. The cumulative effects of the proposed activities are not expected to be appreciable. All other proposed harvest lies within and among previously harvested or otherwise disturbed areas making the cumulative contribution negligible.

The Middle Bugs Project does not propose harvest in any other areas that could be considered unroaded and contiguous to the Roadless area. A commentor questioned impacts that the project would have to an unroaded area between Units B and E, north of Road 555. This area was harvested in the 1970s and 1990s and contains a nonsystem road spur that runs east from Road 5164. (see the attached NAIP image) The Middle Bugs Project does not propose harvest in this area or any other areas that might be considered unroaded; therefore, this project would not contribute to or cause any potential irreversible or irretrievable effects. The Middle Bugs Project area does not include any roadless area as identified by the 2008 Idaho Roadless Rule.

33. The analysis in chapter 3 leads the reader to believe the current roadless boundary has been recently logged and includes roads (it hasn't and doesn't, see page 102). Further, the Hemlock Creek drainage is not severed from the rest of the roadless area. No road goes from Road 555 across Hemlock Creek and then up to one of the 547 roads. The roadless analysis in the EA is confused and incomplete. It must be changed and updated. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012

Response: The Middle Bugs Project does not propose harvest in any unroaded areas (See the maps above) and impacts to the roadless or wilderness attributes are limited.

The 2008 Idaho Roadless Rule established the roadless boundary and the Middle Bugs Project area excludes all roadless areas identified by this Rule. The EA analyzed potential effects to roadless and wilderness attributes (EA, page 102) from proposed activities. The EA (page 102), description of the natural integrity and undeveloped characteristics of the Big Horn Weitas Roadless Area were taken verbatim from the Forest Plan description of the Big Horn Roadless Area (Appendix C-119). The commentor is in error. The EA does not infer or state that recent harvest or road construction has occurred in the roadless area. Both documents acknowledge that past timber harvest, road construction and grazing has occurred in the roadless area. Both the EA and Forest Plan state that, with few exceptions, the natural integrity and appearance has not been altered. The Horseshoe Lake fire in 1961 and subsequent timber salvage activity in 8,000 acres of Gravy Creek is the only other major intrusion. Both documents state that the Lean-to-Ridge Road (Road 555) separates the Hemlock Creek drainage from the rest of the area. Neither document states that a road goes from Road 555 across Hemlock Creek and then up to one of the 547 Roads.

34. We question the consistency of the proposal with the Idaho Roadless Rule and compliance with INFISH standards. Jonathan Oppenheimer, Idaho Conservation League, 10/01/2012

Response: The project does not include any roadless area as identified by the 2008 Idaho Roadless Rule.

This project will comply with INFISH standards. INFISH default buffers will be used to define timber sale unit boundaries. No timber harvest will occur within 300 feet of fish-bearing streams, 150 feet of perennial non-fish bearing water, 100 feet of intermittent streams and landslide-prone areas in priority watershed and 150 feet of wetlands larger than one acre.

During layout, the temporary road location of Road C1 (main temporary road into Unit C from Road 103) will be coordinated with the project hydrologist to insure that road location and design features mesh with watershed mitigation needs and RHCA management.

Design feature #15 requires specific measures to be implemented during these activities to prevent damaging levels of sediment from entering streams. The Forest has successful effectiveness ratings for implementation of INFISH buffer protection, BMPs and other design measures, which are discussed on pages 21-24.

Soils

35. The soil analysis does not include the percentage of disturbed soil after ground disturbing activities (but before soil restoration work). We don't see how the regional standards can be met without this information. Are we to assume there would be no soil restoration measures as a result of this timber sale? Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012

Response: The Soils specialist report, page 21, as well as the table below shows the DSD after timber harvest, and then after the restoration activities.

Unit	Acres	Existing acres DSD	Existing % DSD	Harvest type	Harvest Method	Acres of Temp. Road **	% DSD Harvest & mechanical planting*	% DSD Temporary Road	Cumulative % DSD All Activity***
A	14	0.3	2	CT	Tractor	0	10	0	12
B	48	1.4	3	CT	Tractor	0	10	0	13

C Alt B	416	0	0	RG	60% Tractor 40% Skyline	1	Tractor 6% + Skyline 0.7 =7%	0.2	7
C Alt C	416	0	0	RG	60% Tractor 40% Skyline	1	7+ MP 3%	0.2	10
D Alt B	35	0.7	2	RG	50% Tractor 50% Skyline	0.5	Tractor 5%+Skyline1% =6%	1	9
D Alt C	35	0.7	2	RG	50% Tractor 50% Skyline	0.5	6 + MP 2%	1	11
E Alt B	191	7.6	4	RG	67% Tractor 32% Skyline	0.9	Tractor 6.7% + Skyline 0.6% = 7%	0.5	12
E Alt C	191	7.6	4	RG	67% Tractor 32% Skyline	0.9	7 + MP 3%	0.5	14

* Harvest percent based on Archer. MP means Mechanical Planting. Effects from mechanical planting calculated from 1.5 ft diameter circle for 600 trees planted per acre, with the assumption that half of sites overlap previous skid trails or harvest impacts. Estimates rounded.

** Assumes a 25 foot width right of way for temporary road.

*** Sum of Existing Condition, Harvest, Mechanical Planting and Temporary road. Temporary road. will be decompacted and be covered by slash or duff.

Restoration of skid trails and landings would occur under Alternatives B and C; they would scarify and recontour all skid trails after use to improve soil productivity (EA, Design Feature #7, page 21, 22). Also, activities would be designed to stay below 15% areal disturbance of the treatment area by designating skid trails and using existing skid trails and landings where possible to overlap detrimental effects (EA, Design feature #9). No soil improvement activities would occur under Alternative A (No Action) on existing skid trails and landings; soils would remain less productive.

The 3 miles (about 9 acres) of road decommissioning proposed in Alternatives B and C would also restore soils.

36. The effects of past management actions that typically alter hydrological processes due to soil damage outside of project “activity areas” are not analyzed. The EA simply fails to consider best available science on this subject. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012

Response: The monitoring protocol used (USDA, 2009, Page-Dumroese, et al, 2009) indicates that treatment areas, not project boundaries, are to be used for determination of detrimental soil effects. Past activities that have caused ruts, compaction, mixing of soil layers or burning that are continuing as detrimental soil effects within the ‘activity areas’ are accounted for in the DSD monitoring. Hydrologic alterations outside activity areas are not assessed unless they are currently causing detrimental soil damage within the activity areas.

As stated in the EA, page 87, existing detrimental soil damage in all proposed activity areas was determined by database queries of past activities followed by field visits. In 2011, soil specialists completed field reviews following the protocol outlined in Region 1 Approach to Soils NEPA Analysis Regarding Detrimental Soil Disturbance in Forested Areas (2009) and USDA Soil Disturbance Monitoring Protocol (SDMP) (Page-Dumroese et al., 2009). Detrimental damage is based on the severity of the impacts as determined by the soil scientist with consideration given to the definitions in FSM 2500-Watershed and Air Management R-1 Supplement 2500-99-1. A full

discussion of the methodology, copies of field notes and data collected, are available in the project file.

37. Soil stability, erosion hazard and irreversible soil loss are not adequately displayed. We are told two [acres] in Units C, D and E have sensitive soil characteristics. Unit B is apparently conducive to landslides, yet it will be logged nonetheless. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012

Response: Soil stability, erosion hazard and soil productivity are discussed in the EA, page 87 through 93. The EA, Appendix displays Map A-7 with displays those sensitive soils within each unit that require mitigation. The soil specialist report (Table 4, pages 15+) displays by unit the five factors related to soil stability and erosion hazards by LTA (page 5). The Soils Report Appendix contains a map showing mass wasting hazard and LTAs.

Most (77%) treatment areas have slopes less than 35% and low landslide potential. Five small areas totaling two acres in Units C, D and E are on slopes greater than 55%; however, these areas are not on parent material, aspect or elevations that cause concern for landslides. The EA, (page 22), included design feature #8, which would retain 100% canopy retention in the 5 small areas totaling 2 acres where sensitive soil characteristics have been identified (see map A-7, Appendix A). This design criteria has been changed (DN, page 4) to clarify that, on implementation, all landslide prone areas would be delineated, including those already identified. These areas would have 100% canopy retention and receive the 100 foot no harvest buffer from the edge of the landslide prone area.

The EA, page 92 states that while the aspect, slope and parent material in Unit B could be conducive to landslides, tree retention levels in this commercial thin unit would be sufficient to avert concern for landslides. Unit B is not a concern because the proposed treatment is a thinning, retaining approximately half of the canopy, and therefore not raising any concerns for soil stability.

38. The EA simply does not adequately demonstrate consistency with NFMA, Forest Plan, and Regional requirements pertaining to maintaining and improving soil productivity, nor adequately analyze cumulative impacts of past management actions on soils within and outside of project activity areas. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012

Response: The project complies with NFMA 16 USC 1604(g)(3)(E)(i) – “Soil, slope or other watershed conditions will not be irreversible damaged.” The project would protect organic matter, soil porosity, and topsoil through the use of BMP’s and design features. Localized and limited losses would occur on landings, skid trails, temporary roads, or where the soil is sterilized with fire. However, over the majority of the unit and the landscape, the processes that contribute to productive soils would be preserved. BMP’s and design features assure that no irreversible damage to the watershed or stream channel considerations would occur (EA, page 13).

The EA describes relevant Forest Plan direction related to soils (EA, page 9, 10), and details how project activities are consistent with this direction (EA, pages 91-93). The soils specialist report (pages 22, 23) describes how the project complies with Forest Plan standards. As stated in the EA and specialist report, field surveys were conducted in all proposed activity areas using Regional standards, current protocols were used, project design measures would minimize erosion, soil improvement activities would be implemented on areas with prior impacts to achieve a net improvement in soil productivity, and post project monitoring would be completed to verify

compliance. Detrimental soil impacts from all proposed activities would be less than 15%; therefore, this project complies with Region 1 Soil Quality Standards.

The EA (page 87) discusses the methodology used for consideration of effects on soils. The existing condition and environmental consequences for each alternative are discussed on pages 88-91. The cumulative effects stay below the 15% soil disturbance. The monitoring protocol indicates that treatment areas, not project boundaries, are to be used for determination of detrimental soil effects. Although there have been landslides in the project area, all of them are lower on the slope than the proposed treatment units. The proposed treatments are mostly on ridgelines, so the possibility of an impact from a slide outside the unit affecting the proposed action is unlikely. The Soils report (page 22) summarized the findings, with Standard B indicating all units will stay below 15% detrimental soil disturbance.

Vegetation

39. If you decide to select Alternative B or C, as part of the design for the project, we request that you to retain trees in a non-uniform spacing to promote within-stand diversity in both the regeneration, as well as the commercial thinning units. By varying the spacing and retention of clumps of trees; wildlife habitat, ecological function and microclimatic variables can be improved. In addition, we encourage you to maintain some co-dominant, suppressed trees that can often develop into more suitable wildlife trees. We recognize that the purpose of the project is to promote goods and services, however maintaining diversity within the stands is key towards meeting other standards and guidelines consistent with the Forest Plan. Jonathan Oppenheimer, Idaho Conservation League, 10/01/2012

Response: If Alternative B or C is selected, trees would be retained in a non-uniform pattern to promote structural diversity. As your comment suggests, clumps of trees would be retained and would be non-uniformly spaced throughout the regeneration harvest units. Within these clumps, some trees of each canopy position would be retained (ie. dominant, codominant, intermediate, and suppressed). Within the proposed commercial thin units, non-uniform spacing would be achieved by allowing variable spacing between leave trees. Some codominant and intermediate trees would be left within the thinning units to meet stocking objectives.

40. The EA correctly points out the sad absence, for many reasons, of white pine and larch in the planning area, but the leap from that recognition to the planned logging activities is not, to me anyways, very clear. Maybe a paragraph or two could be added to explain just exactly how we are going to get these two missing species back into the landscape. Dennis Baird 08/30/2012

Response: In the areas in the Middle Bugs project in which regeneration harvest is currently proposed, particularly Units C and E, the forest is homogenous lodgepole pine. The regeneration harvest proposed for these units would harvest the lodgepole pine, then the units would be planted with western white pine and western larch (EA page 18). Natural regeneration of lodgepole pine would be expected in these areas and the expected result of the planting and natural regeneration would be a mixed stand of western white pine, western larch, and lodgepole pine.

41. *Harvesting dead lodgepole pine to eliminate mountain pine beetle activity in the project area is not effective and eliminates the beneficial resource benefits caused by this natural disturbance event. Richard Artley 09/09/2012*

Response: This project is not intended, nor is it expected to eliminate mountain pine beetle activity within the project area. As described in the purpose and need for action, this project would provide goods and services and recover the economic value of dead and dying trees. The project would also increase white pine and larch to increase biodiversity and tolerance to disturbance.

42. *Logging will not affect the Mountain Pine Beetle. Harvesting dead and dying LPP to avoid fires will stop the life cycle of LPP. Harvesting dead and dying LPP increases the fire hazard. See article:*

http://www.newwest.net/city/article/beetle_hysteria_again/C8/L8/ Richard Artley 09/09/2012

Response: The proposed units are not expected to stop the activity of the mountain pine beetle. The need identified in the EA for this project is “to capture the commercial value of the timber in infested stands before it is lost due to mortality and decay” (page 5). Proposed treatments are intended to increase the diversity of the forest and create mixed species stands; treatments are not expected to eradicate lodgepole pine from the proposed units. Natural regeneration of lodgepole pine would be expected in these areas and the expected result of the planting and natural regeneration would be a mixed stand of western white pine, western larch, and lodgepole pine. Post harvest, before activity fuels are treated, fuel loadings would increase. However, after activity fuels are treated, fuel loadings in these treated areas would resemble a Fuel model 8 which would reduce the potential risk of high intensity wildfire.

43. *Harvesting dead and dying LPP creates unacceptable resource damage within the cutting units. Richard Artley 09/09/2012*

Response: The effects of proposed harvest were analyzed and are described throughout the EA. Site specific design measures, unit layout as well as implementation of BMP’s and INFISH buffers would reduce or negate resource impacts.

44. *Stands of LPP contain key habitat for a variety of birds and mammals unavailable in other forest ecosystems. LPP is a native species in the area of the proposed project. Wiping out the species is irresponsible. Please do not allow perceived human benefits to disrupt the natural cycles in the forest. Richard Artley 09/09/2012*

Response: We agree that lodgepole pine is a native species in the project area and that it would be irresponsible to eradicate it from the project area. This project will not wipe out lodgepole pine. Proposed treatments are intended to increase the diversity of the forest and create mixed species stands; treatments are not expected to eradicate lodgepole pine from the proposed units. Natural regeneration of lodgepole pine would be expected in these areas and the expected result of the planting and natural regeneration would be a mixed stand of western white pine, western larch, and lodgepole pine.

45. *Action should not be taken to reduce the insect induced mortality to conifer trees. Such natural disturbance events are necessary to maintain the forest’s biological diversity. Insect activity is an indicator of a healthy properly functioning forest. Leaving these*

dead and dying trees in the forest is orders of magnitude more important than corporate profit. Richard Artley 09/09/2012

Response: The project area lies within management area C8S. The project purpose and need is consistent with Forest Plan direction for management area C8S, which is to manage these areas to maintain high quality wildlife and fishery objectives while producing timber from the productive Forest land (FP, III-53). Proposed treatments are intended to increase the diversity of the forest and create mixed species stands; treatments are not expected to eradicate lodgepole pine from the proposed units. Natural regeneration of lodgepole pine would be expected in these areas and the expected result of the planting and natural regeneration would be a mixed stand of western white pine, western larch, and lodgepole pine.

46. In Chapter 3 of the final EA please discuss the negative effects to the forest ecosystem caused by eradication of the Mountain Pine Beetle in LPP forests. Please see attachments #5 and #14. Richard Artley 09/09/2012

Response: The Middle Bugs project would not eradicate mountain pine beetle from the forest. The EA does say that “creating a mosaic of age and size classes...would reduce susceptibility to mountain pine beetle outbreaks” (EA, page 33, from Amman and Safranyik 1984). The key is that treatments would reduce risk of outbreaks- not that this would eliminate mountain pine beetle from the forest. It is fully expected that mountain pine beetle would remain at endemic levels within the project area.

47. Many wildlife species that exist on the Clearwater NF not only prefer climax tree species but depend on these tree species. Table 1-1 on page 4 indicate that the Responsible Official's goal is to extirpate Grand Fir, Douglas-Fir, and Engelmann spruce. The table indicates that the percent of Subalpine fir in the area could reach 0% and it would satisfy the Responsible Official's goals. Mother Nature species' selection is orders of magnitude more effective for the natural resources in the forest than human manipulation to increase stumpage value. Richard Artley 09/09/2012

Response: The Responsible Official's goal is not to extirpate grand fir, Douglas-fir, and Engelmann spruce from the project area, nor would it satisfy the Responsible Official's goals for the actual amount of subalpine fir in the area to reach 0%. The heading of Table 1-1 is “Forest Cover Types” (page 4). “Forest cover type” is synonymous with “Forest Type”, which is defined by The Dictionary of Forestry as “a category of forest usually defined by its vegetation, particularly its dominant vegetation as based on percentage of cover of trees” (Helms, 1998). Therefore, Table 1-1 does not express a desire to extirpate any tree species from the project area, rather it expresses a desire to replace stands currently dominated by these species with stands that are dominated by early seral species. It would be fully expected that the aforementioned species would be components of the stands, rather than the stands being dominated by these later seral species.

48. The EA notes that the normal comment period for openings great than 40 acres won't be followed because of insects and disease. What data and scientific studies support this decision? Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012

49. *Regarding openings greater than 40 acres, the Forest Service plans no additional 60 day public review or Regional Forester Approval (EA pg. 14) for this proposal even though harvest units are set at 416 acres (Unit C) and 191 acres (Unit E). The reasoning is that this is allowed because of a catastrophic event – in this case insect and disease. What analysis and science was used to make this determination? Nez Perce Tribe Watershed Division, 09/21/2012*

Response: The Forest Service provided for a 60-day public review of the proposed openings over 40 acres in the Middle Bugs Scoping Notice dated 7/1/2011, thus, the 60-day public review requirement was met. On November 14, 2012, the Regional Forester approved creation of these openings.

50. *The EA (pg. 18) states that both Alternative B and C would tractor yard 464 acres and skyline yard 241 acres. Operationally, the tractor ground could be broken into smaller units to achieve openings less than 40 acres in size. This approach would probably still require the same amount of proposed road construction. Why hasn't this been considered? Nez Perce Tribe Watershed Division, 09/21/2012*

Response: Alternative F was developed to address the issue of harvesting openings larger than 40 acres because commentors were concerned about the size and scope of the openings. Keeping proposed units less than 40 acres in size would not meet the project purpose and need of recovering economic value of dead and dying trees (EA, page 25) and it would not trend the landscape toward desired conditions as they relate to historic disturbance regimes (Desired Conditions on EA, page 4). Openings that trend the landscape toward historic conditions (ie. openings greater than 40 acres) also contribute to ecological resilience (EA, pages 33-34).

51. *With regard to regeneration, the EA indicates that larch and white pine would be favored, one assumes through planting. However, broadcast burning will create conditions extremely favorable for lodgepole pine by activating them through burning. This would likely lead to what the agency would perceive as: an overabundance of trees in ten to fifteen years; and without further treatment would actually decrease vigor and increase the likelihood of disease, insects, and stand replacing fire. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012*

Response: As described in the EA, amounts of western white pine and western larch would be increased by planting these species (page 18). It is true that broadcast burning would create conditions favorable for lodgepole pine and the expected result of treatment in the regenerated units would be a mixed stand dominated by early seral species- western white pine, western larch, and lodgepole pine. These stands would be dominated by western white pine and western larch, but with lodgepole pine as a component. If an action alternative is chosen, silvicultural exams of these units would be performed in the future to determine future treatment needs.

52. *What is also interesting is that the EA describes the history of the area as having been dominated by species other than lodgepole pine where lodgepole amazingly appeared after the fires that occurred between 1910 and 1938. This suggests that lodgepole pine trees were a significant part of the forest prior to the fires in the early 1900s. It should also be noted lodgepole pine are an early seral species and the Forest Service goal is to*

favor early seral species (white pine and larch). Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012

Response: The EA states that much of the project area is comprised of mature 80 to 90 year old lodgepole pine stands initiated by large wildfires in 1919 (EA, page 3). The EA also describes the desired conditions for this landscape based on Forest Plan direction, data from Ecological Units of the Northern Region Subsections Land Type Associations and the BHROWS Assessment. It is true that lodgepole pine is considered an early seral species. However, when lodgepole pine occurs in homogeneous conditions, the stand is less resilient to disturbance than a mixed species stand. One of the purposes of this project is to “Improve species diversity in the project area to create conditions that are resilient and allow for rapid recovery after disturbances” (EA, page 5).

Water Quality

53. The EA contains little information about current water quality or fish habitat to support any conclusion. There are no charts or numerical data to report current conditions and whether standards are being met in terms of sediment parameters or any fish habitat parameter. There is no current or recent inventory for fish species like bull trout. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012

Response: Water quality in project area streams is described on EA page 21 and includes a summary of numerical data. Tabular data is available in Table 2 on page 8 of the Watershed specialist report (Snyder, 2012) and is referenced to Forest Plan standards displayed in Table 3 on page 10. As stated in the EA, survey data from 1997 and 2006 was available for the analyses and field observations of channel condition in 2011 support the conclusion in the EA that Middle Creek and its tributaries are meeting water quality criteria and desired conditions for these waterbodies and that sediment is being sufficiently routed through the stream system.

The EA, pages 68-71, 78-80 clearly describes current stream and fish habitat conditions in the project area. This information was derived from Forest GIS database, aquatic survey reports, habitat surveys, INFISH/PACFISH monitoring and BURP monitoring data, fish distribution data, and specialist field surveys. There are no Forest Plan standards for cobble embeddedness; however, desired conditions are being met in all project area streams for cobble embeddedness (EA, page 71).

Forest monitoring observations and BMPs were used to determine potential effects to species from project activities. The most recent fish surveys in the project area in 1997 did not document bull trout in project streams. No recent data for bull trout data exists; however, as stated in the EA, page 82, bull trout and their designated critical habitat occur downstream from the project area, and individuals could migrate in and out of the area. There is a slight risk that individuals may be affected by project activities. The project, therefore, has a “may effect, not likely to adversely affect” ESA determination for bull trout and its critical habitat. This determination is based on forest monitoring observations, BMPs, project design features and implementation of default INFISH buffers. Nearly all proposed instream work would occur in low-order, non-fishbearing streams, where direct mortality to bull trout or bull trout immobile life stages could not occur. Only watershed improvement activities are proposed for fish-bearing streams, and project implementation would include measures that would greatly reduce the likelihood of adverse effects to fish (e.g., sediment retention structures or gradual dewatering).

Since 1995, all management activities in the Upper North Fork Subbasin have implemented INFISH buffers and Best Management Practices in order to eliminate or reduce impacts to

riparian areas and streams. The implementation of timber harvest and site-preparation design criteria and BMPs would minimize soil disturbance, exposure and erosion in the harvest units. The implementation of buffers, and the design and location of project activities would minimize potential effects to stream shading from trees, stream temperature, large woody debris recruitment, and fine sediment transmission. There would be no measurable changes to stream temperature from project activities. Transport of eroded sediments from the units to streams would be controlled by vegetation, ground cover, surface roughness, and downed debris in the buffers.

Past monitoring from 1990-2009 (USDA 1990-2009) has shown that BMPs used to prevent sediment delivery from roads constructed or used for timber harvest activities have high implementation and effectiveness rates, averaging 99%. The implementation of INFISH buffers would protect aquatic species and habitats from potential impacts of proposed regeneration harvest, commercial thinning, and precommercial thinning activities (including yarding and post-harvest fuels reduction). The risk of direct injury or mortality to fish from vegetation management-related project activities would be non-existent. The RHCAs would act as “filter strips” to reduce or eliminate sediment transmission to streams from harvest units (Snyder 2012).

54. The EA does state that sediment would be produced from the project. It then suggests this is not a problem. However, such a conclusion can't be reached absent some site-specific information. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012

Response: Site-specific information was used throughout the water quality effects analysis, as described in the Analysis Methodology in the Water Quality section (EA, page 68). The results of the Water Quality effects analysis are presented in summarized form in the EA with more specific detail in the Watershed specialist report (Snyder 2012) and project file. Reach-specific stream data in the four major streams in the project area was analyzed to assess existing condition (channel stability, bank stability, cobble embeddedness). Existing sediment conditions were determined from cobble embeddedness data and compared to the desired future condition standards developed for the four major streams. All streams were determined to be meeting water quality criteria and desired conditions for these waterbodies and that sediment is being sufficiently routed through the stream system. Site-specific review of existing road condition, proposed unit locations, road locations, treatment units occurred. Erosion and sediment modeling of temporary and permanent road occurred with modeled segments often as short as 150 feet with an average of 400 feet. The potential for increased streamflows due to proposed timber harvest was analyzed at multiple scales, including first-order basins less than 60 acres in size.

Harvest, slash treatment, and road-related activities have the potential to increase sediment production and delivery into streams. The indicators used to assess effects on water quality are sediment yield (tons) from road and harvest activities and road density (mi/mi²). Sediment related direct and indirect effects were measured with the Road WEPP model. WEPP model results were used to compare the predicted effects of road construction in the alternatives on the related indicators. The models were used to provide estimates for comparison of alternatives, not absolutes. As discussed on page 75 of the EA the WEPP model showed a very low potential of sediment delivery from temporary road and permanent road construction.

Current measured sediment data in the analysis area streams is not available, yet previous data suggest that sediment conditions in Middle Creek and its tributaries are meeting water quality criteria and desired conditions for these waterbodies and that sediment is being sufficiently routed through the stream system. Existing evaluations of sediment loading in Hemlock Creek are limited to the determination that Hemlock Creek did not have any sediment loading above natural

(USDA 1997). Idaho DEQ reviewed sediment conditions in Middle Creek in 2003 and determined that Middle Creek meets the Idaho water quality standards for sediment and the stream is not threatened by the erosion taking place in the watershed. Idaho DEQ also concluded that salmonid spawning is not impaired by sediment in Middle Creek (IDEQ 2003). Cobble embeddedness data from 1997 and 2006 for Middle Creek ranged from 18 to 23%, below the desired condition of 35-40% (Isabella Wildlife Works, 1998, IDEQ 2010a, Jones and Murphy 1997). Sediment modeling results from 1997 determined Middle Creek was at 17% over background sediment loading (USDA 1997), which was well below the maximum allowable 150% increase over natural sediment loading criteria for this stream listed in the Forest Plan. All project area streams meet Forest Plan desired conditions. Implementation of design criteria, INFISH buffers and BMPs would reduce potential erosion and minimize the risk for sediment input into streams. The RHCAs would act as “filter strips” to reduce or eliminate sediment transmission to streams from harvest units (Watershed Report, Snyder 2012). Because of the filtering effect of INFISH buffers, no measurable sediment delivery to streams is expected from timber harvest and site preparation activities in the proposed action, as discussed on page 75 of the EA. As for road construction, BMP audits have shown 99% effectiveness. BMP audits from 1990-2009 have shown that best management practices and INFISH/PACFISH buffers are 99 percent effective of keeping sediment from entering stream channels.

Minor short-term increases in sediment delivery are expected from maintenance, culvert replacement, and decommissioning and storage of existing roads; yet these restorative activities would yield long-term reductions in erosion and sedimentation risks (Snyder 2012). In regards to road decommissioning or culvert replacement, the State of Idaho's standards may be exceeded in the short term (0-14 hours), but the effects are short lived both temporally and spatially (Foltz et al., 2007). Forest monitoring indicates that increased turbidity or suspended sediment is generally observed only in the short-term (<12 hours) and limited to immediately downstream of the activity (100-300 feet) (CNF Monitoring; Snyder 2012). Increases in turbidity or suspended sediment would be immeasurable at the mouths of streams for which water quality objectives have been identified (Clearwater Forest Plan, Appendix K).

Foltz, R. B., K. A. Yanosek, and T. M. Brown. 2007. Sediment concentration and turbidity changes during culvert removals. *Journal of Environmental Management*. 12 pgs.

In addition to references included in the watershed report and EA, the following scientific studies provide additional support of the conclusion that the road reconditioning, reconstruction and decommissioning activities proposed in this project would reduce net sediment delivery to streams, thus improving watershed conditions.

Burroughs, E. R. Jr. 1990. Predicting onsite sediment yield from forest roads. *Proceedings of Conference XXI, International Erosion Control Association, Erosion Control: Technology in Transition*. Washington DC, February 14-17, 1990. Pages 223-232.

Grace, J.M. III and B. D. Clinton. 2006. Forest Road Management to Protect Soil and Water. ASABE Paper No. 068010. Presented at ASABE Annual International Meeting, Portland, OR, July 9-12, 2006.

Switalski, T. A., J. A. Bissonette, T. H. DeLuca, C.H. Luce, and M.A. Madej. 2004. Benefits and impacts of road removal. *Frontiers in Ecology and Environment* 2(1):21-28.

Swift, L.W. Jr. and R.G. Burns. 1999. The three R's of roads: redesign, reconstruction, and restoration. *Journal of Forestry* 97(8):41-44.

55. *With regards to landslide prone areas and intermittent streams in priority watersheds, INFISH requires buffers of one-site potential tree height or 100 feet, whichever is greater. Instead, in the Design Measures, the EA referred to a 50- foot buffer from intermittent streams. The EA also referred to “100% canopy retention” in 5 landslide prone areas totaling 2 acres. Instead, the Final EA, FONSI and Decision Notice should apply the 100-foot standard buffer and should similarly buffer the landslide-prone areas. As each of these sensitive areas are on the edges of units, we recommend the areas be dropped, and the cutting boundary be located 100 feet from the edge of the landslide prone area. Jonathan Oppenheimer, Idaho Conservation League, 10/01/2012*

Response: The commenter is correct that the project is located within an INFISH priority watershed. A 100-foot RHCA buffer is required along intermittent streams and landslide-prone acres; design features in the Decision Notice have been revised to reflect this. Design feature #8 has been modified in the Decision Notice to state that on implementation, all landslide prone areas would be delineated, including those already identified in the EA. All landslide prone areas would have 100% canopy retention and receive the 100-foot no harvest buffer from the edge of the landslide prone area. Criteria for sensitive soils include: 1) areas with the combination of slopes exceeding 55%, and erosive parent materials, and on south and southwesterly aspects; or 2) areas showing signs of soil movement as indicated by curved or buttressed tree boles, active soil slumping, leaning trees, tension cracks; or 3) areas with moist seeps or wetland areas with high water tables (indicated by presence of hydrophytic vegetation such as sedges, lady fern, sword fern, Boykina, etc)

Watershed Restoration

56. *The proposed action purports that it will conduct sediment reduction activities including Road Decommissioning, Road Storage, and Culvert Replacement (EA pg. 6). However, when a more in-depth look is taken, the Forest is NOT promising any of this important work will ever be accomplished. The EA also clearly lays out that sediment reduction activity costs are NOT included in the economic analysis. The Forest has proposed sediment reduction activities with no known budget to complete. Is there any intention of completing these activities or have they just been included to give the Forest “social license” to conduct timber harvest? Nez Perce Tribe Watershed Division, 09/21/2012*

57. *In particular, we have questions and concerns with the apparent lack of commitment to the third purpose, to reduce sediment and improve passage for aquatic species. Jonathan Oppenheimer, Idaho Conservation League, 10/01/2012*

58. *There is concern that this is another case of “the check’s in the mail” when it comes to actually completing portions of the proposal (road decommissioning and storage, and culvert replacement) that would create a positive upward trend in watershed condition. Watershed staff urges the Forest to complete restorative activities prior to any timber harvest. Nez Perce Tribe Watershed Division, 09/21/2012*

59. *There is no guarantee that the positive watershed restoration activities will occur. The funding sources for them are not built in to this project. The economic analysis reveals*

this to be the case. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012

Response: The Forest plans to complete a portion of the proposed sediment reduction activities (road reconditioning and replacement of one culvert on Rd 555) during implementation of the proposed harvest activities. The Forest intends to complete other proposed sediment reduction activities before during or after harvest activities—either concurrent with the proposed timber sale or when other funds become available (EA, pages 20 and 21). NEPA directs federal agencies, when planning projects, to conduct environmental reviews to consider the potential impacts on the environment by their proposed actions. It is important to recognize that implementation of any activities approved in the NEPA process are dependent upon available funding. Shovel ready or NEPA approved projects compete better for available funding. Additional funding will be needed to complete all watershed restoration activities. The EA states that timber values would not generate enough funds to cover the nontimber project costs. Watershed improvement activities and timber harvest activities are not considered a “package” they are not mutually exclusive, they may be implemented independently of each other. Fund decisions for these projects are determined through coordination of resource program leaders, District Rangers, and the Forest Leadership Team.

The EA, page 108, Table 3-20 displays the estimated costs of the non-timber projects and is used for budgeting purposes to display funding needs. Funding solicitation generally cannot take place until a project has been NEPA approved since funding is tied to annual accomplishments. However, some targets like pre-commercial thinning are funded annually through appropriated dollars to achieve the Forest’s annual target. As discussed on EA page 107, other items have to compete for funding based on priorities across the Forest. However, looking back on past Clearwater National Forest NEPA projects, all the proposed activities have ultimately received funding to be completed through various sources, including stewardship timber sale receipts, appropriated funds, and collaborative partners, such as the Nez Perce Tribe and Rocky Mountain Elk Foundation.

When road decommissioning and storage projects are implemented, aquatic species passage will also be improved at several stream crossings where culvert removal and stream restoration would occur.

60. The EA is contradictory with regards to any commitment to reduce sediment through road decommissioning, culvert replacement or other watershed restoration tactics. In several places the analysis portion of the EA states that roads “no longer needed...would be decommissioned,” that “Positive cumulative effects would be realized from road decommissioning,” that “In both Alternatives B and C, road decommissioning would slightly decrease road densities,” and that “Both action alternatives would decommission 3.5 miles of road and place 11.3 miles of road into long-term storage.” At the same time, the EA is very specific that “watershed rehabilitation projects...are NOT required mitigation work...” As a result, it appears that, for the purpose of effects analysis, that the watershed rehabilitation work was considered, however during implementation this same work is far from guaranteed. As a result, we feel that the analysis is misleading. Jonathan Oppenheimer, Idaho Conservation League, 10/01/2012

Response: The EA states that the Forest plans to complete a portion of the proposed sediment reduction activities (road reconditioning and replacement of one culvert on Rd 555. EA pages 20 and 123: Table A-4) during implementation of the proposed harvest activities and intends to

complete other proposed sediment reduction activities before, during or after harvest activities—either concurrent with the proposed timber sale or when other funds become available (EA, pages 20 and 21).

Identifying and analyzing the watershed rehabilitation activities in this EA is a critical and cost-effective step toward improvements in watershed condition and function. The analysis also provides necessary interdisciplinary input on the proposed activities to assure the effects are considered, and also provides the opportunity to prioritize improvement projects so the watershed improvement funds are allocated more effectively. The effects of implementing, or not implementing watershed rehabilitation activities are disclosed in many sections of the EA, but it is clearly stated that the rehabilitation projects are not required as mitigation for the effects of other activities (roads, harvest) (EA, pages 10 and 21). A NEPA analysis and decision that includes the watershed improvement activities allows the Forest to plan, analyze and implement these projects in a more timely and cost-effective manner. Integrating the analysis of the watershed rehabilitation activities in to this EA is a much more timely and cost-effective approach than analyzing the effects of individual watershed improvement activities in separate NEPA projects. The Forest acknowledges funds are limited and provides no guarantee when this work will occur. However, the Forest has been successful in funding watershed improvement projects, including the North Fork District where watershed restoration funds are relatively limited compared to other areas of the Forest where more funding is available for restoration of anadromous fish habitat. On the North Fork District, substantial watershed improvement activities have occurred including over 230 miles of road decommissioning (1992 to present) and 16 large culvert/bridge replacements for aquatic organism passage (2004-2011). The Forest intends to continue accomplishing watershed restoration as funding allows.

61. At a minimum, the Idaho Conservation League feels that each mile of permanent road construction should be “balanced” with road decommissioning. In the past, we have recommended a 2:1 ratio between road obliteration and new construction and urge you to ensure watershed rehabilitation features of the project are incorporated into the design and mitigation features and not “left on the shelf” for future uncertain funding. The Final EA, FONSI and Decision Notice should clearly delineate which watershed improvement components will be carried forward as part of the timber sale project. Jonathan Oppenheimer, Idaho Conservation League, 10/01/2012

62. Culvert removal and replacement activities, along with the aforementioned road decommissioning work should be required to mitigate for potential impacts. Given the localized impact associated with large-scale regeneration units (414 and 216 acres), we are concerned that undersized culverts may experience increased stream flows. In order to mitigate for the direct impacts of the logging, which may leave as few as 5 trees/acre, ensuring adequately sized culverts should be a required element of the project. Jonathan Oppenheimer, Idaho Conservation League, 10/01/2012

Response: Culvert replacement and road decommissioning activities would provide positive effects on watershed condition and function, they are not proposed as necessary mitigation of the potential effects of other project activities (EA, pages 20). The water quality/watershed analysis does not rely on culvert replacement and road decommissioning activities to mitigate or offset potential impacts from other project activities. Through project planning (i.e. road location, unit boundaries, harvest systems...), specific design and mitigation measures (EA, pages 21-24), and

application of BMPs (EA pages 130-146), potential adverse impacts to streams through increased water yield or decreased water quality are eliminated or minimized.

The potential for increased streamflows due to proposed timber harvest was analyzed at multiple scales, and results are briefly described in the EA (pages 72), with more detail in the Watershed specialist report (esp. pages 15-17) and project file. Particular focus was given to the small first-order basins located within or adjacent to Unit C that drain through culverts on Road 103. It was determined that the percentages of canopy removal in these basins are not a level of concern for potential water yield increases that could adversely impact channels or culverts on Road 103. Culverts on Road 103 were evaluated for capacity in the field and through peak flow modeling. Culverts draining basins that have harvest activities proposed within or adjacent to them are an adequate size at full capacity (headwater-diameter ratio = 1.0) to pass modeled 100-year return interval peak flows and are considered sufficient to accommodate potential small increases in peak flows. Four of these culverts that drain basins within or adjacent to Unit C, although sufficient size to meet Idaho Forest Practices Act, are considered undersized by current INFISH and Forest standards (accommodates 100-year peak flow at 0.8 headwater diameter ratio) thus recommended for replacement at a larger size (EA, Table A-4).

Wildlife

63. The EA clearly shows that three of the four elk analysis units are not meeting and will not meet forest plan standards. Why wasn't an alternative developed that would meet forest plan standards such as closing or decommissioning more miles of roads or turning motorized trails into nonmotorized trails? Why hasn't the Forest Service complied with the forest plan to date? Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012

Response: The Elk Habitat Effectiveness (EHE) requirement in the Forest Plan for Management Area C8S is 75%; the current value at that scale is 82% and would continue to exceed 75% with the proposed action. Therefore, the project will meet Forest Plan standards. As described in the EA (page 42), for each alternative, elk habitat effectiveness was calculated using *The Guidelines for Evaluating and Managing Summer Elk Habitat in Northern Idaho* (Serveen et. al. 1997) as required in the Forest Plan (II-23) to predict impacts to elk and to compare alternatives at the Elk Analysis Unit (EAU) scale. At the EAU scale, 3 of 4 EAUs do not meet elk habitat effectiveness objectives (EA, page 42). Of those three, EHE will improve in one and stay the same in the other two.

Alternative H, "Decommission Additional Roads" was developed, but dismissed from detailed analysis because the Deciding Official determined that several existing roads were needed for future management. All roads determined to be excess to future management needs were included to be decommissioned in all action alternatives analyzed in detail. Project activities were developed to meet the purpose and need for action. Improvement of elk habitat is not part of the purpose and need for action; however, the project will meet Forest Plan standards for elk habitat effectiveness. Additionally, proposed road decommissioning will improve elk security and timber harvest will increase foraging habitat.

64. The EA tries to explain away the problem by claiming the elk model is skewed. If it is skewed, why not modify it to make it better? Regardless, the narrative on this issue appears to be quite confusing if not misleading. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012

Response: The use of the EHE model requires relatively complicated calculations and results which may appear to be counterintuitive, but is mandated by the Forest Plan. The EA (page 43) does not claim that the model is skewed, but rather provides an explanation of a small reduction in EHE for one of the Elk Habitat Analysis units.

65. *Elk security as related to road density is not clearly addressed in the EA. The EA suggests that since the new road construction would be in intermittent storage after the sale, there will be no increase in road density. However, there will be an increase during the life of the project, which will last for up to eight years, and the road template will continue to exist on the landscape indefinitely. Elk don't differentiate between agency vehicles, which may use the route after the project is done. Road closures are rarely 100 percent effective and new roads do create new openings and loss of security while providing no new habitat. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012*

Response: The EA clearly states on page 44, that elk security in the project area would not be affected and that the 2.1 miles of new permanent road (under Alternative B) or temporary road (under Alternative C) would not be accessible by motorized vehicles after project completion. The commenter is correct that road density during project implementation will temporarily increase. Under Alternative B, the permanent road would be constructed, used and placed into long-term storage within a three-year period (EA, page 22, Design Features 11 and 12). Under Alternative C, all temporary roads would be constructed and decommissioned within 3 years following use.

66. *The EA seems to incorporate the elk analysis for moose and deer. The EA claims that for elk, the road closures would have a "small" impact. However, the EA claims roads closures would increase moose habitat security "substantially." Can you explain why the different conclusions are based upon the same analysis? Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012*

Response: The EA, page 44 states that the construction of 2.1 miles of permanent road in Alternative B would result in a permanent loss of about an acre of vegetation that would be unusable by elk as either cover or forage. The new permanent road would be placed into intermittent storage use after project activities, so there would be no increase in standard road density associated with its construction. Because the changes in standard road density in the Beaver Dam EAU would be small and primarily associated with existing motorized use, changes in elk behavior that would affect survival or persistence should not be measurable. Because there would be no new road open to motorized use under either action alternative, and because almost all road proposed for decommissioning or storage is already closed to motorized use, the elk security areas within the project area would not be affected in any EAU.

The EA, page 44 also states that for moose and white-tailed deer, the direct and indirect effects of each of the alternatives would be similar to elk due to the increase in forage habitat and the security area size in the Beaver Dam EAU. The reduction in cover and increase in forage would be minor at the project scale, but potentially beneficial, and changes to access would generally maintain open road density at a relatively low level and increase overall habitat effectiveness for both species. The statement that substantial benefit would accrue to moose and whitetail deer security habitat is incorrect. Thank you for pointing out this error. It will be clarified in the Decision Notice.

67. *The EA alleges, "reduced habitat quality and high predation" are the reasons for elk decline. What data support such an allegation? Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012*

Response: Idaho Department of Fish and Game, Project W-170-R-34, Progress Report, December 2010, page 14 states that reduced habitat quality and predation are the primary causes for the elk population in the Lolo Unit being below Idaho Department of Fish and Game (IDFG) objectives.

68. *The EA provides no site-specific population data for pileated woodpeckers, goshawks, and pine martens. However, some were surveyed in 2011 and no sign was found. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012*

Response: No site-specific population data exists for these species, but individuals of each species have been known to occur on the North Fork Ranger District in relatively close proximity to the project area. See pages 45, 46, 48, 50 in the EA. Cumulative effects analysis areas for these species are described in the EA in Chapter 3.

Monitoring direction provided in the 1987 Forest Plan, pages IV-8 through 16 indicates that most monitoring items are "...applicable to specific management areas..." and that "other monitoring items are more applicable to broad areas or are Forest-wide in nature..." Numerous survey and monitoring efforts have been conducted on the CNF since the approval of the 1987 CNF Plan. A recent cooperative program between the CNF and Potlatch Corporation was undertaken to reward individuals for reporting active goshawk nests. The Northern Region Landbird Monitoring Program and CNF have cooperated in the landbird monitoring program. The program was developed to provide long-term population trend monitoring, habitat-relationships, and management effects studies of forest birds (including CNF MIS and sensitive bird species) on USFS lands.

Other notable monitoring activities conducted since approval of the 1987 CNF Plan, include sensitive plant (Lichthardt and Mosely, 1994) and animal (Cassier 1991/1994) surveys, and sensitive animal and plant sightings (documented in the Idaho Conservation Data Center). The Clearwater National Forest has also cooperated with the Idaho Department of Fish and Game (IDFG) and the Rocky Mountain Research Station to assess fisher and wolverine presence and distribution (via trapping, radio monitoring, and winter tracking) in the Upper Lochsa River Basin (Lolo Pass Study Area).

The monitoring report is available at www.fs.fed.us/r1/clearwater/ResourceProg. In addition, the IDFG conducts population trend monitoring for elk, white-tailed deer, and moose (all of which are recognized CNF MIS). The Nez Perce Tribe also is conducting monitoring of wolf populations. The results of these monitoring efforts are shared with the CNF.

Specific species data regarding species presence/absence or estimated/documentated numbers of individuals or pairs is extremely difficult to obtain in a forest environment. Species with relatively large territories (such as northern goshawk) and reclusive behaviors (northern goshawk and American marten) are extremely difficult to survey for both presence/absence and consistent population data. Gathering population data for reclusive northern goshawk and American marten is difficult and unreliable, because: 1) Fluctuating prey abundance and reproductive success; 2) Variable year-to-year territory or nest fidelity; 3) Difficulty locating animals due to seasonal limitations (e.g., soliciting nest defending behaviors by northern goshawks, or mid- to high-elevation winter tracking for American marten in subalpine fir/Engelmann spruce forest cover types).

Pileated woodpeckers, goshawks, and pine martens are Forest Plan Management Indicator Species (FP, II-24). In the Middle Bugs EA, suitable habitats for each MIS were described based on Forest Plan direction, the conditions of existing vegetation, and relevant habitat attributes (EA, page 39). In the Middle Bugs project, all existing old growth would be retained. No planned activities will occur in old growth or mature (130 to 150 year) habitat. All alternatives comply with Forest Plan direction to maintain at least 10% of the Forest in old-growth habitat and to manage at least 5% of each OGAU within forested, nonwilderness areas as old growth habitat (II-23). Retention of old growth stands would maintain habitat for old-growth dependent species (EA, page 41).

69. *Black-backed woodpeckers have not been reported from the area yet the Forest Service considers them secure, based upon 35-year-old observations 30 miles to the northwest!? Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012*

Response: The commenter misstates the “secure” spatial reference for black-backed woodpeckers—this term is applied in the EA (page 59) to the G5 global rank assigned to the species. Coincidentally, a sighting of an individual of this species was recorded in the project area on October 18, 2012. Based on habitat requirements and trends (Samson 2006a), local populations are likely stable or increasing.

70. *There are no numbers presented for fishers or wolverines, both rare carnivores that are sensitive to human activity. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012*

Response: No site-specific population data exists for these species, but individual wolverines and fishers have been known to occur on the North Fork Ranger District and documentation is provided in the EA of individuals in relatively close proximity to the project area. Monitoring direction is provided in the 1987 Forest Plan, pages IV-8 through 16. This section indicates that most monitoring items are “...applicable to specific management areas...” and that “other monitoring items are more applicable to broad areas or are Forest-wide in nature...”

The Clearwater National Forest has cooperated with the Idaho Department of Fish and Game (IDGF) and the Rocky Mountain Research Station to assess fisher and wolverine presence and distribution (via trapping, radio monitoring, and winter tracking) in the Upper Lochsa River Basin (Lolo Pass Study Area).

71. *With regard to wolves, the EA states numbers have increased dramatically. However, data from the Fish and Wildlife Service show declining wolf populations in Idaho over the past couple of years. Please explain this apparent inconsistency. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012*

Response: No inconsistency exists in the EA wolf discussion. The IDFG and Nez Perce Tribe’s most recent monitoring report (2011 Idaho wolf monitoring progress report, IDFG, Boise; Nez Perce Tribe Wolf Recovery Project, Lapwai, 94 pp) documents that wolf number in Idaho increased from 14 in 1995 (at reintroduction) to an estimated high of 856 in 2009. While the estimated number decreased to 746 in 2011 (for reasons unrelated to Forest management), this is still a more than 50-fold increase in the Idaho wolf population over the stated and relevant period.

The EA, page 65 concluded that the Middle Bugs project should have little to no direct effect on individual wolves and little effect on wolf abundance or persistence because the full project area would remain suitable habitat for the species.

72. The EA claims fire suppression has reduced lynx habitat. However, recent fires like Boundary Peak have burned near if not actually within the project area. The project area boundary has been very narrowly drawn. This seems to be an attempt to suggest logging here would benefit lynx by creating more foraging habitat. However, foraging habitat has been recently created. Please explain this seeming inconsistency. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012

Response: The District assessed the potential effects of the proposed project on lynx based on the Northern Rockies Lynx Management Direction (NRLMD), which recognizes that a mosaic of forest habitat produced by natural and anthropogenic succession and disturbance processes is desirable for lynx in the long term. Consistent with NRLMD and Clearwater Forest Plan direction, Lynx Analysis units (LAU's) were defined to analyze direct, indirect and cumulative effects, not the project area boundary.

An assessment of the effects of the planned action was completed for the project and documented in the EA and project file. Analysis of the effects of the planned actions on Canada lynx habitat indicated the project complies with the NRLMD Record of Decision, March 2007. Specifically, the planned actions would not cause timber management projects to impact more than 15% of lynx habitat on national forest lands within an LAU in a ten-year period. Furthermore, suitable habitat within the Middle Bugs project area and each of two lynx analysis units would exceed 90% and remain well above the 70% minimum standard. Project design features were incorporated to not allow timber harvest in patches of contiguous snowshoe hare winter habitat that were 5 acres or larger in size. The conclusion documented in the biological assessment was that the Middle Bugs project "is not likely to adversely affect" Canada lynx or its habitat.

Further, there is no inconsistency between the fact of historic fire suppression on the Clearwater National Forest and the fact that fires that do occur or are prescribed can create lynx foraging habitat because of the differing relevant temporal and spatial scales.

73. The EA does not demonstrate consistency with viability requirements of the forest plan for MIS and TES species. Gary Macfarlane, Friends of the Clearwater, Alliance for the Wild Rockies, Lands Council, 09/29/2012

Response: The EA, Chapter 3, describes in appropriate detail and scale the likely effects of the proposed project on MIS and TES species. Direct, indirect and cumulative effects analysis areas vary by species depending upon the species home range size, mobility and habitat requirements; habitat availability; habitat quality; and Forest Plan predetermined analysis units (old growth, elk habitat effectiveness units, lynx analysis units). Effects analysis areas are defined for each species. The project is consistent with Forestwide management direction (FP, II-2) to provide habitat for viable populations of all indigenous wildlife species. Habitat availability and changes at the project, Forest and Regional scale for selected MIS and sensitive species are described in the EA, page 53. These effects are compared with available broad-scale studies. The CNF Plan EIS, Vol. 1 (page 66, #6), states the Forest Plan was designed to ensure the maintenance of minimum viable population on a Forest-wide basis by assuring sufficient numbers of breeding adults through an appropriate distribution and diversity of suitable habitats.

Numerous survey and monitoring efforts have been conducted on the CNF since the approval of the 1987 CNF Plan. A recent cooperative program between the CNF and Potlatch Corporation was undertaken to reward individuals for reporting active goshawk nests. The Northern Region Landbird Monitoring Program and CNF have cooperated in the landbird monitoring program. The program was developed to provide long-term population trend monitoring, habitat-relationships, and management affects studies of forest birds (including CNF MIS and sensitive bird species) on USFS lands. Other notable monitoring activities conducted since approval of the 1987 CNF Plan, include sensitive plant and animal surveys, and sensitive animal and plant sightings (documented in the Idaho Conservation Data Center).

Appendix C –Project Maps

The attached maps provide clarity and additional information as requested in various comments.

Map C-1 – Vicinity Map displays where the Clearwater Forest is located in Idaho and where the Middle Bugs analysis area lays on the Clearwater Forest.

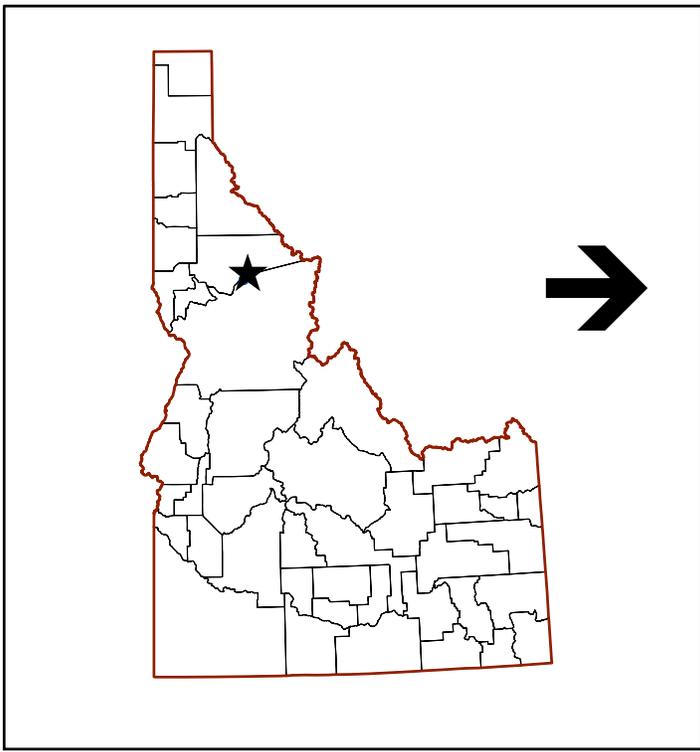
Map C-2 – Selected Alternative C - Project Activities Map displays the location of proposed treatments.

Map C-3 – Aerial Map displays an aerial image of the project area and Roadless Area boundaries. Evidence of past management activities, harvest units, and roads can be seen on the map.

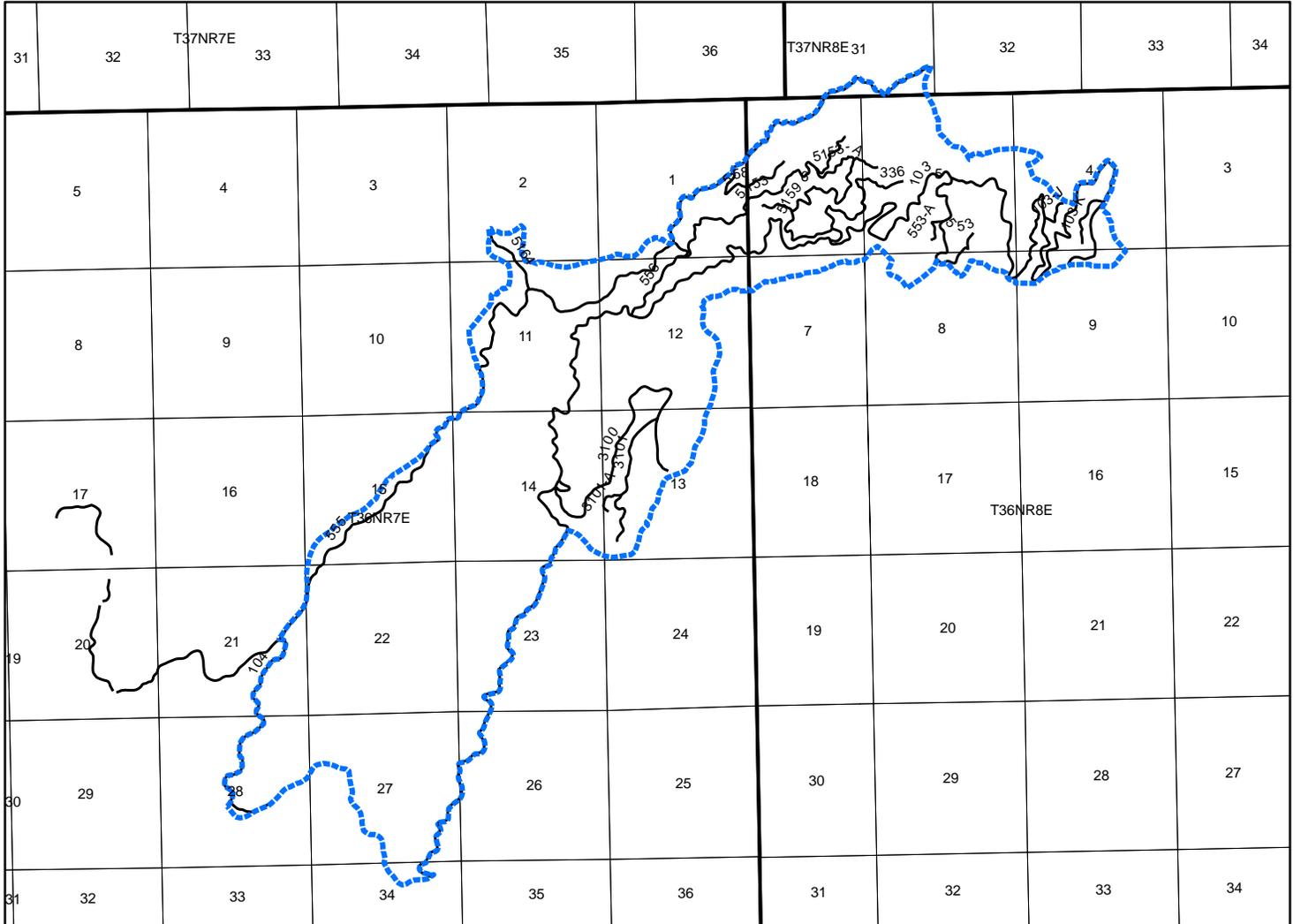
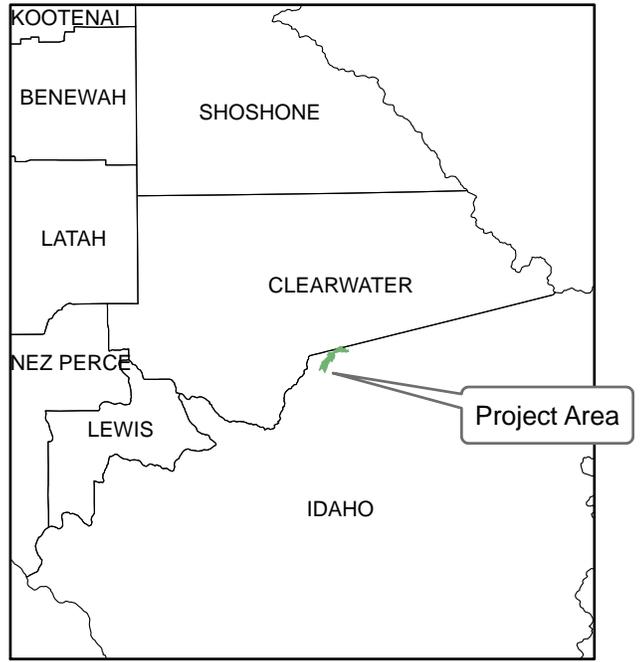
Map C-4 – Aerial contour map of roadless boundary, roads and past and proposed harvest areas.

Map C-5- Photos of Stock Driveway on Lean To Ridge along Big Horn Weitas Roadless boundary on northeast boundary of Unit E.

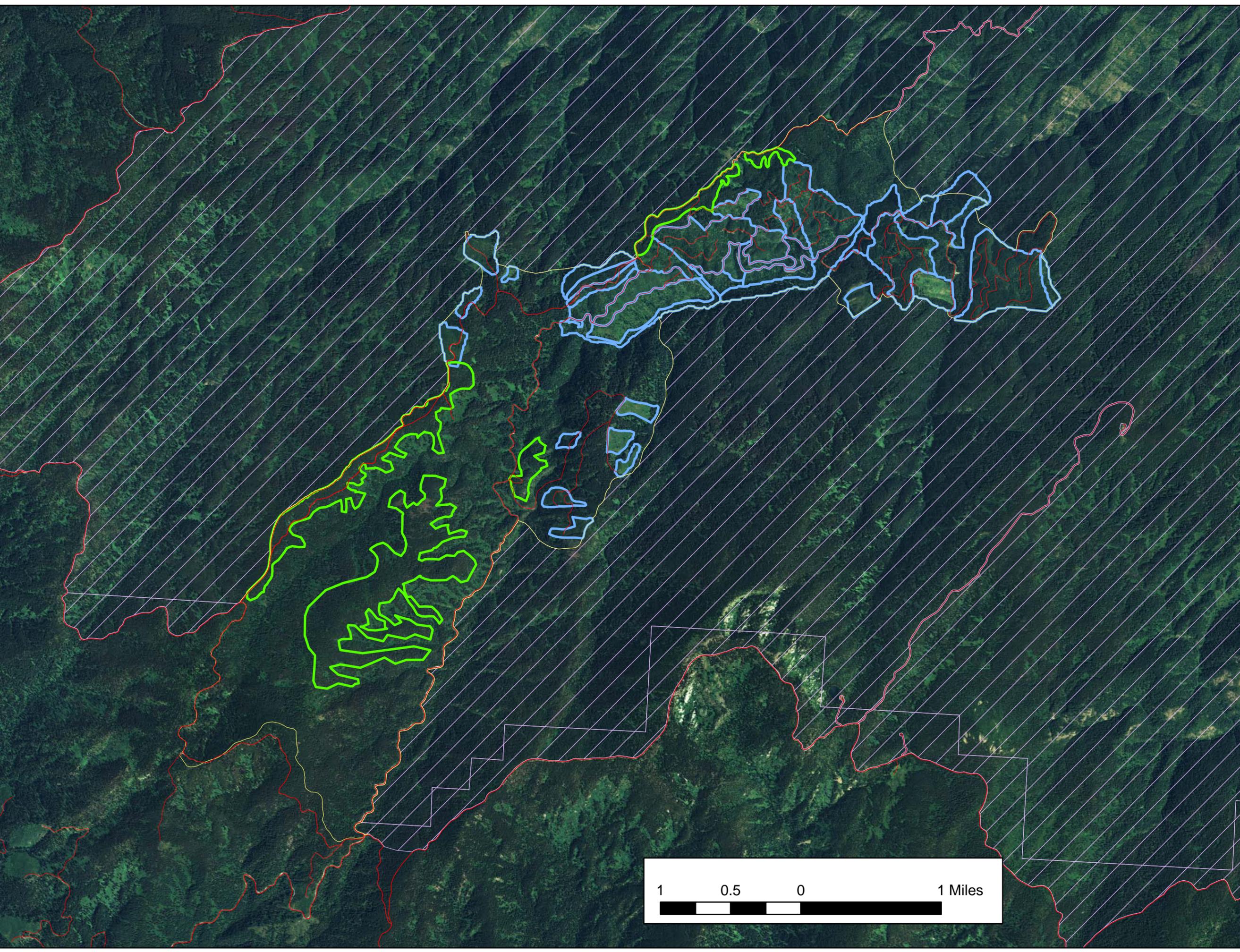
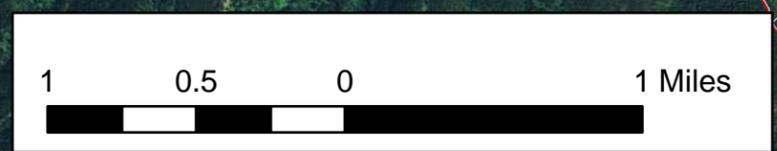
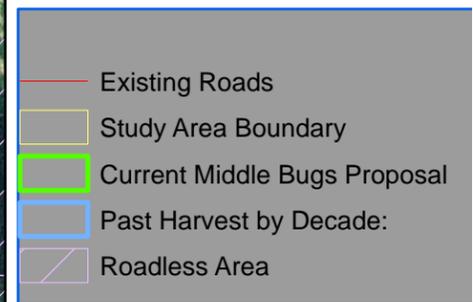
Map C-6 – Soils Mitigation Map – Displays areas of known sensitive soils to avoid



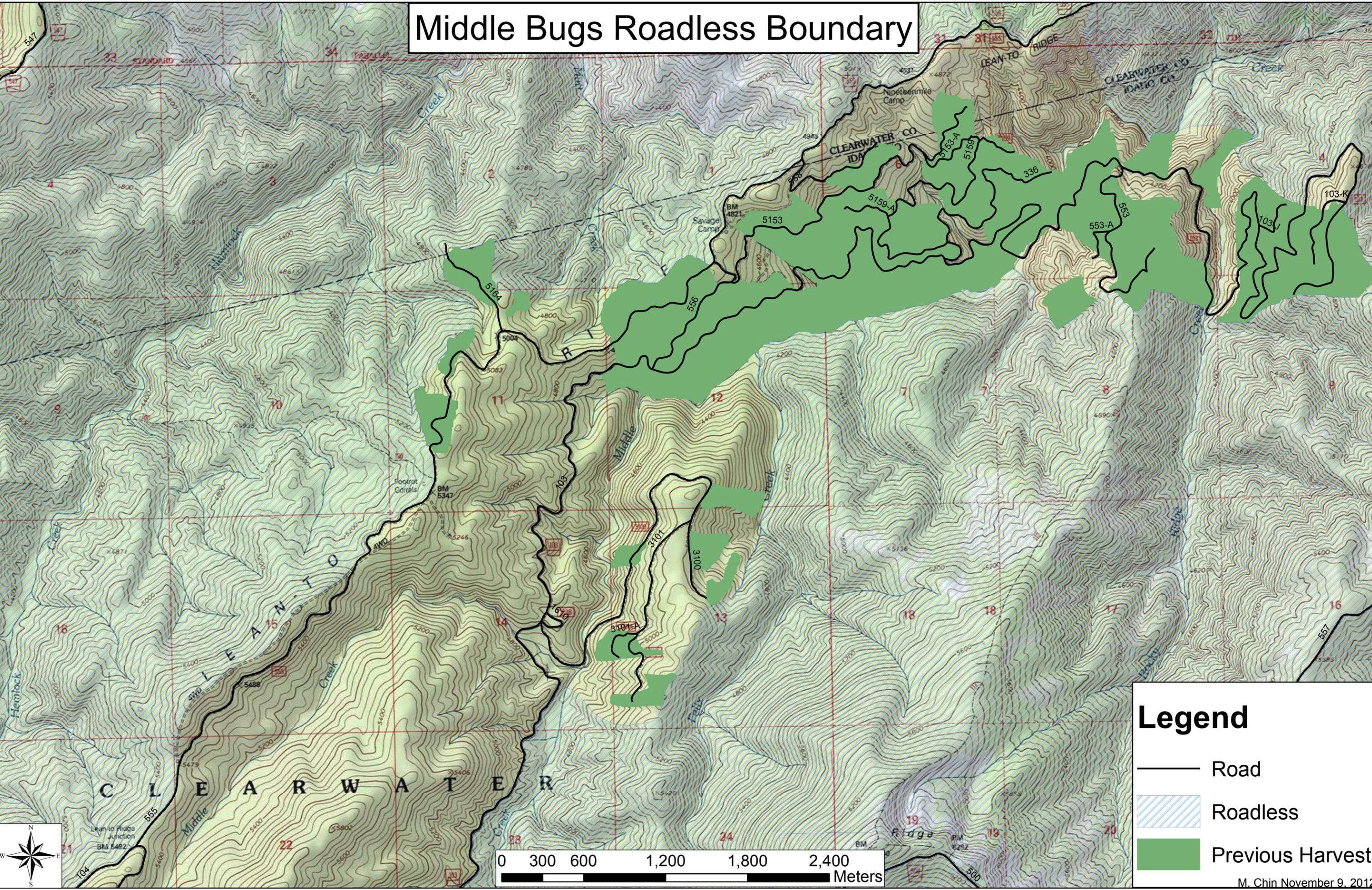
Middle Bugs Project Vicinity Map



Middle Bugs



Middle Bugs Roadless Boundary



Legend

- Road
- ▨ Roadless
- Previous Harvest

0 300 600 1,200 1,800 2,400 Meters

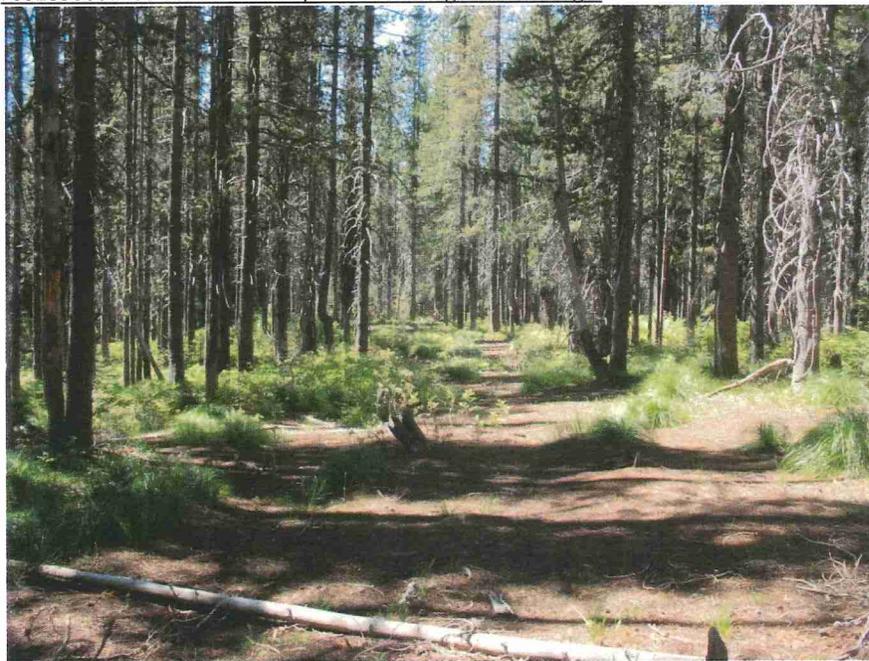
R2012010500011
2011 Middle Creek Bugs Timber Sale Project
North Fork Ranger District
Clearwater National Forest

FS01050001455 Stock Driveway Corridor along Lean To Ridge.



Looking South jpeg 017

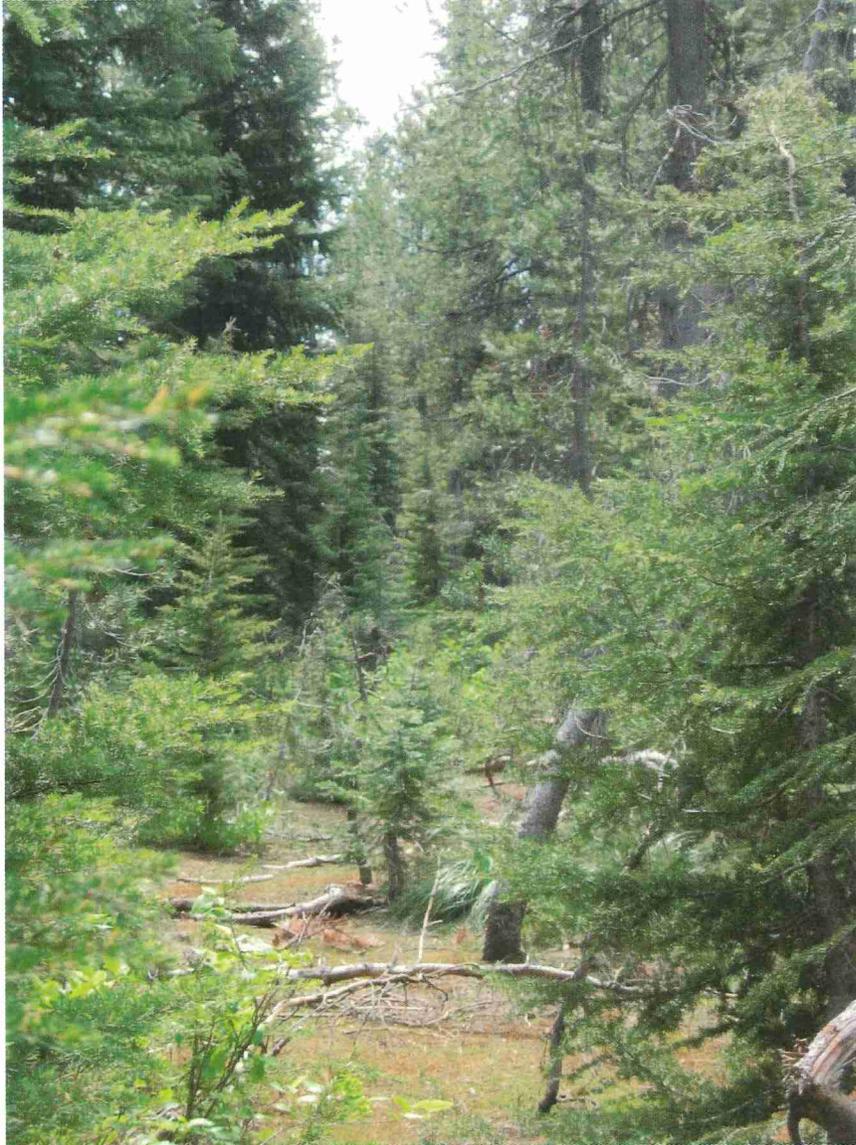
FS01050001455 Stock Driveway Corridor along Lean To Ridge.



Looking North jpeg 013.

FS2012010500011
2011 Middle Creek Bugs Timber Sale Project
North Fork Ranger District
Clearwater National Forest

FS01050001456, 1936 Trail Tread



Looking North Jpeg 011

FS2012010500011
2011 Middle Creek Bugs Timber Sale Project
North Fork Ranger District
Clearwater National Forest

FS0105000 1456, 1936 USFS Trail Tread



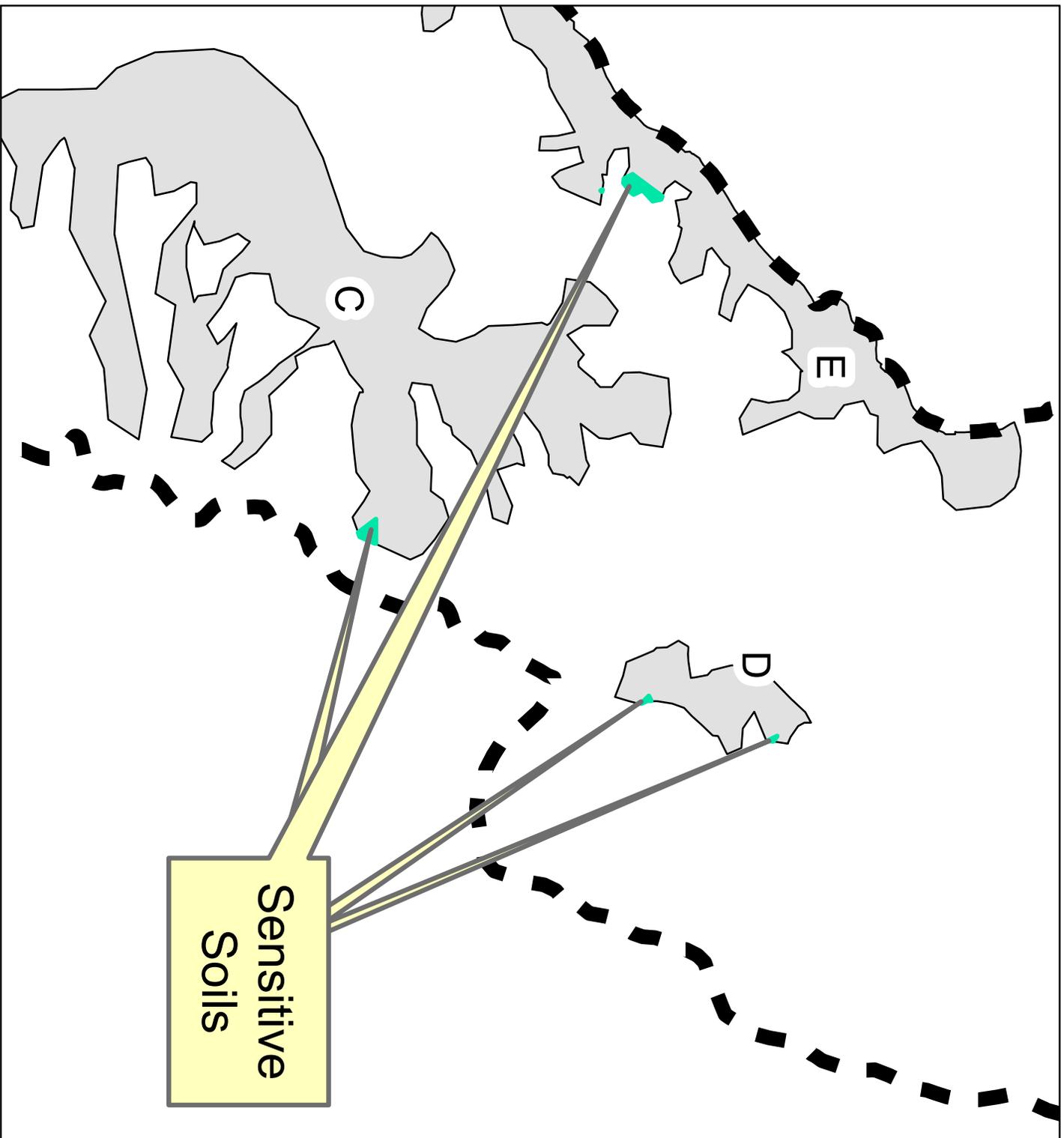
Looking South Jpeg 008

Middle Bugs
Sensitive Soils
Requiring Mitigation



-  Study Area Boundary
-  Sensitive Soils
-  Harvest Units

Sensitive
Soils



Appendix D –Consideration of Science and Literature Submitted by the Public

Members of the Middle Bugs Project interdisciplinary team are considered proficient in their field of study by way of academic achievement, agency training, years of professional experience, and in some cases, certification programs. In addition, each team specialist has cited numerous scientific studies and literature used to support discussions and conclusions made in this project’s analysis (refer to References). The public referenced other literature and scientific studies during the EA comment period. Some of this literature consisted of opinion pieces, editorials, articles, press releases, testimony, quotations, or stories from news outlets. They are not scientific, peer reviewed studies or literature. Peer review as well as the strength and specificity of the relationship between ideas, data and inference distinguish scientific insights from opinion.

All applicable science was considered, as required by law, regulation and policy. The citations contained in the comment letters were evaluated for applicability to this project proposal, and the findings discussed below.

<i>Cited Literature</i>	<i>How was it considered</i>	<i>Rationale/Comments</i>
Al-jabber, Jabber M. 2003 Habitat Fragmentation: Effects and Implications http://faculty.ksu.edu.sa/a/Documents/Habitat%20Fragmentation%20Effects%20and%20Implication.pdf	Not used	Mr. Artley states that timber harvest activities damage natural forest resources and cited this document which contains pictures showing logging damage. Samson 1997, states “Recent experimental evidence suggests habitat fragmentation in ecosystems with a high natural disturbance has little effect on species survival rates owing to the adaptation of natural disturbance regimes.” Estill (1996) and Samson recommend not addressing the issue of fragmentation at the project level.
Amaranthus, Mike P. Ph.D., Raymond M. Rice Ph.D., N. R. Barr and R. R. Ziemer Ph.D. 1985. Logging and forest roads related to increased debris slides in southwestern Oregon. Journal of Forestry Vol. 83, No. 4. 1985. http://www.humboldt.edu/~rrz7001/pubs/Ziemer85.PDF	Supports analysis	This study came to the same conclusions as ones done on the Clearwater N.F. after 1996-1997 flood events. The Middle Bugs project avoids areas prone to mass wasting. Also, project design features would minimize soil disturbance, displacement and compaction and impacts to the forest floor and organic matter.
Anderson, P.G. 1996. “Sediment generation from forestry operations and associated effects on aquatic ecosystems” Proceedings of the Forest-Fish Conference: Land Management Practices Affecting Aquatic Ecosystems, May 1-4, 1996, Calgary, Alberta. http://www.alliance-pipeline.com/contentfiles/45_Sediment_generation.pdf	Not used; Consistent with other science used	This document is consistent with other science used in the Middle Bugs project to develop design features to minimize sediment. This article discusses the effects of logging and roads on aquatic habitats, particularly in relation to sediment delivery to streams. The article recommends measures to limit effects. These are similar to those used for the project including INFISH buffers, undersized or damaged culvert replacements, installation of additional culverts to drain roadside ditches away from streams, the decommissioning of unnecessary roads, and using appropriate yarding systems to minimize soil disturbance.
Applying Ecological Principles to Management of the U.S. National Forests Issues in Ecology Number 6 Spring 2000 http://www.watertalk.org/wawa/ecosci.html Found at: http://www.esa.org/science_resources/issues/FileEnglish/issue6.pdf Roland, 1993; Rothman and Roland, 1998; Kouki, McCullough and Marshall, 1997; Bellingier, Ravlin and McManus, 1989	This document is applicable and consistent with literature used in the analysis	This article identified major ecological considerations that should be incorporated in sound forest management policy and their potential impacts on current practice. The Middle Bugs project would maintain structural diversity by retaining trees and large woody debris on harvest sites that more closely mimic natural processes. The project would implement INFISH buffers, BMPs and proposes road decommissioning, culvert removal and/or replacement activities to protect water quality. Where temporary or permanent roads would be constructed, project design features and BMPs would help meet Forest guidelines and

Cited Literature	How was it considered	Rationale/Comments
		reduce the extent of disturbance and maintain soil productivity. New proposed permanent road construction would have negligible effects on hillslope hydrology and water quality because it would be located in an upper hillslope and ridgetop location, would not cross any water and would be placed into a hydrologically stable condition following long-term storage techniques. Temporary roads would be fully obliterated and recontoured after use.
Barnard, E.L. Ph. D. "Forest Health Fundamentals" from Forest Management, 2004 http://www.fl-dof.com/forest_management/fh_fundamentals.html	Not used. Supports project activities.	This 2004 article describes the poor health of Florida forests and the need for active forest resource management.
Barry, Glen, Ph.D. Commercial Logging Caused Wildfires, Published by the Portland Independent Media Center, August 2002. http://portland.indymedia.org/en/2002/08/17464.shtml	Not applicable	This opinion piece denounces all commercial timber harvest on FS lands; particularly activities supporting the national fire plan. It contends that fuel reduction efforts should be limited to the immediate vicinity of homes.
Barry, Glen PH. D. "Insect Attacks may benefit Colorado Forests" Forests.org, January 29, 2004 http://forests.org/blog/2004/01/insect-attacks-may-benefit-col.asp	Not applicable	The author advocates that a hands off approach to managing beetle infested forests in Colorado would lead to adaptive and renewed forests, with far improved outcomes than logging could ever hope to achieve. Consistent with Forest Plan direction for this management area, the Middle Bugs project would reduce susceptibility to mountain pine beetle outbreaks, increase diversity of successional stages in lodgepole pine stands which would increase resilience and reduce the probability that mountain pine beetle caused disturbance would convert mid-successional and late successional stands to early successional stands.
Barry, John Byrne. Stop the Logging, Start the Restoration. The Planet newsletter, June 1999, Volume 6, Number 5 http://www.sierraclub.org/planet/199905/ec1.asp	Not applicable	This non-peer reviewed opinion piece advocates an end to commercial logging on federal lands. Middle Bugs project activities are consistent with Forest Plan direction for this area and address the purpose and need for action.
Bartels, Ronald, John D. Dell, Richard L. Knight Ph.D. and Gail Schaefer, "Dead and Down Woody Material" Animal Inn http://www.fs.fed.us/r6/nr/wildlife/animalinn/hab_8ddwm.htm	General Information	This paper asserts that leaving the perpetuation of large down material to chance will probably result in its disappearance from the managed forests of the future, along with the loss of dependent plant and wildlife species. The Middle Bugs project contains design features that dictate the tons of coarse woody material to be left in treated areas consistent with Graham et al. 1994 recommendations. Leave tree requirements would address future recruitment needs. Implementation of default INFISH buffers, and BMPs would provide additional protections. Potential impacts to plant, animal and fishery resources were considered in the analyses.
Bio-Medicine.org, 2001 http://news.bio-medicine.org/biology-news-2/View-of-forest-insects-changing-from-pests-to-partners-8940-1/ Science Blog http://www.scienceblog.com/community/older/2001/C/200113890.html View of forest insects changing from pests to partners	Not Applicable	The author contends that in many cases, insect infestations should be allowed to run their course as they help to restore forest health on a long term basis. The no action alternative demonstrates that left untreated, the area would not trend toward desired future conditions. Proposed project activities would reduce the lodgepole component while increasing white pine and larch which would increase biodiversity and tolerance to disturbance within individual stands as well as the project area. Left untreated, beyond the next 10-20 years, the landscape would be expected to return to a lodgepole pine dominated landscape. This is not consistent with the desired future conditions for this area based on Forest Plan direction and incorporated data from Ecological Units of the Northern Region Subsections, Land Type Associations and the BHOWS Assessment.
Black, S.H. PH.D., D. Kulakowski Ph. D., B.R. Noon Ph.D., and D. DellaSala Ph.D. 2010. "Insects and Roadless Forests: A Scientific Review of Causes, Consequences and Management Alternatives." National Center for Conservation Science & policy,	Not applicable	The Middle Bugs project does not propose activities within roadless areas. The project purpose and need is to provide goods and services and improve species diversity to create conditions that are resilient and allow for rapid recovery after disturbances.

<i>Cited Literature</i>	<i>How was it considered</i>	<i>Rationale/Comments</i>
Ashland OR. http://nccsp.org/files/Insect%20and%20Roadless%20Forests.pdf		
Black, Scott Hoffman Ph. D., Entomologist/Ecologist and Executive director, The Xerces Society, Excerpt from a 2008 comment letter to Alice Allen Hell Canyon Ranger District, Black Hills National Forest, http://www.xerces.org/wp-content/uploads/2008/09/black_hills_comments.pdf	Not applicable	This is an excerpt from a comment letter protesting salvage harvest in the proposed Jasper Fire Value Recovery Project in South Dakota. In general, it has nothing to do with the proposed Middle Bugs project other than both projects propose removal of beetle infested timber.
Black, Scott Hoffman Ph. D., Entomologist/Ecologist and Executive director, The Xerces Society for Invertebrate Conservation 2005 "Logging to Control Insects: The Science and Myths Behind Managing Forest Insect "Pests"	Not Used.	This report outlines key aspects of bark beetle outbreaks, their relationship to fire risk, and presents alternatives to large scale logging practices. In part, the purpose of the Middle Bugs project is to provide goods and services and recover the economic value of dead and dying trees; to improve species diversity to create conditions that are resilient and allow for rapid recovery after disturbance. This project is consistent with Forest Plan direction for this area regarding selection of silvicultural systems that will be the most beneficial to long term timber production, but modified as necessary to meet other resource and management area direction.
Board on Agriculture. 1998 "Forested Landscapes in Perspective: Prospects and Opportunities for Sustainable Management of America's Nonfederal Forests" http://books.nap.edu/openbook.php?record_id=5492&page=205	Not applicable	This paper examines the federal role in nonfederal forest management. This is not applicable to the Middle Bugs project which is proposed on federal lands on the Nez Perce Clearwater National Forest.
Bond, Monica L., Derek E. Lee, Curtis M. Bradley and Chad T. Hanson Ph.D., "Influence of Pre-Fire Tree Mortality on Fire Severity in Conifer Forests of the San Bernardino Mountains, California", The Open Forest Science Journal, 2009, 2, 41-47 http://www.biologicaldiversity.org/publications/papers/Bond_et_al.pdf	Not Applicable	This study in southern California conifer forests found that stands with considerable mortality due to drought and insects would not burn at higher severity than stands without significant tree mortality, either in the short or long term; indicating that widespread removal of dead trees may not effectively reduce higher-severity fire. The purpose and need of the Middle Bugs project is to provide goods and services and recover the economic value of dead and dying trees; to improve species diversity to create conditions that are resilient and allow for rapid recovery after disturbance. This project is consistent with Forest Plan direction for this area regarding selection of silvicultural systems that will be the most beneficial to long term timber production, but modified as necessary to meet other resource and management area direction. This is not a fuel reduction project.
Borga, M., F. Tonelli, G. Dalla Fontana and F. Cazorzi. 2003. Evaluating the Effects of Forest Roads on Shallow Landsliding. Geophysical Research Abstracts, Vol. 5, 13312, 2003 http://www.cosis.net/abstracts/EAE03/13312/EAE03-J-13312.pdf	Not used	This link is only of the articles abstract. To have a better understanding of their studies and compare their findings to the Middle Bugs EA, a full article is needed. The quotation is general and does not contain enough information to compare to the Middle Bugs project. The Middle Bugs EA analyzed potential effects to landslide prone areas from project activities.
Bowling, L.C., D. P. Lettenmaier, M. S. Wigmosta and W. A. Perkins. 1996. Predicting the Effects of Forest Roads on Streamflow using a Distributed Hydrological Model from a poster presented at the fall meeting of the American Geophysical Union, San Francisco, CA, December 1996. http://www.ce.washington.edu/~lxb/poster.html	Not used	This poster focused on flow routing and compared the performance of two different flow routing schemes. Research results are uncertain; however, the concept of the research is valid. Road maintenance can reduce sediment delivery to stream channels through improved drainage and reduced erosion of the road surface by directing water off of the road surface. Refer to the Middle Bugs EA, Chapter 3 for the effects on streams and soils.
Boxall, Bettina "Bark beetles may kill trees, but that may not raise fire risk" Los Angeles Times, September 26, 2010,	Not Applicable	This is a newspaper article about a study that concluded that overall, mountain pine beetle damage generally results in a dampening rather than an amplification of fire behavior

Cited Literature	How was it considered	Rationale/Comments
http://articles.latimes.com/2010/sep/26/nation/la-na-beetle-fire-20100926		and intensity because the infestations thin the tree crowns which reduces fire risk. The Middle Bugs project is not a fuels reduction project. The purpose and need is to provide goods and services and recover the economic value of dead and dying trees. Also to improve species diversity in the project area to create conditions that are resilient and allow for rapid recovery after disturbance.
Brisler, Daniel. 1998. A Review and Comment on: Forest Service Roads: A Synthesis of Scientific Information, 2nd Draft, USDA Forest Service. December 1998. http://www.wildrockies.org/wildcpr/reports/socio-eco-roads.html	Limited applicability	Commenter references Forest Service Roads Report (national level). He discusses that the ecological costs of roads are overridden by social benefits, particularly aquatic effects. This reference is too broad to apply to the road segments and land types in the project area. Since the points cited are from a large variety of articles in many areas, it is difficult to find applicability to the design measures and land types where roads exist or are proposed on this project. The Middle Bugs project addresses aquatic road related concerns through culvert replacement, road reconstruction, and road decommissioning.
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.	Not used, supports analysis	The document focuses on impacts of down wood removal on carnivores and harvest impacts in remote areas. The Middle Bugs Project would retain down woody debris and the project is not within a remote area.
Bunnell, Fred L. Ph.D., Kelly A. Squires and Isabelle Houde. 2004. Evaluating effects of large-scale salvage logging for mountain pine beetle on terrestrial and aquatic vertebrates. Mountain Pine Beetle Initiative Working Paper 1. Canadian Forest Service. http://warehouse.pfc.forestry.ca/pfc/25154.pdf	Limited applicability	This reference pertains to impacts to wildlife and aquatic species from beetle kill salvage logging in British Columbia due to increases in sediment and landslides. The Middle Bugs project includes design features to reduce the potential for sedimentation. Impacts of proposed activities on sediment production and landslide potential are analyzed in Chapter 3.
Byron, Eve "Wuerthner to speak on forest ecology and value of dead trees" Published in the Helena Independent Record, November 17, 2009 http://www.helenair.com/news/local/article_7cac58d2-d339-11de-abfc-001cc4c002e0.html	Not Applicable. Opinion piece. General information	This brief 2009 newspaper article advertised an upcoming lecture by George Wuerthner who has argued that dead trees are critical to a healthy forest ecosystem and don't necessarily need to be removed from a forest to lessen the danger of catastrophic fire. The Middle Bugs project presents a site specific analysis of potential impacts from project implementation. Project activities are consistent with the project purpose and need for action and Forest Plan direction for this area which is to limit size of individual wildfires, treat logging and thinning slash to prepare sites for reforestation, to break up continuous fuel beds, to remove barriers to big game movement and improve forage and to use prescribed fires from planned and unplanned ignitions as needed to achieve Forest Plan direction.
Calvert, Heffry Ph.D. A Healthy Forest needs Bugs, California Forest Stewardship Program, 2002, http://ceres.ca.gov/foreststeward/html/bugs.html	Not applicable	This quote states that insects keep our forests healthy. The Middle Bugs project would harvest dead and dying timber to provide goods and services and improve species diversity to create conditions that are resilient and allow for rapid recovery after disturbance. Proposed harvest activities in this area are consistent with Lotan and Critchfield, 1990; Gibson, 2004; Walker, et. al. 2004; and Holling, 2001.
Cushman, John H. Jr. 1999. Audit Faults Forest Service on Logging Damage in U.S. Forests. New York Times, February 5, 1999 http://query.nytimes.com/gst/fullpage.html?res=9B00E2DF163BF936A35751C0A96F958260&sec=&sp on=&pagewanted=print	Not Applicable	This 1999 article in the New York Times reported deficiencies in implementation of Forest Service timber sales between 1995 and 1998. It is not pertinent to this project.
Court Case – Citizens Against Burlington, Inc. v. Busey, 938 F.2d 190 (D.C. Cir. 1991), cert. denied, 502 U.S. 994, 112 S. Ct. 616 (1991). See also Ayers v. Espy, 873 F. Supp. 455, 467-68 (D. Colo. 1994)	Consistent with Middle Bugs project analysis	These court cases are submitted as proof that the analysis fails to offer and disclose a reasonable range of alternatives. The court stated that a court will uphold an agency's definition of objectives as long as they are reasonable. Further, an agency need follow only a rule of reason in preparing an EIS, and this rule of reason extends

<i>Cited Literature</i>	<i>How was it considered</i>	<i>Rationale/Comments</i>
		both to which alternatives the agency must discuss, as well as the extent to which it must discuss them. The dissent found this reasoning contra to CEQ's regulations, noting that the FAA failed to examine all practical or feasible alternatives, and it had "the duty under NEPA to exercise a degree of skepticism in dealing with self-serving statements from a prime beneficiary of the project."
Court Case – Citizens against Toxic Sprays v. Bergland, 428 F. Supp. 908. 933 (D.Or. 1977).	Consistent with Middle Bugs project analysis	The courts have established that this direction does not mean every conceivable alternative must be considered, but that selection and discussion of alternatives must permit a reasoned choice and foster informed decision making and informed public participation.
Court Case – Town of Matthews v. United States Dept. of Transportation., 527 F. Supp, 1058 (W.D,N.C. 1981).	Consistent with Middle Bugs project analysis	The courts have established that this direction does not mean every conceivable alternative must be considered, but that selection and discussion of alternatives must permit a reasoned choice and foster informed decision making and informed public participation.
"Dead Trees are Good Homes" Parks Canada, 2009 http://www.pc.gc.ca/eng/docs/v-g/dpp-mpb/sec1/dpp-mpb1b.aspx	Consistent with Middle Bugs analysis. General information	This article states that "at endemic or normal levels, mountain pine beetles help maintain diversity by colonizing and killing old or damaged trees, therefore kick-starting the invaluable process of decomposition." It is widely recognized that the current mountain pine beetle outbreak has reached epidemic levels in many areas. The scale of outbreaks is unprecedented in modern times. The Middle Bugs project design features retain 5 to 26 leave trees per acre and 7 to 13 tons per acre of coarse woody material to meet soil and wildlife objectives.
deMaynadier, Phillip G. and Malcolm L. Hunter, Jr. Road Effects on Amphibian Movements in a Forested Landscape. http://www.mendeley.com/research/road-effects-on-amphibian-movements-in-a-forested-landscape/	Not used	This single sentence quote comes from the results of a study conducted in Maine for wide roads with use of 300 vehicles/day. Middle Bugs roads do not have this much use. The abstract does not provide site-specific nor species-specific information relative to Middle Bugs project nor the western toad, a Clearwater National Forest sensitive species. Planned actions to decommission unneeded roads could improve upstream migration opportunities for amphibians. The EA discusses road impacts to western toad (pg. 65, 66).
Dombeck, Mike Ph.D. Through the Woods. The News Hour with Jim Lehrer. 19 June 1998. http://www.pbs.org/newshour/bb/fedagencies/jan-june98/road_6-19.html	Not used; supports analysis	This quotation is taken out of context from a transcript about road building in roadless areas. It does not address any specific activities in the proposed project. The Middle Bugs Project discloses potential impacts to recreation, wildlife, watershed and fisheries resources.
Dombeck, Mike Ph.D. 1998. A message on Conservation Leadership sent to all USFS employees on July 1, 1998 http://www.wvhighlands.org/VoicePast/VoiceAug98/Dombeck.Aug98.html	Not used; supports analysis	The Middle Bugs project was developed with consideration of resource values, Forest Plan goals, objectives and standards and in compliance with NEPA regulations.
Dombeck, Mike Ph.D. 1998. US Forest Service Chief Dombeck remarks made to Forest Service employees and retirees at the University of Montana. February 1998.	Not Used; supports analysis	Middle Bugs is consistent with the road recommendations made by the Chief in this speech: it presents an alternative with no new permanent roads, eliminates unneeded roads and upgrades roads important to public access.
Drever, Ronnie Ph.D. and Josie Hughes 2001 "Salvaging Solutions: Science-based management of BC's pine beetle outbreak" A report commissioned by the David Suzuki Foundation, Forest Watch of British Columbia (a project of the Sierra Legal Defence Fund), and Canadian Parks and Wilderness Society – B.C. Chapter http://www.davidsuzuki.org/files/Pine_beetle.final_w=cover2.pdf	Not Applicable.	This report focuses on management within the timber harvesting landbase, on the understanding that protected areas must remain unlogged, both to meet the regional conservation objectives and to provide opportunities for understanding unmanaged forest ecosystems. The quoted portion of the report states that current mountain pine beetle management fails to adequately ensure that ecological values are protected. The Middle Bugs EA analyzed impacts to all relevant resources and includes design features to minimize impacts.
Ehrlich, Anne Ph.D., David Foster Ph.D. and Peter	Not applicable	The excerpted quote refers to environmental damage

<i>Cited Literature</i>	<i>How was it considered</i>	<i>Rationale/Comments</i>
<p>Raven Ph.D. 2002. Call to End Logging Based on Conservation Biology. Native Forest Network. http://www.nativeforest.org/campaigns/public_land/strb_5_30_02.htm</p>		<p>caused by Forest Service logging activities in the past century. It calls for a halt to commercial logging on National Forest Lands. The Middle Bugs Project is consistent with Forest Plan management direction for this area and responds to the purpose and need for action.. A no action alternative was analyzed.</p>
<p>Ehrlich, Anne and E.O. Wilson, et al. April 2002. 221 Scientists Urge President Bush to End Commercial Logging on National Forests. http://www.forestwatch.org/content.php?id=108</p>	<p>Not applicable</p>	<p>This letter discusses potential irrevocable damage to terrestrial and aquatic habitats from logging practices. The Middle Bugs EA analyzed potential effects to resources from proposed activities and determined the specific environmental effects that would occur, with detrimental effects minimized through project design measures.</p>
<p>Elliot, W.J.; Page-Dumroese, D.; Robichaud, P.R. 1999. The effects of forest management on erosion and soil productivity, Proceedings of the Symposium on Soil Quality and Erosion Interaction, Keystone, CO, July 7, 1996. Ankeney, IA: Soil and Water Conservation Society. 16 p. http://forest.moscowfsl.wsu.edu/smp/docs/docs/Elliot_1-57444-100-0.html</p>	<p>Background information. Consistent with science used</p>	<p>This paper discusses the impacts of forest management activities on soil erosion and productivity. The Middle Bugs EA analyzed the impacts of proposed harvest and burning activities on soil erosion and productivity. Proposed activities are consistent with Forest and Regional soil standards. Design features have been included to assure that these standards are met.</p>
<p>EPA. 2000. Entry into the Federal Register: March 3, 2000 (Volume 65, Number 43) Page 11675. National Forest System Road Management. http://www.epa.gov/fedrgstr/EPA-GENERAL/2000/March/Day-03/g5002.htm</p>	<p>supports analysis</p>	<p>CFR notice of comment opportunity on Forest Service Road Management. Proposed strategy would have forests analyze new and existing roads for need, decommission those not needed, improve those roads needed to limit effects to resources. Middle Bugs is consistent in that it addresses all three topics.</p>
<p>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. Available online at: http://www.nrdc.org/land/forests/roads/eotrinx.asp</p>	<p>Considered</p>	<p>This compilation of articles documents the adverse impacts of roads and logging on North American Forest systems. This research was cited with the statement that adverse consequences to soil, ecological processes, wildlife, and other elements of the natural environment are associated with logging, including thinning. The Middle Bugs EA analyzed and disclosed potential site-specific impacts to these resources from proposed activities.</p>
<p>Ercelawn, A. 2000. Wildlife Species and Their Habitat: The Adverse Impacts of Logging -- A Supplement to End of the Road. ,11 pp.Natural Resources Defense Council. New York. Available online.</p>	<p>Considered</p>	<p>The Middle Bugs project analyzed potential project impacts to MIS, TES and sensitive species from project activities. Much of the research cited in this appendix is not relevant to the Middle Bugs area.</p>
<p>FOREST CONSERVATION NEWS TODAY. August 27, 2002. Bush Fire Policy: Clearing Forests So They Do Not burn http://forests.org/archived_site/today/recent/2002/tiporefl.htm</p>	<p>Not applicable</p>	<p>This opinion piece contends there is little evidence to show that logging will prevent catastrophic fires; on the contrary, logging roads and industrial logging causes wildfires. The objectives of the Middle Bugs project are to provide goods and services, recover economic value of dead and dying trees; improve species diversity in the area to create resilient vegetative conditions; reduce stand densities in overstocked stands to promote tree growth and vigor and reduce potential sediments into the aquatic ecosystems. This is not a fuels project.</p>
<p>Forest Fragmentation and Roads, Eastern Forest Environmental Threat Assessment Center, U.S. Forest Service - Southern Research Station. http://www.forestthreats.org/publications/su-srs-018/fragmentation</p>	<p>Not used.</p>	<p>The abstract discusses fragmentation. Samson 1997, states "Recent experimental evidence suggests habitat fragmentation in ecosystems with a high natural disturbance has little effect on species survival rates owing to the adaptation of natural disturbance regimes." Estill (1996) and Samson recommend not addressing the issue of fragmentation at the project level.</p>
<p>"Forest Protection – Insects" Canfor Corporation, 2007, http://www.canfor.com/treeschool/library/files/insects.asp</p>	<p>Consistent with science used.</p>	<p>The Middle Bugs project is consistent with recommendations in this report which states that using silviculture methods to improve the health of the stand and increase the growth rate of the trees will help keep pests under control. Berryman 1 lists the following approaches:</p>

Cited Literature	How was it considered	Rationale/Comments
		<p>Select tree species that are optimally adapted for the sites. Use harvest methods adapted to the tree species that are being replanted and that mimic the natural disturbance patterns. Strong healthy seedlings are less prone to attack. Remove diseased or unhealthy trees and logging debris that can act as breeding grounds for pests (salvage logging). Encourage diversity of species. This helps to limit pest spread. Use thinning, fertilization and prescribed fire to enhance vigor. Prevent trees from becoming overmature by harvesting before this state is reached.</p>
<p>Forman, Richard T. and Lauren E. Alexander. 1998. Roads and their Major Ecological Effects. Annual Review of Ecology and Systematics, Vol. 29: 207-231, November 1998 http://arjournals.annualreviews.org/doi/abs/10.1146/annurev.ecolsys.29.1.207?cookieSet=1&journalCode=ecolsys.1</p>	<p>Not used; supports analysis</p>	<p>Document discusses road impacts to species at a national level including Britain and Australia. The Middle Bugs EA addresses effects from roads specific to the analysis area. Consistent with the roads analysis completed for this area, this project proposes decommissioning 3 miles of roads and placing 11.3 miles into long term storage.</p>
<p>Franklin, Jerry F. Ph.D. and James K. Agee Ph.D. 2003. Forging a Science-Based National Forest Fire Policy. Issues in Science and Technology Fall 2003. http://inr.oregonstate.edu/download/forging_a_science_based_national_forest_fire_policy.pdf</p>	<p>Provides background information applicable to this project</p>	<p>In this article, a multi-disciplinary group of scientists discuss ecosystem based management approaches to keep watersheds and forests functioning properly. Middle Bugs project activities are consistent with the approaches discussed. It is not a fire salvage project. Sufficient amounts of down, woody material would be left to sustain soil productivity. No old growth would be harvested.</p>
<p>Franklin, Jerry Ph.D., David Perry Ph.D., Reed Noss Ph.D., David Montgomery Ph.D. and Christopher Frissell Ph.D. 2000. Simplified Forest Management to Achieve Watershed and Forest Health: A Critique. http://www.coastrange.org/documents/forestreport.pdf</p>	<p>Provides background information applicable to and consistent with the project.</p>	<p>In this article, a multi-disciplinary group of scientists discuss ecosystem based management approaches to keep watersheds and forests functioning properly. To maintain forest function, the Middle Bugs project would implement INFISH buffers, applicable BMPs, retain 14 to 26 trees per acre on regeneration harvested areas – favoring the retention of larger trees.</p>
<p>Frey, David. 2010. Logging Won't Halt Beetles, Fire, Report Says. NewWest.net, 3-03-10. http://www.newwest.net/topic/article/logging_wont_halt_beetles_fire_report_says/C41/L41/</p>	<p>Not applicable</p>	<p>This article discusses impacts to wildlife, soil and fisheries from roadbuilding in mountain pine beetle infested roadless areas in Colorado. The author contends that cutting efforts should be focuses around communities and homes. The Middle Bugs project analyzed the impacts to wildlife, soils and fisheries from all proposed activities. The project purpose and need proposes timber harvest and activity fuel treatments to provide goods and services, improve species diversity to create resilient conditions and allow for rapid recovery after disturbance.</p>
<p>Furniss, Michael J., Michael Love Ph.D. and Sam A. Flanagan. 1997. Diversion Potential at Road-Stream Crossings. USDA Forest Service. 9777 1814—SDTDC. December 1997. http://www.stream.fs.fed.us/water-road/w-r-pdf/diversionpntl.pdf</p>	<p>Not used; supports analysis</p>	<p>Document discusses impact of roads, particularly road stream crossings, on fisheries. Project proposed actions and design features minimize road impacts. Analysis of impacts to aquatic habitats is discussed in the EA, pages 78.</p>
<p>Gable, Eryn . 2010. Battling beetles may not reduce fire risks – report. The Xerces Society Land Letter, March 4, 2010 http://www.xerces.org/2010/03/04/battling-beetles-may-not-reduce-fire-risks-report/</p>	<p>Limited applicability</p>	<p>This article is an opinion piece that interprets the findings of a separate report that states that the occurrence of large fires in lodgepole pine and spruce-fir forests is mainly influenced by climatic conditions, particularly drought. The article also contends that logging can seriously damage soil and roots, leader to greater stress on remaining trees and increasing susceptibility to outbreaks. The Middle Bugs purpose and need proposes timber harvest and activity fuel treatments to provide goods and services, improve species diversity to create resilient conditions and allow for rapid recovery after disturbance. Impacts to all relevant resources was analyzed. After harvest, the area would be planted with western larch and western white pine to increase species diversity and resilience.</p>
<p>Gerein, Keith “Notorious pine beetle may be misunderstood” The Edmonton Journal, March 21,</p>	<p>Not Applicable</p>	<p>This article discusses Currie research that discovered the mountain pine beetle is associated with a bacterium</p>

<i>Cited Literature</i>	<i>How was it considered</i>	<i>Rationale/Comments</i>
2009 http://www.chetwyndecho.net/Issues/Issue_13_March_27_2009IWORK_-_website_PDF.pdf/		containing an antibiotic compound that could eventually lead to new life-saving medicines. It is not applicable to the middle Bugs project.
Giuliano, Jackie Alan, Ph.D. 2008. Fire Suppression Bush Style: Cut Down the Trees! Environmental News Service, 2008. http://www.ens-newswire.com/	Not applicable	This 2008 opinion piece asserts that under the Bush administration, environmental laws would be undermined or suspended to that federal land management agencies can increase logging and roadbuilding on public lands, one of the timber industry's highest priorities. The Middle Bugs project is consistent with all applicable laws, rules and regulations regarding proposed activities. It is also consistent with Forest Plan direction for this area.
Goheen, D. J. and E. M. Hansen. 1993. Effects of pathogens and bark beetles on forests. pp. 175-196 in Beetle-Pathogen Interactions in Conifer Forests. T.D. Schowalter and G.M. Filip, eds. Academic Press. San Diego..	Applicable; supports analysis	This document addresses the varied roles that root pathogens and bark beetles play in western coniferous forests as regulators of ecological structure and processes and arbiters of management success and agents of significant economic loss.
Gorte, Ross W. Ph.D. 1995. Forest Service Timber Sale Practices and Procedures: Analysis of Alternative Systems. A Congressional Research Service (CRS) report, October 30, 1995. http://www.ncseonline.org/NLE/CRS/detail.cfm?do=do&OrderBy=Date&Category=Forests&CRScode=&Title=&Authors=&Keyword=&quickKeyword=&MaxCount=32&start=21	Not applicable to this project	This report describes the Forest Service timber sale system and the major concerns over the consequences of the sale system. It then reviews the option of a complete overhaul of the current approach that would separate the timber cutting and removal from the sale of the wood, and analyzes the consequences of this approach. This is not applicable to analysis of the environmental effects of the proposed actions. The Middle Bugs EA analyzed the environmental impacts to wildlife, waters quality, fisheries and soils from implementing proposed activities
Government Accounting Office. 1999. Western National Forests: A Cohesive Strategy is Needed to Address Catastrophic Wildfire Threats, GAO/RCED-99-65. http://www.gao.gov/archive/1999/rc99065.pdf	Not used, supports analysis	This 1999 GAO report contains recommendations to the Secretary of Agriculture for developing a more cohesive strategy to address growing threats to national forest resources and nearby communities from catastrophic wildfires. The Middle Bugs project is not a fuels reduction project. This project would provide goods and services important to society and recover the economic value of dead and dying trees. Consistent with the GAO report, this project would also improve species diversity to recreate conditions that are resilient and allow for rapid recovery after disturbance.
Grace, Johnny M. III Ph.D. 2003. Minimizing the impacts of the forest road system. In: Proceedings of the conference 34 international erosion control association; ISSN 1092-2806. [Place of publication unknown]: International Erosion Control Association: 301-310. http://www.srs.fs.usda.gov/pubs/ja/ja_grace011.pdf	Not used	Study conducted in Alabama on 4 methods for filtering sediment from roads to limit its delivery to streams. We can't determine from study whether road was graveled or native surface which is needed in order to compare with Middle Bugs. Current BMP's including slash filter windrows have shown to be very effective on the Nez Perce and Clearwater N.F. The Middle Bugs EA addresses effects of sediment from roads in chapter 3.
Gucinski, Hermann Ph.D., Michael J. Furniss, Robert R. Ziemer Ph.D. and Martha H. Brookes, Editors. 2001. Forest Roads: A Synthesis of Scientific Information. USDA Forest Service, General Technical Report PNW-GTR-509. http://www.fs.fed.us/pnw/pubs/gtr509.pdf	Not used Consistent with science used	This article discusses how road effects take place in the context of environmental settings, their history, and the state of engineering practices, and how they must be evaluated in those contexts for best management approaches.
H. R. 1494 text. April 4, 2001 http://www.agriculturelaw.com/legis/bills107/hr1494.htm	Not applicable	This 2001 bill proposed to eliminate commercial logging on Federal public lands. It never came to a vote. A single sentence is quoted regarding commercial logging indirect costs such as flooding damage, damage to the salmon fishing industry and harm to the recreation and tourism industries. This does not apply to the middle Bugs project.
Hann, W.J. et al. 1997. Landscape dynamics of the Basin. Pp. 337-1,055 in: Quigley, T.M. and S.J. Arbelbide (eds.). An Assessment of Ecosystem Components in the Interior Columbia Basin and Portions of the Klamath	Not Used; supports analysis	This assessment provides general background information on landscape dynamics within the Columbia Basin. As stated in the abstract, this information can be used by land managers to develop broad land management goals and priorities and provides the context for decisions specific to

<i>Cited Literature</i>	<i>How was it considered</i>	<i>Rationale/Comments</i>
and Great Basins: Volume II. USDA Forest Service, PNW-GTR-405 http://www.fs.fed.us/pnw/pubs/gtr405/pnw_gtr405aa.pdf		smaller geographic areas. A single sentence was quoted that states that fires in the roaded areas are more intense, due to drier conditions, wind zones on the foothill/valley interface, high surface fuel loading, and dense stands. A fuels analysis was completed for the Middle Bugs project.
Hanson, Chad Ph.D. 2000. Commercial Logging Doesn't Prevent Catastrophic Fires, It Causes Them. New York Times. May 19, 2000. http://www.commondreams.org/views/051900-101.htm	Not Applicable	This opinion piece asserts that timber harvest through its effects on forest structure, local microclimate and fuel accumulation has increased fire severity more than any other recent human activity. The Middle Bugs EA analyzed the impacts that proposed harvest of dead and dying trees would have on ladder and surface fuels in the project area.
Hanson, Chad Ph.D. 2008. Logging Industry Misleads on Climate and Forest Fires. New West. July 11, 2008. http://www.newwest.net/topic/article/logging_industry_misleads_on_climate_and_forest_fires/C41/L41/	Not applicable	This excerpt from an opinion piece states that recent editorials by timber industry spokesman are a wildly misleading attempt to promote increased logging of western US forests under the guise of reducing wildland fires. This general statement does not pertain to the Middle Bugs project, its purpose and need or site specific analysis of potential impacts.
Hanson, Chad, Ph.D. 2001. Logging for Dollars in National Forests. The Sacramento Bee - November 14, 2001. http://www.johnmuirproject.org/news-logging-for-dollars.html	Not applicable	This excerpt from an opinion piece states that the FS has developed a huge bureaucracy around the selling of timber from national forest land. The Middle Bugs project is consistent with Forest Plan management area direction, applicable laws, rules and regulations.
Harvey, A. E., M. J. Larsen, and M. F. Jurgensen. 1976. Distribution of Ectomycorrhizae in a Mature Douglas-fir/larch Forest Soil in Western Montana. Forest Science, Volume 22, Number 4, 1 December 1976, pp. 393-398(6) http://www.ingentaconnect.com/content/saf/fs/1976/00000022/00000004/art00007;jsessionid=i2sdf2hpha2.alexandra	Used for background information	The reference states that "logging reduces the organic parent material (duff and woody residues) available for soil formation processes." Numerous authors have reported reductions in mycorrhiza populations due to forest disturbance; however, the degree of reduction and its impact on forest regeneration varies widely and depends on many factors. The Middle Bugs EA, Chapter 2, describes all soil design and mitigation measures to keep project impacts at acceptable levels. Project activities and design features are consistent with science discussed.
Haskell, David G. Ph.D. 1999. Effects of Forest Roads on Macroinvertebrate Soil Fauna of the Southern Appalachian Mountains. http://www.istor.org/stable/2641904	Not used	The quoted document suggests that forest roads can produce marked edge effects that may have negative consequences for the function and diversity of the forest ecosystem based on soil samples taken along the edges of unpaved roads in the southern Appalachian mountains. The Middle Bugs project proposes road decommissioning and long term storage activities.
Hawbaker, Todd J. Ph.D., Volker C. Radeloff Ph.D., Murray K. Clayton Ph.D., Roger B. Hammer Ph.D., and Charlotte E. Gonzalez-Abraham Ph.D. Road Development, Housing Growth, and Landscape Fragmentation In Northern Wisconsin: 1937-1999. Ecological Applications, Vol. 16, No. 3, pp. 1222-1237. http://www.esajournals.org/doi/abs/10.1890/1051-0761%282006%29016%5B1222%3ARDHGAL%5D2.0.CO%3B2?journalCode=ecap	Not used	Not applicable. This document pertains to road densities associated with housing development.
Houston, Alan Ph.D. 1997. Why Forestry is in Trouble with the Public. Evergreen magazine, October 1997. http://evergreenmagazine.com/web/Why_forestry_is_in_trouble_with_the_public-v2.html	Not applicable	Opinion piece speaks to public distrust of foresters.
Hudak, Mike Ph.D. 1999. From Prairie Dogs to Oysters: How Biodiversity Sustains Us from his book review of The Work of Nature: How the Diversity of Life Sustains Us by Yvonne Baskin, 1997 Newsletter of Earth Day Southern Tier, February/March 1999, p. 2 http://www.mikehudak.com/Articles/FromPrairieDog	Not applicable	A single statement is taken from a book review which states that human manipulation of existing ecosystems has also sometimes had unfortunate consequences. The Middle Bugs EA analyzed potential impacts to applicable resources from proposed activities.

<i>Cited Literature</i>	<i>How was it considered</i>	<i>Rationale/Comments</i>
s9902.html		
Huff, Mark H. Ph.D.; Ottmar, Roger D.; Alvarado, Ernesto Ph.D., Vihnanek, Robert E.; Lehmkuhl, John F.; Hessburg, Paul F. Ph.D., Everett, Richard L. Ph.D. 1995. Historical and current forest landscapes in eastern Oregon and Washington. Part II: Linking vegetation characteristics to potential fire behavior and related smoke production. Gen. Tech. Rep. PNW-GTR-355. USDA Forest Service, Pacific Northwest Research Station. https://ir.library.oregonstate.edu/dspace/bitstream/1957/4706/1/PB96155213.pdf	Used for background information	This 1995 study examined changes in vegetation structure and composition in 6 river basins in eastern Oregon and Washington from 35 to 50 years ago to the present and to project the effects of vegetation changes on potential fire behavior and smoke production. The study concludes that prescribed fire, along with mechanical measures if hazardous burning conditions exist, can be used for restoration purposes to regulate stand composition, reduce plant competition, and modify fuels to achieve a desired structure. Over time, prescribed fires, natural fires, selective tree harvesting or combinations thereof can be used to maintain desired conditions and processes. The study conclusions, while specific to Oregon and Washington, are consistent with Middle Bugs project activities to address the purpose and need for action and move toward desired conditions.
Ingalsbee, Timothy Ph.D. 1997. Logging for Firefighting: A Critical Analysis of the Quincy Library Group Fire Protection Plan. Unpublished research paper. http://www.fire-ecology.org/research/logging-for-firefighting_2.htm	Not applicable	This paper is specific to the Quincy Library Group Fire Protection Plan.
Ingalsbee, Timothy Ph.D. 2000. Commercial Logging, for Wildfire Prevention: Facts Vs Fantasies. http://www.fire-ecology.org/citizen/logging_and_wildfires.htm	Not applicable	This opinion piece asserts that forest management policies should be based on science, not politics and that past management activities are the sources of forest health problems such as insect infestations, disease outbreaks and severe wildfires. The Middle Bugs EA analyzed the impacts of proposed activities with consideration of the latest science (see references).
Ingalsbee, Timothy Ph.D. 2002. Logging without Limits isn't a Solution to Wildfires. The Portland Oregonian, August 6, 2002 http://www.klamathforestalliance.org/Documents/loggingwithoutlimits.html	Not applicable	This opinion piece speaks to public opposition to commercial logging and skepticism regarding Forest Service credibility. It does not offer science or statements regarding proposed activities that can be addressed here.
Ingalsbee, Timothy Ph.D. 2002. The wildland fires of 2002 illuminate fundamental questions about our relationship to fire. The Oregon Quarterly, Winter 2002 http://fireecology.org/research/wildfire_paradox.pdf	Not applicable	This is a single statement taken from an opinion piece. The Middle Bugs project is not a fuels reduction project. It will remove dead and dying trees and leave larger, legacy trees.
Ingalsbee, Timothy Ph.D. 2003. Fanning the Flames! The U.S. Forest Service: A Fire-Dependent Bureaucracy. Missoula Independent. Vol. 14 No. 24, June 2003 http://www.fire-ecology.org/research/USFS_fire_dependent.html	Not applicable	This opinion piece contends that harvest activities create conditions that encourage large scale severe wildfires. The Middle Bugs project would harvest beetle infested lodgepole pine and treat logging slash. Project analysis has determined that fuel loading post harvest would decrease..
Ingalsbee, Timothy Ph.D. 2005. A Reporter's Guide to Wildland Fire. Firefighters United for Safety, Ethics, and Ecology (FUSE), January 2005 http://209.85.173.104/search?q=cache:FuTKT_jqv2oJ:www.fire.unifreiburg.de/media/A%2520Reporters%2520Guide%2520to%2520Wildland%2520Fire.pdf+ph.d.+%22fuels+reduction%22,+%22commercial+logging%22&hl=en&ct=clnk&cd=19&gl=us	Not applicable	This opinion piece contends that logging will make the area more prone to high intensity and high severity wildfires. Project analysis has determined that fuel loading post harvest would decrease.
Ivins, Molly. 1997. Creators Syndicate, August 3 1997 08 03. http://www.creators.com/opinion/molly-ivins/molly-ivins-august-3-1997-08-03.html	Not used	This is an opinion piece on Congressional funding of road construction and supporting the timber industry. Article suggests that N.F. roads are paid for by tax payers. Access to the timber stand via road construction is an appraised cost to determine stumpage. A business practice conducted by all land owners who sell timber.
Jalkotzy, M.G., P.I. Ross, and M.D. Nasserden. 1997. The Effects of Linear Developments on Wildlife: A Review of Selected Scientific Literature. Prepared for Canadian Association of Petroleum	Reviewed; not used.	The document reported on the effects of roads, trails, pipelines, and seismic lines related to petroleum extraction in Canada. Adverse and beneficial to effects to wildlife and mitigation practices were presented. The Middle Bugs

Cited Literature	How was it considered	Rationale/Comments
Producers. Arc Wildlife Services Ltd., Calgary. 115pp. http://citeseerx.ist.psu.edu		project proposes an alternative that would not construct permanent roads. Some roads in excess of those needed to accomplish Forest Plan management objectives would decommissioned, and habitats naturally reforested by seeds from adjoining forest stands.
Jones, Julia A. Ph.D., Frederick J. Swanson Ph.D., Beverley C. Wemple Ph.D., and Kai U. Snyder. 2000. Effects of roads on hydrology, geomorphology, and disturbance patches in stream networks. Conservation Biology 14, No. 1. 2000. http://smealsearch2.psu.edu/cache/papers/Business/627/http:zSzzSzwww.earthscape.orgzSzzSzr2zSzscbzSzzscb14_1zSzscb14-1_joj01zSzscb14-1_joj01.pdf/effects-of-roads-on/pdf/	Not used; supports analysis	This document supports the proposed Middle Bugs project road reconstruction, reconditioning, decommissioning and long term road storage activities to minimize effects to streams.
Juel, Jeff, 2003. Old Growth at a Crossroads: U.S. Forest Service Northern Region National Forests noncompliance with diversity provisions of their Forests Plans and the National Forest Management Act Regulations. The Ecology Center Incorporated. 27p. August 2003.	Considered;	This 2003 paper asserts that regionwide the FS has failed to meet Forest Plan old growth standards, does not keep old growth inventories and has not monitored population trends as required by Forest Plans and NFMA. The Middle Bugs Project does not harvest in any old growth or step down old growth. Impacts to old growth and old growth related species were analyzed and disclosed in the EA. Project activities are consistent with pertinent Clearwater Forest Plan direction.
Kahklen, Keith. 2001. A Method for Measuring Sediment Production from Forest Roads. Pacific Northwest Research Station, USDA Forest Service. Research note PNW-RN-529, April 2001. http://www.fs.fed.us/pnw/pubs/rn529.pdf	Not used	This 2001 paper describes a method for determining sediment quantity and transport distance from a particular road section. The WEPP:Road model was used to compare the predicted effects of proposed activities on water quality and quantity.
Karr, James R. Ph.D., Christopher A. Frissell Ph.D., Jonathan J. Rhodes, David L. Perry Ph.D. and G. Wayne Minshall Ph.D. 2002. Excerpt from a letter to the Subcommittee on Forests & Forest Health U.S. House of Representatives. 3 July, 2002. http://www.nativeforest.org/campaigns/wildfire_info_center/letter_from_beschta.htm	No applicable	This letter is a rebuttal to the Forest Service Chiefs testimony regarding the "Beschta report" which pertains to post fire salvage logging. The Middle Bugs project is not a post fire salvage project.
Keene, Roy. 2009. Logging does not prevent wildfires Guest Viewpoint, the Eugene Register Guard. January 11, 2009. http://www.highbeam.com/doc/1G1-192070397.html	Not applicable	Opinion piece promoting fuel reduction through the hand cutting, piling and burning of small trees and brush along Forest roadsides. The Middle Bugs Project would use timber harvest to achieve desired species distribution and structure. It would treat activity fuels by piling, burning or chipping. This is not a fuel reduction project.
Keene, Roy, Restorative Logging? "More Rarity than reality", Guest Viewpoint, the Eugene Register Guard, March 10, 2011 http://eugeneweekly.com/2011/03/03/views3.html	Not applicable	This opinion piece contends that forest restoration should rarely include logging. The Middle Bugs Project includes timber harvest activities to provide goods and services, capture economic value from dead and dying trees and alter species composition and structure followed by planting with desired species.
Keppeler, Elizabeth T. Robert R. Ziemer Ph.D., and Peter H. Cafferata. 1994. Effects of Human-Induced Changes on Hydrologic Systems. An American Water Resources Association publication, June 1994 http://www.fs.fed.us/psw/publications/ziemer/Ziemer94a.PDF	Used as background information	This study addresses hillslope drainage processes by comparing pre- and postharvest pore pressure levels and soil moisture conditions on a steep hillslope within a zero order basin in coastal northwestern California. The Middle Bugs project incorporates design measures, BMPs and riparian area protections as well as ground truthing by project hydrologists and soil scientists to minimize effects to these resources.
Klein, Al. 2004. Logging Effects on Amphibian Larvae Populations in Ottawa National Forest. http://www.nd.edu/~underc/east/education/documents/AKlein2004Pre-loggingssurveyofamphibianlarvaeinvernalpools.pdf	Not used but consistent with science used and referenced.	Consistent with Forest Plan direction and applicable laws and regulations, the Middle Bugs EA analyzed all applicable management indicator species, designated threatened, endangered, and sensitive species. The Middle Bugs project proposes road decommissioning and improvement, culvert replacement and removal, road and trail stream crossing improvements in RHCA's and INFISH buffers

<i>Cited Literature</i>	<i>How was it considered</i>	<i>Rationale/Comments</i>
		where amphibians may exist. With respect to the boreal toad, commercial and pre-commercial thinning would retain large, down wood and cover and are not expected to directly or indirectly effect reproduction or rearing habitats. It is possible that mechanical harvest would kill some individuals residing in treated areas.
Kreil, Randy "Bare Trees", North Dakota Outdoors, March 1994 http://www.und.nodak.edu/org/ndwild/oldtree.html	General information. Consistent with document and science used	This 1994 article states that "Dead trees and dead parts of trees are critically important to birds and mammals for nesting, rearing of young, feeding and as shelter. With a little forethought and tolerance we can maintain our organized, structured lifestyle and at the same time provide wildlife the habitat it needs to survive." The Middle Bugs project maintains leave tress, snags and down coarse woody material to meet this need. The wildlife analysis considered the needs of MIS, TE and sensitive wildlife species.
Kulakowski, Dominik Ph.D., Assistant Professor, Clark University, Testimony before the Subcommittee on Public Lands and Forests of the Energy and Natural Resources Committee of the United States Senate, April 21, 2010 http://energy.senate.gov/public/_files/KulakowskitestimonyonS2798042110.pdf	Not applicable	This testimony before congress was in regards to the proposed bill, the National Forest Insect and Disease Emergency Act of 2009. The bill was not enacted. This bill was to reduce the risk of catastrophic wildfire through the facilitation of insect and disease infestation treatment of National Forest System and adjacent land, and for other purposes. Kulakowski's testified that scientific studies have found that fire risk does not increase following outbreaks of spruce beetle or mountain pine beetle. The Middle Bugs project is not a fuels reduction project.
Laverty, Lyle, USDA Forest Service and Tim Hartzell U.S. Department of the Interior. 2000. A Report to the President in Response to the Wildfires of 2000. September 8, 2000. http://www.fs.fed.us/emc/hfi/president.pdf	Used as background information. Consistent with document and science used	This report recommends that increased efforts are currently needed to address 'the brush, small trees, and downed material that have accumulated in many forests because of past management activities, especially a century of suppressing wildland fires, [and this] will require significant investments to treat landscapes through thinning and prescribed fire. The report discusses the Peshtigo Fire, which grew and spread to such tragic proportions in large part because of the availability and wide distribution of untreated harvest slash. The Middle Bugs Project would treat post harvest slash. It would treat lodgepole stands impacted by mountain pine beetle, reducing fuel buildup.
Lawren, Bill. 1992. Singing the Blues for Songbirds: Bird lovers lament as experts ponder the decline of dozens of forest species. National Wildlife. http://www.nwf.org/News-and-Magazines/National-Wildlife/Birds/Archives/1992/Singing-the-Blues-for-Songbirds.aspx	Reviewed; not used	The author contends that birds will have a place to live as long as large forest tracts in the Appalachians and northern New England remain intact. The paper provided neither site-specific nor species-specific information relative to the Middle Bugs project nor the management of Clearwater National Forest management indicator species or designated threatened, endangered or sensitive bird species.
Lawrence, Nathaniel, NRDC senior attorney. 2001. Gridlock on the National Forests. Testimony before the U.S. House of Representatives Subcommittee on Forests and Forest Health (Committee on Resources) December 4, 2001. http://www.nrdc.org/land/forests/tnl1201.asp	Not applicable	This nonscientific paper discusses thinning for fire risk reduction and post-fire salvage logging. The Middle Bugs project does not propose post-fire salvage. The project proposes regeneration harvest and commercial thinning to provide goods and services, harvest dead and dying trees before they lose economic value and achieve desired species distribution and structure.
Leitner, Brian. 2003. Logging Companies are Responsible for the California Wildfires. The Democratic Underground, October 30, 2003. http://www.democraticunderground.com/articles/03/10/30_logging.html	Not applicable	The quoted excerpt from this nonscientific paper states that post harvest logging debris increases risk of wildfire. The Middle Bugs project will treat post harvest fuels to reduce risk. Pre and post harvest fuel levels were modeled.
Logan, Jesse A. Ph.D. and James A. Powell Ph.D. Ghost Forests, Global Warming and the Mountain Pine Beetle (Coleoptera: Scolytidae) AMERICAN ENTOMOLOGIST • Fall 2001 http://www.usu.edu/beetle/documents/Logan_Powel	Not Applicable	This article concludes that mountain pine beetle outbreaks are an important component in the disturbance ecology of lodgepole pine forests. The Middle Bugs project proposes regeneration harvest and commercial thinning to provide goods and services, harvest dead and dying trees before

<i>Cited Literature</i>	<i>How was it considered</i>	<i>Rationale/Comments</i>
I01.pdf		they lose economic value and achieve desired species distribution and structure. Proposed treatments are intended to increase the diversity of the forest and create mixed species stands; treatments are not expected to eradicate lodgepole pine from the proposed units. Natural regeneration of lodgepole pine would be expected in these areas and the expected result of the planting and natural regeneration would be a mixed stand of western white pine, western larch, and lodgepole pine.
Long, Richard D., U.S. Department of Agriculture Office of Inspector General. 2001. Western Region Audit Report: Forest Service National Fire Plan Implementation. Report No. 08601-26-SF, November 2001. http://maps.wildrockies.org/ecosystem_defense/Resources_Species_Topics/Fire/Misuse%20of%20Fire%20Plan%20funds.pdf	Not applicable	This report presents the results of the Inspector General's 2001 review of the Forest Service's implementation of the National Fire Plan. The Middle Bugs project is not a fuels reduction project. This report has no bearing on the Middle Bugs project.
Lowe, Kimberly Ph.D. 2005. Restoring Forest Roads. A Northern Arizona University Ecological Restoration Institute publication. Working Paper 12. June, 2005. https://library.eri.nau.edu:8443/bitstream/2019/100/4/Lowe3WorkingPaper2005.pdf	Not used; supports analysis	This paper pertains to restoring unused and abandoned roads. The Middle Bugs project would decommission 3.5 miles of unneeded roads.
Luce, Charles H. Ph.D. 2002. Hydrological processes and pathways affected by forest roads: what do we still need to learn? Hydrologic Processes: 16, 2901-2904. http://www.fs.fed.us/rm/boise/teams/soils/Publications/Luce%202002%20HP.pdf	Not used, supports analysis	This document supports the watershed analysis for water and sediment yield. The Middle Bugs project proposes road improvements to minimize effects to water and sediment yield to streams.
Maholland, Becky and Thomas F. Bullard Ph.D. 2005. Sediment-Related Road Effects on Stream Channel Networks in an Eastern Sierra Nevada Watershed. Journal of the Nevada Water Resources Association, Volume 2, Number 2, Fall 2005. http://www.nvwra.org/docs/journal/2005_Fall/NWRA_journal_fall2005_article4.pdf	Not used, consistent with project activities	The intent of this study was to understand geomorphic processes that influence sediment movement. This report is to assist land managers in identifying sediment sources and applying appropriate measures to control sediment entering into streams. The Middle Bugs Project recognizes the impacts that roads have on the landscape. An alternative is proposed that would build no new permanent roads. Temporary roads would be constructed and then obliterated following use. Additionally, road reconstruction and improvement work would be completed to reduce risk of sedimentation.
Malecki, Ron W. 2006. A New Way to Look at Forest Roads: the Road Hydrologic Impact Rating System (RHIR). The Road-RIPorter, Autumn Equinox, 2006. http://www.wildlandscpr.org/files/uploads/RIPorter/rr_v11-3.pdf	Not used; supports analysis	This newsletter focuses on wildland restoration activities in the west. The Middle Bugs project proposes road decommissioning and reconstruction work and culvert replacement that fit with the goals of this group.
Mann, Charles C. Ph.D. and Mark Plummer Ph.D.; Call for Sustainability in Forests Sparks a Fire, Science 26 March 1999: Vol. 283. No. 5410, pp. 1996-1998, http://www.sciencemag.org/cgi/content/summary/283/5410/1996	General Information	The Middle Bugs project complies with all current Forest Plan direction, applicable laws, rules and regulations regarding the proposed timber harvest.
Maser, Chris Ralph G. Anderson, Kermit Cromack, Jr. Ph.D., Jerry T. Williams and Robert E. Martin, Ph.D. "Dead and Down Woody Material" From Wildlife Habitats in Managed Forests the Blue Mountains of Oregon and Washington http://www.fs.fed.us/r6/nr/wildlife/animalinn/hab_6ddwm.htm	General information. Consistent with science used.	This article states that dead and down woody material in various stages of decay serves many important functions, one of which is habitat for wildlife. The Middle Bugs project analyzed impacts to wildlife, fisheries and other relevant resources from proposed activities. The project would maintain INFISH buffers, includes BMPs, maintains leave trees and 7 to 13 tons per acre of coarse woody material (Graham, et al 1994)
Maser, C. Ph.D. and J. M. Trappe Ph.D. 1984. The Seen and Unseen World of the Fallen Tree. 1984	Not applicable	The quoted 2 sentences suggest that removal of fallen trees impact habitat diversity and long-term forest productivity.

<i>Cited Literature</i>	<i>How was it considered</i>	<i>Rationale/Comments</i>
USDA Forest Service, GTR-PNW-164 http://www.fs.fed.us/pnw/publications/pnw_gtr164/		The Middle Bugs project designated logging systems designed to minimize soil disturbance that would detrimentally affect both physical character and biological soil organisms. Site disturbance for preparation for planting of the kind current in 1984 is not necessary with proposed silvicultural prescriptions, harvest systems, and site preparation activity.
Maser, C. Ph.D., R. F. Tarrant, J. M. Trappe Ph.D., and J. F. Franklin Ph.D. 1988. The Forest to the Sea: A Story of Fallen Trees. USDA Forest Service, GTR-PNW-GTR-229 http://www.fs.fed.us/pnw/publications/pnw_gtr229/	Not applicable	The 2 quoted sentences in summary, state that logging negatively impacts habitat diversity. Consistent with Graham et al, The Middle Bugs project would retain 7-13 tons of CWD/acre; retain 5 to 26 leave trees per acre. Large diameter legacy trees would be retained to provide long term structural diversity. The project includes vegetative objectives to improve species diversity to create conditions that are resilient and allow for rapid recovery after disturbances. Mountain pine beetle outbreaks can be prevented by creating a mosaic of age and size classes, which reduces the acreage susceptible to mountain pine beetles at one time (Amman and Safranvik 1984).
McCashion, J. D. and R. M. Rice Ph.D. 1983. Erosion on logging roads in northwestern California: How much is avoidable? Journal of Forestry 8(1): 23-26. http://www.fs.fed.us/psw/rsi/projects/water/McCashion.pdf	Not used	This document discusses potential types of modeling that may be used to determine the effects of roads. It is dated and is specific to northwestern California. The Middle Bugs project uses the WEPP:Roads model to analyze these effects. The effects of roads on the Middle Bugs project area have been considered in the Hydrology and Soils analysis.
McFero III, Grace, J. 2004. Sediment Plume Development from Forest Roads: How are they related to Filter Strip Recommendations? An ASAE/CSAE Meeting Presentation, Paper Number: 045015, August 1-4, 2004. http://www.srs.fs.usda.gov/pubs/ja/ja_grace017.pdf	Not used, supports analysis	This document discusses the sediment plumes coming off of roads and their length (range 3-140 meters, average 30 meters). It recommends streamside management zone widths (30 meters on fish bearing streams). The Middle Bugs project exceeds those widths by implementing INFISH buffers.
McGarigal, Kevin Ph.D., William H. Romme Ph.D. Michele Crist Ph.D. and Ed Roworth Ph.D. 2001. Cumulative effects of roads and logging on landscape structure in the San Juan Mountains, Colorado (USA). Landscape Ecology, Volume 16, Number 4 / May, 2001. http://www.springerlink.com/content/w12557624742tv77/	Not used, supports analysis	This document discusses the effects of land management at different scales. The Middle Bugs project assesses the effects of roads and logging at the project and cumulative effects level. The paper does not provide site-specific or species-specific information relative to Middle Bugs project. The analysis considered the direct, indirect and cumulative effects on elk security and recognized sensitive wildlife and plant habitats known or suspected to occur in the analysis area. This document also supports management actions included in the Middle Bugs project to maintain or restore aquatic resource health.
McIntosh, B.A., J.R. Sedell, J.E. Smith, R.C. Wissmar S.E. Clarke, G.H. Reeves, and L.A. Brown. 1994. Management history of eastside ecosystems: changes in fish habitat over 50 years, 1935-1992. GTR-321 93-181, http://www.fs.fed.us/pnw/publications/pnw_gtr321/	Not applicable	This single sentence quotation states that logging reduces ecosystem health by damaging aquatic habitats through siltation, reduction in stream complexity and increased water temperature. The Middle Bugs Project incorporates BMPs, INFISH buffers and other design features to protect aquatic habitats from those effects.
McLellan, Bruce N. 1990. Relationships between Human Industrial Activity and Grizzly Bears. Bears: Their Biology and Management, Vol. 8 International Conference on Bear Research and Management. February 1989 (1990), pp. 57-64. http://www.bearbiology.com/fileadmin/tpl/Downloads/URSUS/Vol_8/McClellan_8.pdf	Not applicable	The FWS neither considers the Clearwater National Forest as occupied grizzly bear habitat nor requires the Forest to consult regarding this species and planned management actions. Projects outside of the currently delineated boundary for the Bitterroot Ecosystem do not need to consider grizzly bear habitat as an issue in the NEPA process or in the Biological Assessment .
Megahan, Walter F. Ph.D. 2003. Predicting Road Surface Erosion from Forest Roads in Washington State. From a presentation presented at the 2003 Geological Society of America meeting. http://gsa.confex.com/gsa/2003AM/finalprogram/abstract_67686.htm	Not used	This document discusses the Washington Surface Erosion Model used by the state of Washington. The Middle Bugs project uses WEPP:Roads to conduct erosion modeling.

<i>Cited Literature</i>	<i>How was it considered</i>	<i>Rationale/Comments</i>
Miller, Edward W. "Savage or Salvage Logging?" The Coastal Post - September, 1998 http://www.coastalpost.com/98/9/13.htm	Not Used.	This 1998 newspaper article addressed an opinion criticizing the proposed salvage harvest of 650 beetle infested pine on 15 acres in the Marin Municipal Water District (CA) because it would be detrimental to the ecology of the watershed, affect the quality and volume of available water and reduce soil support. The Middle Bugs project analyzed impacts to water quality, fisheries, soils, plants and wildlife.
Montgomery, David Ph. D., Statement at a press Conference with Senator Robert Torricelli about S. 977 and HR 1376), the Act to Save Americas Forests, April 28, 1998, US Capiton, http://www.saveamericasforests.org/news/ScientistsStatement.htm	Not Used	This is not a peer reviewed article. The referenced quote supports the Act to Save Americas Forests. This bill did not become law. In part, it proposed to ban clearcutting from Federal lands. The effects of regeneration harvest on resources in the Middle Bugs project were analyzed in the EA.
Moring, John R. Ph.D. 1975. The Alsea Watershed Study: Effects of Logging on the Aquatic Resources of Three Headwater Streams of the Alsea River, Oregon – Part III. Fishery Report Number 9 Oregon Department of Fish and Wildlife. http://www.for.gov.bc.ca/hfd/library/ffip/Moring_JR1975b.pdf	Not applicable	This 1975 study analyzed the effects of logging practices on a specific watershed system. Middle Bugs project design features including implementation of INFISH RHCAs would prevent these effects.
Naeem, Shahid Ph.D., F.S. Chapin III Ph.D., Robert Costanza Ph.D., Paul R. Ehrlich Ph.D., Frank B. Golley Ph.D., David U. Hooper Ph.D. J.H. Lawton Ph.D., Robert V. O'Neill Ph.D., Harold A. Mooney Ph.D. Osvaldo E. Sala Ph.D., Amy J. Symstad Ph.D., and David Tilman Ph.D. 1999. Biodiversity and Ecosystem Functioning: Maintaining Natural Life Support Processes. Issues in Ecology No. 4. Fall 1999. http://www.esa.org/science_resources/issues/Textsues/issue4.php	General information	Biological diversity is addressed in the Forest Plan through detailed management direction (goals, standards and guidelines), by management area (MA) for the MIS and T&E wildlife species; and Regional Forester's direction and designations of sensitive wildlife and plant species. Biodiversity is preserved in this project by following Forest Plan requirements.
Naylor, Brian, Ph.D. "Cavity Trees – Nature's Refuge", The Ontario Woodlot Association Newsletter, Winter / Spring 2006, Vol. 42 http://www.ontariowoodlot.com/pages_pdf_new/cavitytree_S&W.pdf	General information. Consistent with science used.	The quoted article excerpt describes the importance of cavity trees and how they are used by wildlife for a variety of purposes. The Middle Bugs project analyzed potential impacts to relevant wildlife species. Nonmerchantable snags which are not a hazard during the felling or skidding operation would be left for wildlife and long term site productivity. Leave tree retention requirements would address future snag and coarse woody material recruitment.
Nappier, Sharon. Lost in the Forest: How the Forest Service's Misdirection, Mismanagement, and Mischief Squanders Your Tax Dollars. Taxpayers for Common Sense, 2002. http://www.ourforests.org/fact/lostintheforest.pdf	Not applicable	This is a single statement from an opinion piece criticizing FS land management. An economic analysis was completed for the Middle Bugs project. It is consistent with Forest plan direction and applicable rules and regulations.
"Native Forest Insects and Diseases" A publication of the Canadian Forest Service, 2003 http://www.health.cfs.nrcan.gc.ca/BorealShield/nativeInsectsAndDiseases_e.html	Not Used. Consistent with science used	This Canadian Forest Service publication discusses their integrated pest management approach to maintain forest health and prevent the entry of alien species into the country. This article goes on to state that outbreaks of native insects and diseases are natural, recurring processes with many ecological benefits. However, they pose major problems when their severity or spread threatens forest productivity and competes with commercial forest values.
Noble, Ian R. and Rodolfo Dirzo Ph.D. 1997. Forests as Human-Dominated Ecosystems. Science Vol. 277. No. 5325, pp. 522 - 525. 25 July 1997. http://www.sciencemag.org/cgi/content/abstract/277/5325/522?maxtoshow=&HITS=10&hits=10&RESU_LTFORMAT=&fulltext=logging&searchid=1136659907310_5043&FIRSTINDEX=0&journalcode=sci	Not applicable	The quoted excerpt refers to agroforestry and how it reduces biodiversity. Agroforestry is an integrated approach of using the interactive benefits from combining trees and shrubs with crops and/or livestock. The Middle Bugs project does not employ agroforestry. The Forest Plan specifies management direction for various areas. This project is consistent with Forest Plan management direction for this area

<i>Cited Literature</i>	<i>How was it considered</i>	<i>Rationale/Comments</i>
Northup, Jim. 1999. Public Wants More Wilderness, Less Logging on Green Mountain NF. Press Release by Forest Watch, a Vermont-based environmental organization. http://www.forestwatch.org/content.php?id=10	Not applicable	This opinion statement references survey data that concluded that people want more wilderness and less logging on the Green Mountain NF. This non scientific data is not applicable to this project.
Noss, Reed F., Ph.D. 1995. The Ecological Effects of Roads or the Road to Destruction. Wildlands CPR. http://www.wildlandscpr.org/ecological-effects-roads	Not used; supports analysis	This opinion piece discusses the effects of all roads in general and potential mitigation measures to reduce the effects. The Middle Bugs project decommissions roads and replaces culverts with fish passable structures. The paper provided neither site-specific nor species-specific information relative to Middle Bugs project. The analysis considered the direct, indirect and cumulative effects on elk security and recognized sensitive wildlife and plant habitats known or suspected to occur in the project analysis area. This document also supports management actions included in the Middle Bugs project to maintain or restore aquatic resource health.
Okoand Ilan Kayatsky, Dan. 2002. Fight Fire with Logging? Mother Jones, August 1, 2002 http://www.motherjones.com/news/feature/2002/08/fireplan.html	Not applicable	This opinion piece criticizes the National Fire Plan and claims that tree removal increases the risk of fire. The Middle Bugs project is not a fuel reduction project.
Ortega, Yvette K.; Capen, David E. 1999. Effects of forest roads on habitat quality for Ovenbirds in a forested landscape. Auk. 116(4): 937-946. http://www.fs.fed.us/rm/pubs_other/rmrs_1999_ortega_y001.html	Not applicable	The paper provided neither site-specific nor species-specific information relative to the Middle Bugs project nor the management of Clearwater National Forest management indicator species or designated threatened, endangered or sensitive bird species. Not applicable since no Ovenbirds are in the area
Partridge, Arthur Ph. D., Statement at a press Conference with Senator Robert Torricelli about S. 977 and HR 1376), the Act to Save Americas Forests, April 28, 1998, U.S. Capitol http://www.saveamericasforests.org/news/ScientistsStatement.htm	Not applicable	This 1998 press conference statement was made in support of a bill that did not become law which, in part, proposed to ban clearcutting from Federal lands.
Perry, David A. Ph. D., Testimony at a Senate Field Hearing on Forest Health, August 29, 1994 http://www.subtleenergies.com/ormus/Fire/D_PERRY.htm	Consistent with science used	This is a record of 1994 senate testimony on the state of forest health in the inland northwest.
Platt, Rutherford V. Ph.D., Thomas T. Veblen Ph.D., and Rosemary L. Sherriff. 2006. Are Wildfire Mitigation and Restoration of Historic Forest Structure Compatible? A Spatial Modeling Assessment. Published online by the Association of American Geographers. Sep. 8, 2006 http://www.ingentaconnect.com/content/routledg/ana/2006/00000096/00000003/art00001	Not Applicable	Platt et al. 2006 completed computer simulations of fuels and forest stand structures in Colorado and concluded that much of the area did not need both wildfire mitigation and restoration of historical stand structures, although wildfire mitigation was needed on more of the area. The authors stress that the study has several limitations that mean that the results should not be extrapolated beyond the study area and that it was not verified with field collected data. The Middle Bugs project is not a HFRA project.
Powell, Douglas S. Ph.D, Joanne L. Faulkner, David R. Darr, Zhiliang Zhu Ph.D. and Douglas W. MacCleery. 1992. Forest Resources of the United States. USDA Forest Service. Rocky Mt. Forest and Range Experiment Station.	Not Applicable	This quotation is a single statement pulled out of context from the report and states that private lands are more suitable for timber production than National Forest Lands which are of lower productivity and on steeper, higher elevation terrain. Forest Service direction requires that all stands where harvest is prescribed be classified as suitable for timber production. Middle Bugs project activities are consistent with FP direction for the area and would move the area toward desired future conditions.
Raven, Peter, Ph.D., from his February 9, 2001 letter to Senator Jean Carnahan http://www.saveamericasforests.org/Raven.htm	Not applicable	This 2001 letter to Senator Jean Camahan is an opinion piece that discusses harvest of ancient forests; clearcutting; harvesting roadless areas; and logging in certain special forest areas. This letter states we need to allow sustainable forest practices around these protected forests which is consistent with the proposed project.
Raven, Peter, Ph.D., Jane Goodall, C.B.E., Ph.D.,	Not applicable	This 1998 letter to Congress is an opinion piece signed by

Cited Literature	How was it considered	Rationale/Comments
Edward O. Wilson, Ph. D. and over 600 other leading biologists, ecologists, foresters, and scientists from other forest specialties. From a 1998 letter to congress. http://www.saveamericasforests.org/resources/Scientists.htm		advocates of the Act to Save America's Forests. This comment is beyond the scope of this project.
Reed, R.A., Johnson-Barnard, J., and Baker, W.A. 1996. Contribution of Roads to Forest Fragmentation in the Rocky Mountains. Conservation Biology 10: 1098-1106. http://cpluhna.nau.edu/Research/contribution_of_roads_to_forest.htm	Reviewed; not used	This study concluded that roads associated with logging activities often have potentially detrimental impacts on animal and plant communities. The authors suggested that timber harvests should be planned to minimize impact on the landscape and exacerbation of the current landscape fragmentation problems on many forestlands. The paper provided neither site-specific nor species-specific information relative to Middle Bugs project. The analysis considered the direct, indirect and cumulative effects on elk security and recognized sensitive wildlife and plant habitats known or suspected to occur in the project area. This document also supports management actions included in the project to maintain or restore aquatic resource health. This document supports the wildlife analysis for big game security and patch size. The Middle Bugs project decommissions roads as recommended by this paper.
Reid, L. M. Ph.D. and T. Dunne. 1984. Sediment Production from Forest Road Surfaces. Water Resour. Res., 20(11), 1753–1761. http://www.agu.org/pubs/crossref/1984/WR020i011p01753.shtml	Not used, supports analysis	This document supports the watershed analysis for water and sediment yield.
Reid, Leslie M. Ph.D., Robert R. Ziemer Ph.D., and Michael J. Furniss. 1994. What do we know about Roads? USDA Forest Service. http://www.fs.fed.us/psw/publications/reid/4Roads.htm	Not used, supports analysis	This document discusses the effects of roads on natural resources. The Middle Bugs project proposes road decommissioning and road reconstruction and includes project design measures that would limit those effects.
"Removal of dead wood and dead trees was listed as a KEY THREATENING PROCESS" Schedule 3 of the Threatened Species Conservation Act 1995 [12 December 2003]. http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/threat_profile.aspx?id=20011	Not used. Consistent with analysis	This quotation from the New South Wales Government Threatened Species Conservation Act of 1995, Schedule 3, states that removal of dead old trees results in the loss of important habitat and may adversely affect specific threatened species (which are listed in the act). This law is not applicable to the Middle Bugs project. The Middle Bugs project analyzed potential impacts to relevant wildlife species. Nonmerchantable snags which are not a hazard during the felling or skidding operation would be left for wildlife and long term site productivity. Leave tree retention requirements would address future snag and coarse woody material recruitment.
Rice, Raymond M. Ph.D., Forest B. Tilley and Patricia A. Datzman. 1979. Watershed's Response to Logging and Roads: South Fork of Caspar Creek, California, 1967-1976. USDA Forest Service, Research Paper PSW-146. http://www.fs.fed.us/psw/publications/rice/Rice79.pdf	Not used	This 1979 research is outdated, and doesn't consider the current BMPs, INFISH buffers or specific project design and mitigation measures included in the Middle Bugs project to assure that water quality standards are met..
Riedel, Mark S. Ph.D. and James M. Vose Ph.D. 2002. Forest Road Erosion, Sediment Transport and Model Validation in the Southern Appalachians. Presented at the Second Federal Interagency Hydrologic Modeling Conference, July 28 – August 1, 2002. http://www.srs.fs.usda.gov/pubs/ja/ja_riedel002.pdf	Not applicable	This document discusses the validation of the Watershed Characterization System model for estimating sediment. The Middle Bugs project uses WEPP:Road for modeling sediment.
Roberson, Emily B. Ph.D., Senior Policy Analyst, California Native Plant Society Excerpt from a letter to Chief Dale Bosworth and 5 members of congress http://www.plantsocieties.org/PDFs/Fire%20letter%20CNPS%208.02%20letterhead.pdf	Not applicable	This report excerpt states that logging and roadbuilding often increase both fuel loading and fire risk. These general statements, valid in some settings, do not apply to the Middle Bugs Project because of project design features. Moreover, this is court testimony by a third party, which

Cited Literature	How was it considered	Rationale/Comments
		although it is the speakers considered opinion, it is not peer reviewed material.
<p>Roelofs, Terry D. Ph.D. 2003. Testimony for the California State Water Board and Regional Water Quality Control Boards Regarding Waivers of Waste Discharge Requirements on Timber Harvest Plans. August 2003. http://74.125.113.132/search?q=cache:QNY_aih1RxEJ:edennapa.org/thp/roelofstestimony.doc+%22timber+harvest%22+ph.d.+adverse&hl=en&ct=clnk&cd=5&gl=us</p>	Not applicable	This paper discusses how logging and associated activities impact coastal watersheds in California inhabited by coho salmon. INFISH buffers, BMP implementation assures there would be no change in temperature or sedimentation from Middle Bugs activities.
<p>Romme, W.H., J. Clement, J. Hicke, D. Kulakowski Ph.D. L.H. MacDonald, T.L. Schoennagel Ph.D., and T.T. Veblen. 2006 "Recent Forest Insect Outbreaks and Fire Risk in Colorado Forests: A Brief Synthesis of Relevant Research" http://www.cfri.colostate.edu/docs/cfri_insect.pdf</p>	Applicable. Consistent with science used.	This article presents a brief synthesis of relevant research about recent forest insect outbreaks and fire risk in Colorado forests to help inform effective management options. Proposed project activities are consistent with viable options discussed in this research.
<p>Rowland, M. M., M. J. Wisdom, B. K. Johnson, and M. A. Penninger. 2005. Effects of Roads on Elk: Implications for Management in Forested Ecosystems. Pages 42-52 in Wisdom, M. J., technical editor The Starkey Project: a synthesis of long-term studies of elk and mule deer. Reprinted from the 2004 Transactions of the North American Wildlife and Natural Resources Conference, Alliance Communications Group. http://www.fs.fed.us/pnw/pubs/journals/pnw_2004_rowland001.pdf</p>	Reviewed; not used.	The document reported on techniques to address the effects of roads relative to forest management and elk in NE Oregon. Effects to elk and elk habitat were discussed. Roads also affect other forest resources. The Middle Bugs project analysis considered the direct, indirect and cumulative effects on elk security. The Middle Bugs project considers an alternative that would not built permanent roads. A roads analysis was conducted to determine excess roads and those are proposed for de-commissioning in the Middle Bugs project.
<p>Rudzitis, Gundars. 1999 Amenities Increasingly Draw People to the Rural West. Rural Development Perspectives, vol. 14, no. 2 http://www.ers.usda.gov/publications/rdp/rdpsept99/rdpsept99b.pdf</p>	Not applicable	This quotation references opinion poll information opposing commodity extraction on public lands.
<p>Santiago, Melissa J. and Amanda D. Rodewald, Ph.D. "Dead Trees as Resources for Forest Wildlife" Ohio State University Extension Fact Sheet http://ohioline.osu.edu/w-fact/0018.html</p>	General information. Consistent with science used.	This fact sheet describes how plants, animals and soils are benefitted by dead trees, so retention is an essential component of any wildlife conservation or management plan. Consistent with this information, the Middle Bugs project design features include retention of coarse woody material, INFISH buffers, BMPs, leave tree requirements for future coarse woody material and snag recruitment.
<p>Schneider, Gary. 2008. Dead trees (they're still full of life!). Macphail Woods Ecological Forestry Project http://www.macphailwoods.org/wildlife/deadtrees.html</p>	General information. Limited applicability	Project design measures, including retention of downed woody material and standing trees in treatment areas, would assure the project would maintain soil stability and productivity and meet Regional soil standards for coarse woody material and provide habitat for wildlife species.
<p>Schowalter, Tim Ph.D., "Insect epidemics a natural path to forest health?" 27-May-1997, OSU News http://oregonstate.edu/dept/ncs/newsarch/1997/May97/goodbugs.htm</p>	Not applicable	This 1997 article states that insect infestations should not be viewed simply as disasters; but that they help to establish a balance between the available water, nutrients and demands of plants.
<p>Schwartz, Chuck Ph.D. - March 1998. Wildlife and Roads. The Interagency Forest Ecology Study Team (INFEST) newsletter. http://www.sf.adfg.state.ak.us/sarr/forestecology/fsroads.cfm</p>	Not Applicable	The article addresses habitat issues in Alaska. The paper provided neither site-specific nor species-specific information relative to Middle Bugs project nor the management of Nez Perce Clearwater National Forest management indicator species or designated threatened, endangered or sensitive species. No grizzly bears are located in the project area.
<p>Science Findings, issue twenty, November 1999 Pacific Northwest Research Station, USDA Forest Service, http://www.fs.fed.us/pnw/science/scifi20.pdf</p>	Consistent with science used for this project.	In this 1999 issue of Science Findings, Bull, Parks, and Torgersen, share their latest findings, which include the fact that snags and logs are colonized by organisms representing a broader array of plants, invertebrates, and vertebrates than was previously recognized. Logs play roles in wildlife habitat, nutrient cycling, water economy, and

<i>Cited Literature</i>	<i>How was it considered</i>	<i>Rationale/Comments</i>
		soil structure that suggest they are more important than previously recognized. Current direction for providing wildlife habitat on public forest lands does not reflect findings from research since 1979; more snags and dead wood structures are required for foraging, denning, nesting, and roosting than previously thought. Consistent with this information, the Middle Bugs project design features include retention of coarse woody material, INFISH buffers, BMPs, leave tree requirements for future coarse woody material and snag recruitment. (Bollenbacher, B., R. Bush and R. Lundberg. 2009. Estimates of snag densities for Northern Idaho Forests in the Northern Region.)
"Science should lead pine beetle epidemic solutions" Star-Tribune Editorial Board, Wyoming Star Tribune, October 3, 2010, http://trib.com/news/opinion/editorial/article_f87d7db9-ed2a-5620-8d66-20556935c592.html	Not applicable	This 2010 editorial piece about mountain pine beetle infestations in Wyoming advocates more study to determine the best strategy for addressing the problem and concludes that "Wyoming's best chance to make wise, informed decisions is to follow the science, and be willing to be nimble as data and test results change."
Scott, Mark G. Forest Clearing in the Gray's River Watershed 1905-1996. A research paper submitted in partial fulfillment of the requirements for the degree of MASTER OF SCIENCE in GEOGRAPHY Portland State University, 2001 http://www.markscott.biz/papers/grays/chapter1.htm	No Applicable	This quotation refers to the effects of clearcutting within the Grays River watershed and concludes by stating that a strategy is needed to objectively manage all the values of the forest. The Middle Bugs project was developed to move the project area toward a desired future condition as defined in the EA and Clearwater Forest Plan. It proposes activities to improve watershed conditions and manage forest vegetation to achieve desired species distribution and structure. Project design features protect old growth, aquatic habitats, wildlife habitats etc.
Shanley, James B. and Beverley Wemple Ph.D. 2002. Water Quantity and Quality in the Mountain Environment Vermont Law Review, Vol. 26:717, 2002. http://www.uvm.edu/~bwemple/pubs/shanley_wemple_law.pdf	Considered, but not used.	This report describes hydrologic processes in mountainous areas and describes effects to water quality and quantity from a series of land development action, in particular ski resorts.
Shoemaker, Jennifer, NASA Goddard Space Flight Center "Landsat Reveal Surprising Connection Between Beetle Attacks, Wildfire" Posted at the NASA WEB site, Sep. 8, 2010 http://landsat.gsfc.nasa.gov/news/news-archive/sci_0031.html	Not applicable	This study determined that large fires do not appear to occur more often or with greater severity in forest tracts with beetle damage. The Middle Bugs project is not a fuels project. It proposes to harvest dead and dying trees to provide goods and services. Although topography and weather may play a more important role than fuels in governing fire behavior (Bessie and Johnson 1995), topography and weather cannot be realistically manipulated to reduce fire severity. Fuels are the leg of the fire behavior triangle (Countryman 1972) that land managers can change to achieve desired conditions (Pollet and Omi 2002). Forest Plan management area direction for this area is to suppress wildfires. Fire exclusion in fire-adapted ecosystems can cause many changes in vegetation and potential fire behavior, which are well documented.
Short, Brant, Ph.D. and Dayle C. Hardy-Short Ph.D. Physicians of the Forest : A Rhetorical Critique of the Bush Healthy Forest Initiative Electronic Green Journal, Issue #19, December 2003 http://escholarship.org/uc/item/4288f8j5	Not applicable	This opinion piece criticizes the Healthy Forest Initiative. The Middle Bugs project is not a fuels reduction project.
Sierra Club. 2005. Ending Commercial Logging on Public Lands http://northcarolina.sierraclub.org/pisgah/conservation/ecl.html	Not applicable	This opinion piece denounces logging on public lands. The Middle Bugs project is consistent with all applicable laws, rules and regulations regarding harvest in this Management area on this forest.

<p>Slaymaker, Olav Ph.D. "Assessment of the Geomorphic Impacts of Forestry in British Columbia" <i>AMBIO: A Journal of the Human Environment</i> 29(7):381-387. 2000 http://www.bioone.org/doi/abs/10.1579/0044-7447-29.7.381</p>	<p>Not used; Consistent with other science used</p>	<p>This article is consistent with other science used to develop design features to minimize hydrology effects. The abstract cited speaks to effects on runoff, water yield, peak flows, sediment and wood transport and mass movement (landslides). The article suggests that following Forest Practice Act codes (in British Columbia) can significantly minimize these impacts. The Middle Bugs project implements design features, such as INFISH buffers, that are more stringent than state Forest Practice Act codes. BMP audits have verified the effectiveness of preventing or greatly limiting impacts to streams.</p>
<p>Stahl, Andy. 2003. Reducing the Threat of Catastrophic Wildfire to Central Oregon Communities and the Surrounding Environment. Testimony before the House Committee on Resources, August 25, 2003 http://www.fseee.org/index.html?page=http%3A//www.fseee.org/eactivist/testimony082503.shtml</p>	<p>Not applicable</p>	<p>Middle Bugs is not a HFRA project</p>
<p>Strickler, Karyn and Timothy G. Hermach. 2003. Liar, Liar, Forests on Fire: Why Forest Management Exacerbates Loss of Lives and Property Published by CommonDreams.org. October 31, 2003 http://www.commondreams.org/scriptfiles/views03/1031-10.htm</p>	<p>Not applicable</p>	<p>This is an opinion piece opposing all timber harvest</p>
<p>Swift Jr., L. W. 1984. Soil losses from roadbeds and cut and fill slopes in the Southern Appalachian Mountains. <i>Southern Journal of Applied Forestry</i> 8: 209-216. 1984. http://cwt33.ecology.uqa.edu/publications/403.pdf</p>	<p>Not used, supports analysis</p>	<p>This document supports the watershed analysis for water and sediment yield and supports the design measures required for road reconstruction, improvement and obliteration under this project.</p>
<p>Switalski, Adam. 2003. Where Have All the Songbirds Gone? Roads, fragmentation, and the Decline of Neotropical Migratory Songbirds. <i>Wildlands CPR</i>, September 8, 2003. http://www.wildlandscpr.org/node/213</p>	<p>Not used</p>	<p>The paper provided neither site-specific nor species-specific information relative to Middle Bugs project nor the management of Nez Perce Clearwater National Forest management indicator species or designated threatened, endangered or sensitive species. Samson 1997, states "Recent experimental evidence suggests habitat fragmentation in ecosystems with a high natural disturbance has little effect on species survival rates owing to the adaptation of natural disturbance regimes." Estill (1996) and Samson recommend not addressing the issue of fragmentation at the project level.</p>
<p>Taxpayers for Common Sense. 2000. From the Ashes: Reducing the Harmful Effects and Rising Costs of Western Wildfires. Washington DC, Dec. 2000 http://www.ourforests.org/fact/ashes.pdf</p>	<p>Not applicable</p>	<p>This opinion piece criticizes HFRA activities to reduce fuels. The Middle Bugs project is not a HFRA project.</p>
<p>Thomas, Craig. 2007. Living with risk: Homeowners face the responsibility and challenge of developing defenses against wildfires. <i>Sacramento Bee</i> newspaper, July 1, 2007. http://www.sierraforestlegacy.org/NR_InTheNews/SFLIP_2007-07-01_SacramentoBee.php</p>	<p>Not applicable</p>	<p>The quoted statement is included in an opinion piece. The statement focuses on protecting homes from wildfire near Lake Tahoe and encourages residents to implement defensible space around their homes. This is not applicable to the Middle Bugs project.</p>
<p>Tinker, Daniel B. Ph.D. et al., 2010 "Reciprocal interactions between bark beetles and wildfire in subalpine forests: landscape patterns and the risk of high-severity fire" A research paper sponsored in part by the Joint Fire Science Program http://landscape.zoology.wisc.edu/October%202009%20updates/JFSP_FnlRep_30Sept2009.pdf</p>	<p>General Information</p>	<p>This paper addresses the risk of high severity fire following bark beetle outbreaks and how post-disturbance biomass recovery differs between bark beetle outbreaks and wildfire. The middle Bugs project is not a fuels project. The purpose and need is to provide goods and services and recover the economic value of dead and dying timber.</p>
<p>Trombulak, Stephen C. Ph.D. and Christopher A. Frissell Ph.D. 2000. Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities. <i>Conservation Biology</i>, Volume 14, No. 1, Pages 18–30, February 2000. http://www.transwildalliance.org/resources/200922144524.pdf</p>	<p>Not used, supports analysis</p>	<p>This document discusses the effects of roads on terrestrial and aquatic resources and encourages removal of unneeded roads. Middle Bugs project proposes road decommissioning and long-term storage.</p>
<p>University of California; SNEP Science Team and Special Consultants 1996. <i>Sierra Nevada</i></p>	<p>Not applicable</p>	<p>The report excerpt presents findings specific to the Sierra Nevada ecosystem and states that timber harvest, through</p>

Cited Literature	How was it considered	Rationale/Comments
Ecosystem Project: Final Report to Congress Volume 1, Chapter 4 – Fire and Fuels. http://ceres.ca.gov/snep/pubs/web/PDF/v1_ch04.pdf		its effects on forest structure, local microclimate and fuels accumulation, has increased fire severity more than any other recent human activity. The Middle Bugs project is not a fuels project. Project objectives are to provide goods and services, capitalize of economic value of dead and dying lodgepole pine, and improve species diversity in the project area to create conditions that are resilient and allow for rapid recovery after disturbances. Existing and post fuel levels were modeled in the project area. The article goes on to state that in some places, mechanical fuel reduction, often in conjunction with prescribed fire, can also be of use in reducing fuels and fire hazards.
Vincent, James W. Ph.D., Daniel A. Hagen, Ph.D., Patrick G. Welle Ph.D. and Kole Swanser. 1995. Passive-Use Values of Public Forestlands: A Survey of the Literature. A study conducted on behalf of the U.S. Forest Service. http://www.icbemp.gov/science/vincent.pdf	Not applicable	This report provides a survey of the state of economic research regarding the nonuse value of forests, and addresses the implications of these studies for the management of public forestlands in the Columbia River Basin. The Middle Bugs project is consistent with Forest Plan Management area direction.
Voss, René. 2002. Getting Burned by Logging. The Baltimore Chronicle. July 2002. http://www.baltimorechronicle.com/firelies_jul02.shtml	Not applicable	This opinion piece opposes hazardous fuel reduction timber projects. The Middle Bugs project is not a fuel reduction project.
Watson, Mark L. 2005. Habitat Fragmentation and the Effects of Roads on Wildlife and Habitats. Background and Literature Review 2005. http://www.wildlife.state.nm.us/conservation/habitat_handbook/EffectsofRoads.htm	Not used	This document supports the wildlife analysis for big game security and patch size. Samson 1997, states "Recent experimental evidence suggests habitat fragmentation in ecosystems with a high natural disturbance has little effect on species survival rates owing to the adaptation of natural disturbance regimes." Estill (1996) and Samson recommend not addressing the issue of fragmentation at the project level.
Wisdom, Michael J., Richard S. Holthausen Ph.D., Barbara C. Wales Ph.D., Christina D. Hargis Ph.D., Victoria A. Saab Ph.D., Danny C. Lee Ph.D., Wendel J. Hann Ph.D., Terrell D. Rich, Mary M. Rowland, Wally J. Murphy, and Michelle R. Eames. 2000. Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin: Broad-Scale Trends and Management Implications Volume 2 – Group Level Results. USDA Forest Service, PNW-GTR-485, May 2000. http://maps.wildrockies.org/ecosystem_defense/Science_Documents/Wisdom_et_al_2000/Vol_2a.pdf	Applicable; used in analysis	This publication looked at habitat requirements and trends in habitats for terrestrial species found in the interior Columbia basin (eastern WA and OR, Idaho and western MT).The document supports the wildlife analysis for big game security
Wright, Bronwen, Policy Analyst and Attorney Pacific Rivers Council Excerpt from a May 11, 2009 letter to the Rogue River-Siskiyou National Forest Travel Management Team http://www.pacificrivers.org/protection-defense/comment-letters/Rogue%20River%20Siskiyou%20TMP%20DEIS.pdf	Not Used; Supports analysis	This is a site-specific comment letter to the Rogue-Syskiyou NF on their Travel Plan DEIS that addresses the effects of roads on aquatic resources. It recommends closing roads and improving stream crossings to minimize effects. Middle Bugs decommissions roads and upgrades culverts.
Wuerthner, George. 2008. Ecological Differences between Logging and Wildfire. http://wuerthner.blogspot.com/2008/12/ecological-differences-between-logging.html	Considered; Not used	This article discusses the ecological differences between mechanical treatments and wildfire. Middle Bugs project includes design features detailing amounts of coarse woody material in treated units to be left for nutrient retention.
Wuerthner, George. 2008. Logging, thinning would not curtail wildfires. The Eugene Register-Guard, December 26, 2008 http://wuerthner.blogspot.com/2008/12/logging-thinning-would-not-curtail.html	Not Applicable.	This article contends that mechanical treatments can increase wildfires' spread and severity by increasing the fine fuels on the ground (slash) and by opening the forest to greater wind and solar penetration, drying fuels faster than in unlogged forests. The Middle Bugs project proposes treatment of activity fuels following timber harvest.
Wuerthner, George. 2009. Who Will Speak For the Forests? NewWest, January 27, 2009	Potential Impacts	This opinion piece describes potential resource impacts from logging activities in general. The Middle Bugs project

<i>Cited Literature</i>	<i>How was it considered</i>	<i>Rationale/Comments</i>
http://www.newwest.net/topic/article/who_will_speak_for_the_forests/C564/L564/	discussed were considered in the Middle Bugs EA	contains design features to limit potential impacts.
Wuerthner, George, Pine Beetle Fears Misplaced Helena Independent Record, March 25, 2010 http://helenair.com/news/opinion/article_f3d671f0-37c9-11df-921d-001cc4c002e0.html	Not applicable	This newspaper opinion piece contends that beetles are essential to maintaining biodiversity and healthy forests and that there is little scientific evidence to support the contention that beetle killed trees substantially increase risk of large blazes. In the Middle Bugs project area, dead and dying trees, coupled with high tree densities are resulting in increasing accumulations of surface fuels. Dense regeneration increases fuel loadings, as does natural thinning, snow breakage, blowdown, and insect and disease mortality. Project activities will break up fuel continuity, create age class diversity which will decrease the risk of fire. Crown fire potential would be decreased not only because of canopy removal, but also as a result of potential reduction in heat generated by surface fuels. (Kalabokidis and Omi 1998; Scott 2003)
Wuethner, George, 3-17-09. Temporary Roads are Like Low Fat ice Cream; http://www.newwest.net/topic/article/temporary_roads_are_like_low_fat_ice_cream/C564/L564/	Not used	This is an opinion piece on the effects of temporary roads. The Middle Bugs EA discusses the impacts of temporary roads. Project design features were developed to address these impacts .
Ziemer, Robert R. Ph.D., 1992. Effect of logging on subsurface pipeflow and erosion: coastal northern California, USA. Proceedings of the Chengdu Symposium, July 1992. IAHS Publication. No. 209, 1992 http://www.fs.fed.us/psw/publications/ziemer/Ziemer92.PDF	Not applicable	In a 1992 study, 3 zero order swales were instrumented to measured pipeflows within the Caspar Creek Experimental Watershed in northwestern California. After logging, there was great spatial and temporal variability in sediment transport. Water quality and postharvest sedimentation was modeled for the Middle Bugs project. Design features such as INFISH buffers, BMPs, etc were included to limit sedimentation.
Zimmerman, E.A. and P.F. Wilbur. 2004. A Forest Divided. New Roxbury Land Trust newsletter, 2004. http://www.ourbetternature.org/forestfrag.htm	Not used; supports analysis	This opinion piece on forest fragmentation and effects on aquatic and terrestrial resources is general and not specific to the Middle Bugs project.