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East Reservoir Final Record of Decision

Kootenai National Forest Libby Ranger District

Lincoln County, Montana

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East Reservoir Project Final Record of Decision

Introduction

This final record of decision (ROD) documents my decision and rationale for selecting Alternative 2, with modifications, as described in the Draft and Final Environmental Impact Statements (DEIS and FEIS) for the East Reservoir Project on the Libby Ranger District of the Kootenai National Forest (KNF). In making my decision on the East Reservoir Project, I am following the pre-decisional administrative review process (objection process) as described in Subpart B of 36 CFR 218. This final ROD is now issued after the conclusion of the objection process.

Summary of the Final Decision

After careful consideration of the potential impacts of the management activities analyzed and documented in the East Reservoir DEIS issued June 2013, I have decided to implement Alternative 2, with modifications to include some activities analyzed under Alternative 3 in order to respond to public concerns regarding loss of access by motorized vehicles and snowmobiles. (See appendix 1 for the detailed description of the decision.) Alternative 2 with modifications is also the environmentally preferred alternative.

A summary of the management actions in my decision include:

- Timber harvest and associated fuel treatment on approximately 8,845 acres, including intermediate harvest on approximately 5,387 acres and regeneration harvest on approximately 3,458 acres to re-establish, restore and retain landscapes that are more resistant and resilient to disturbance and uncertain environmental conditions such as climate change; create a heterogeneous landscape that provides a variety of habitats to sustain populations of terrestrial and aquatic species; reduce hazardous fuels adjacent to private property and across the landscape while re-introducing fire to the ecosystem and contribute timber to the local and regional economy. This harvest is dispersed over the 92,407 acre project area. These activities will contribute approximately 78,761 hundred cubic feet (CCF) of timber products to the economy. Approximately 91 percent of this harvest will be accomplished with ground-based systems and 9 percent by skyline yarding. An estimated 37 percent (approx. 3,310 acres) of the harvest will be restricted to winter harvest to protect resources.
- Precommercial thinning on approximately 5,775 acres to improve growing conditions and increase composition of shade-intolerant species in managed sapling-sized stands.
- Planting of conifer seedlings will occur on approximately 3,346 acres in this decision.
- Prescribed fire will be used to reduce hazardous fuel loadings on treatment units, create fuel breaks along ridge lines, and restore natural fire regimes. Prescribed fire treatments will be completed on approximately 4,257 acres (appendix 2).
- Approximately 10,049 acres (appendix 2) of burning and/or slashing over the next 10 years to enhance wildlife habitat (bighorn sheep escape habitat and foraging), increase ungulate browse and to reduce hazardous fuels. These treatments and will be spaced over time to avoid displacing big game from the entire burn area at any given time. These

treatments have been covered under previous planning documents associated with the Forestwide Fuels Programmatic Environmental Assessment.

- National Core and Montana State Best Management Practices (BMPs) and road maintenance work will be applied to approximately 176.40 miles of haul roads prior to hauling and maintained through operations.
- New road construction totaling approximately 9.25 miles of new permanent roads (appendix 1, table 6) in order to access harvest units, fuels units and allow the DNRC access to their lands.
- Temporary road construction totaling approximately 4.26 miles (appendix 1, table 4) in order to accomplish harvest activities. These roads will be obliterated following harvest.
- A change to yearlong, open access on approximately 1.79 miles of roads (appendix 1, table 7) that currently only provide seasonal access to existing dispersed campsites along the Kooicanusa Reservoir.
- Access changes from motorized to non-motorized on five trails (279, 280, 420, 426, and 500) for a total of approx. 27 miles (appendix 1, table 8). Trails 281 and 420 will remain motorized, creating a loop which includes open National Forest System roads (roads 4904 and 4925).
- Watershed rehabilitation will include road decommissioning and intermittent stored service (storage) work. Decommissioning work is authorized on 5.93 miles of existing road. Approximately 0.51 miles of these roads are open yearlong to traffic while the rest are currently restricted yearlong to traffic (appendix 1, table 5). Road storage will occur on 17 road segments totaling approximately 16 miles. Two roads (#5060, 5167) are currently open (0.65 miles), the rest of the roads are currently seasonally closed but open to snow vehicles. These roads will remain open to snow vehicles (appendix 1, table 5).
- Undetermined roads occur in the East Reservoir area. These are roads that exist on the ground but are not officially part of the National Forest System. Approximately 13 miles of these undetermined roads will be added to the National Forest System. These roads currently access dispersed camping sites, are needed to access harvest units, and are needed for existing or future land management. An additional 6.24 miles of undetermined roads that are not needed now or in the future will be decommissioned.
- The Forest Service and the Montana State Department of Natural Resources and Conservation (DNRC) have proposed to cost-share in several roads in the analysis area for access purposes. Of the approximately 30 miles, new road construction (new location) will be authorized for 0.20 miles (N39) (appendix 1, table 9).
- Access to the recreation sites on the south side of the mouth of Fivemile Creek and in the Yarnell area will be improved. New road construction and improvement of existing access will occur to provide more opportunities for dispersed campsites. Improvements will be made while maintaining the character of the sites.
- A new non-motorized trail within the East Reservoir analysis area will be created. The trail is located south of the mouth of Cripple Horse Creek between Lake Kooicanusa and Montana State Highway 37 and will be a 2.75 mile loop. The trail will be managed for

- non-motorized travel (horse, bicycle, foot) yearlong with trailhead parking to accommodate four to six vehicles.
- Design features and mitigation measures to maintain and protect resource values (see Appendix 3).

The decision implements the activities from Alternative 2 (ROD page 12) with the following modifications:

- I have included Unit F19 which is adjacent to state land on the Kooconusa Reservoir near the mouth of Cripple Horse Creek. This unit was added during field reconnaissance and includes slashing and burning to address excess fuels.
- Road #4904, in the Boundary Mountain area will be changed from restricted yearlong to restricted seasonally (10/15–06/30) to give additional access to the trailhead for Trail #425.
- The five motorized trails (279, 280, 420, 426, and 500) will change from motorized to non-motorized for a total of about 27 miles to improve big game security. Trails 281 and 420 will remain as motorized trails creating a loop which includes open National Forest System roads. This has been analyzed in Alternative 3. The reason for changing the motorized routes to non-motorized was to increase big game security. The existing security is 28 percent which is below the recommendation of 30 percent. Leaving the loop as motorized increases security from 28 percent to 33.4 percent while leaving some motorized trails for recreationist.
- Two undetermined roads in the Canyon Bay area will be decommissioned to protect resource values at risk (table 2.22 in the DEIS). These are roads #5298 and 2598A (0.24 miles).
- A new non-motorized trail within the East Reservoir analysis area will be created as described in Alternative 3. This trail will increase established recreation area along the Kooconusa Reservoir and will be part of the decision.

Following my review of the interdisciplinary team’s analysis of the action alternatives, I have determined that the changes I am making to Alternative 2 are minor and within the scope and context of the environmental effects disclosed in the DEIS, FEIS, biological assessments, biological evaluation, and supporting documentation located in the project file (PF).

In summary, my decision authorizes commercial timber harvest, temporary road construction to access harvest units, fuels management activities, prescribed burning without harvest, recreation improvements, permanent road construction, road storage, road decommissioning activities, access management changes, and road cost-shares. The management actions are described in detail in appendices 1, 2, and 3 of this document.

Design Features and Management Measures

Alternatives were designed with input from all resource specialists, and as such were created to reduce or eliminate potential adverse effects to resources. After analyzing the potential effects of proposed activities and establishing design features and management measures (appendix 3), it was determined that no mitigation measures are necessary because potential adverse effects have

been addressed through design features and management measures including rehabilitation of soil resources in units 194T, 194S, 330 and 331 as described in appendix 8 of this ROD.

Monitoring Activities

Monitoring must be summarized in the ROD “where applicable for any mitigation” (40 CFR 1505.2). As discussed in the mitigation section above, no mitigation measures are necessary for this project. However, the Forest Service will continually evaluate the project to ensure that best management practices and Forest Plan standards and guidelines are followed. Best management practices and Forest Plan standards and guidelines will be incorporated into different phases of the project, as described in appendices 6 and 9.

Decision Rationale

I have selected Alternative 2 with modifications because it best addresses public concerns while meeting the purpose and need for the project and protecting resources. This section details my rationale for this decision.

Purpose and Need for Action

A number of specific resource and vegetation conditions that are currently not meeting long-term management objectives were identified in the broad scale assessment of the Cripple Planning Subunit (East Reservoir Landscape Assessment 2010) located in the project record (Vol. V, Doc 1). Opportunities to improve these conditions were developed through a comparison of reference conditions (generally presettlement condition) with current conditions and determining actions to improve those ecosystem components that are outside of a manageable natural range of variability. This is discussed in more detail in the forest vegetation and fire/fuels sections in chapter 3 of the DEIS. The assessment was based on Kootenai Forest Plan direction, the National Fire Plan, findings in the Northern Region Overview, the Upper Kootenai Assessment, and trends observed by interdisciplinary specialists conducting the landscape assessment.

The purpose and need for the activities proposed in the East Reservoir Project are to:

- Re-establish, restore, and retain landscapes that are more resistant and resilient to disturbance (insect and disease infestations, fire) and uncertain environmental conditions such as climate change;
- Create a heterogeneous landscape that provides a variety of habitats to sustain populations of terrestrial and aquatic species;
- Provide amenities, jobs, and products to the communities;
- Reduce hazardous fuels adjacent to private property and across the landscape while re-introducing fire to the ecosystem; and
- Enhance recreation settings and facilities with the goal of providing high quality experiences.

Benefits of Implementing the Action Alternatives

Both of the action alternatives satisfy my decision criteria and implementation of either of them will result in many benefits as follows:

- Maintain diverse age classes of vegetation for viable populations of all existing vertebrate species;

- Reduce overall stand densities and promotion of fire-adapted species such as ponderosa pine and western larch;
- Introduce prescribed fire to simulate natural ecological processes, prevent excessive fuel buildups, create habitat diversity for wildlife, reduce fire suppression costs, maintain ecosystems, and to create shrub fields for wildlife foraging habitat;
- Provide forest products within the sustainable capability of the ecosystem;
- Provide access to National Forest System and private lands while providing ecological integrity, wildlife security habitat and protecting water quality;
- Maintain a balance of open and closed roads to ensure big-game habitat security;
- Improve recreation experience through improvements in dispersed camping sites.

Both action alternatives respond in various ways to the purpose and need for action. Because the purpose and need for action responds to forest plan goals, objectives, and standards, I used it as an indicator of forest plan implementation. Table 1 displays a comparison of purpose and need objectives by alternative, which helped me evaluate how well the effectiveness of each alternative responds to the forest plan.

Table 1. Comparison of Purpose and Need Objectives by Alternative

| Activities | Alt 1 | Alt 2 | Alt 3 |
|---|-------|--------|--------|
| Re-establish, Restore and Retain Landscapes that are More Resistant and Resilient to Disturbance (Insect and Disease Infestations, Fire) and Uncertain Environmental Conditions such as Climate Change | | | |
| Commercial Timber Harvest (acres) | 0 | 8,845 | 7,782 |
| Precommercial Thinning (acres) | 0 | 5,563 | 5,563 |
| White Pine Precommercial Thinning (20% of stand acres) | 0 | 212 | 0 |
| Create a Heterogeneous Landscape that Provides a Variety of Habitats to Sustain Populations of Terrestrial and Aquatic Species | | | |
| Motorized Trails Changed to Non-motorized (miles) | 0 | 36.56 | 26.89 |
| Fuels and Wildlife Treatment (acres) | 0 | 10,049 | 10,049 |
| Provide Amenities, Jobs and Products to the Communities | | | |
| Timber Harvest Volume, Estimated, CCF | 0 | 78,761 | 67,987 |
| Total Employment (persons) | 0 | 629 | 560 |
| Reduce Hazardous Fuels Adjacent to Private Property and Across the Landscape While Reintroducing Fire to the Ecosystem | | | |
| Natural Fuel Reduction/Stand IMP through Hand Slashing, Grapple Piling, Chipping, Mastication or Mechanical Product Removal (acres) | 0 | 1,378 | 1,309 |
| Fuels and Wildlife Treatment (acres) | 0 | 10,049 | 10,049 |
| Enhance Recreation Settings and Facilities with the Goal of Providing High Quality Experiences | | | |
| Construction and Improvement of Recreation Access Roads (miles) | 0 | 6.28 | 6.28 |
| Road Access Changed to Yearlong Access (miles) | 0 | 1.79 | 1.79 |
| Native Rock Ring Fire Pits, Vault Toilets and Signage Proposed | No | Yes | Yes |

Key Issues

I selected Alternative 2 with modifications over the other action alternative because it best addresses public concerns while achieving project objectives. The following paragraphs explain my rationale by key issue for this project.

Regeneration Units Over 40 Acres

Several of the proposed treatment units that exceed 40 acres in size will trend the landscape towards a more desirable pattern of patch sizes that mimics natural processes and restores historical patterns of patch size as some of the units are blocked up with other early-successional stages. (DEIS pages 41–48, 59, 60 chapter 3, vegetation). Some of the larger openings create a pattern of fuel treatments at a landscape scale that is likely to disrupt large fire growth and spread and assist in the efficacy of suppression efforts and one unit provides a fuel break immediately adjacent to a major power transmission line (FEIS errata and DEIS page 182, chapter 3, fire and fuels). These large openings can reduce edge effect and reduce fragmentation in wildlife habitat (DEIS pages 224, 300 and 308, chapter 3, wildlife). In accordance with direction provided in the Northern Region supplement to FSM 2471.1, Regional Forester approval to exceed the 40-acre size limit has been requested and granted (Project File Vol. S, Doc 31). Appendix 11 describes the site specific forest plan amendments for exceeding the 40-acre opening size.

Impact to Old Growth Forest Stands

Concern regarding the impact to old growth stands is addressed by dropping proposed vegetation treatments in old growth. Alternative 2 with modifications maintains fuel treatments (173 acres) in some old growth such as on dry land types. The purpose of prescribed fire in old growth, as identified in the forest plan, is to maintain old growth characteristics. These proposed treatments will occur in dry land old growth such as south aspects of dry habitats. Treatments to be implemented are designed to reduce ladder fuels through a combination of slashing and prescribed burning. Reducing ladder and surface fuels will maintain or enhance some of the dry land old growth attributes and help ensure the survivability of the older, large diameter trees in these individual stands. The overall goal is to work towards returning these stands to their appropriate fire regime and increased fire resiliency.

Closing of Approximately 27 Miles of Motorized Trails (Big Game Security)

As explained previously, both action alternatives meet many of the purpose and need objectives to a similar extent. However, in response to public comment, Alternative 2 with modifications changes less motorized trails to non-motorized while meeting recommended values for wildlife security (table 8).

Table 2 displays a comparison of the alternatives by significant issue.

Table 2. Comparison of Issue Indicators by Alternative

| Issue | Alt 1 | Alt 2 | Alt 3 |
|--|--------------|--------------|--------------|
| Issue #1—Regeneration Harvests Over 40 Acres | | | |
| Number of Units Over 40 acres in MA12 | 0 | 1 | 0 |
| Number of Units Over 40 acres in MA 15, 16 | 0 | 8 | 0 |
| Issue #2—Impact to Old Growth Forest Stands | | | |
| Vertical Structure Removed in Designated Old Growth/Replacement Old Growth (acres) | 25 | 137 | 0 |
| Vertical Structure Removed in Undesignated Old Growth (acres) | N/A | 43 | 0 |
| Road Length Existing/Built Adjacent/Through Designated Old Growth/Replacement Old Growth (ft.) | 158,400 | +666 | +666 |
| Number of Existing or Proposed Regeneration Units Adjacent to Old Growth | 136 | +28 | +23 |
| Edge Influence in Old Growth (acres) | 1,744 | +250 | +241 |
| Interior Habitat Remaining in Old Growth (acres) | 7,518 | 7,268 | 7,277 |
| Treated to Maintain Old Growth or Trend Stand Toward Old Growth (Burning) (acres) | N/A | 1,326 | 0 |
| Percent of Designated Old Growth in the PSU | 11.2 | 11.2 | 11.2 |
| Issue #3— Motorized Vs. Non-motorized Trails | | | |
| Motorized Trails Changed to Non-motorized (miles) | 0 | 36.56 | 26.89 |
| Security Cover (Standard 30%) | 28.1 | 35 | 33.4 |

Cumulative Effects

In addition to the purpose and need and public issues, I considered the potential for cumulative effects from past, present, and reasonably foreseeable actions in conjunction with project activities, as disclosed in chapter 3 of the DEIS, and I determined there will be no significant cumulative effects. I found the cumulative effects analysis is consistent with the Forest Service NEPA Regulations (36 CFR 220.4(f), July 24, 2008) in accordance with the Council on Environmental Quality Memorandum, *Guidance on the Consideration of Past Actions in Cumulative Effects Analysis*.

My conclusion is based on: 1) the project’s consistency with CEQ direction; 2) on-the-ground review and discussions with district resource specialists; and 3) review of the extensive project environmental documentation, including biological assessments, and findings that through project design resources are protected.

Why I Did Not Select the No-action Alternative (Alternative 1)

There are many reasons I did not select Alternative 1 (no action). While in the short term, doing nothing may have less effect than the short-term disturbances associated with the action alternative activities, over time, the consequence of doing “nothing” is potentially far greater. I did not select Alternative 1 because:

- Without active management, this landscape would continue to trend away from reference conditions for species diversity. There would be **no** regeneration harvest

and planting of western white pine, western larch, and ponderosa pine. Restoring tree stocking densities through commercial thinning, precommercial thinning, and improvement harvest would not occur. These stands would not trend towards reference density conditions. The risk of tree mortality from insect and disease infestations, primarily mountain pine beetle, would likely increase on the dry land sites and in lodgepole pine stands. Wildfire potential and intensity would also remain higher than reference conditions.

- Trending successional stages toward reference condition levels through regeneration harvests would not occur. Restoring successional diversity across the landscape that is better adapted to disturbances would not occur.
- In concert with continued wildfire suppression, encroachment of Douglas-fir would continue in some of the dry ponderosa pine habitat types creating an increased fire risk in the wildland-urban interface (WUI).
- Existing motorized trails would not be closed which would maintain security habitat at less than desired secure habitat by seven percent within the analysis area for large mammals including moose, elk, deer, and sheep.
- Without weed treatment and burning activities, shrub and grass species in the natural openings would continue to decline in value as browse for big game. Weed treatment would continue consistent with funding, but would not be increased and may not keep up with the expansion of noxious weeds.
- With continued fire suppression, conifer encroachment on bighorn sheep escape habitat would result in higher risk of mortality from predators because increased cover would be provided for stalking predators.
- In some areas, lack of forest regeneration in concert with fire suppression would result in less early successional forest, which provides snowshoe hare foraging habitat, thus likely reducing prey numbers for the threatened Canada lynx.
- Natural regeneration of seral species such as ponderosa pine and western larch would be minimal. These species are better adapted to disturbance such as fire and were present in larger numbers historically.
- Road maintenance and improvements would occur at a much slower rate under the no action alternative and some culverts would continue to impede aquatic organism passage. There will be little management for viewing along Scenic Byway 37.
- There would be no jobs or labor income associated with timber harvest and other resource activities in this area.

In summary, the no-action alternative does not satisfy the purpose and need for the project and does not implement the forest plan direction for this area, which includes improving forest conditions and habitats through management practices. (See DEIS chapter 3 analysis of Alternative 1 for more detailed information on the effects of no action).

Project Location

The East Reservoir project area (from now on referred to as analysis area) lies approximately 15 miles east of Libby, Montana in Lincoln County, along the east side of Lake Koocanusa Reservoir. The analysis area is approximately 92,407 acres. The Forest Service manages 78,546 acres, Montana State Department of Natural Resources and Conservation (DNRC) manages 4,032

acres, 1,322 acres are in private ownership, Plum Creek Timber Company (PCTC) owns 7,672 acres and the Corp of Engineers (COE) manages 802 acres.

The legal description of the analysis area includes all or portions of T30N, R28W, Sections 2 to 11, 13 to 30 and 32 to 36; T30N, R29W, Sections 1 to 4, 9 to 16 and 24; T31N, R327W, Sections 3 to 10, 15 to 18, 20 to 22, 28 and 29; T31N, R28W, Sections 1 thru 36; T31N, R29W, Sections 1, 2, 10 to 15, 22, 23, 26 to 36; T32N, R27W, Sections 7 to 9, 14 to 23 and 26 to 33; T32N, R28W, Sections 2 to 5 and 8 to 36; and T32N, R29W, Sections 24 to 26, 35 and 36, PMM.

The East Reservoir analysis area makes up the analysis boundary for most resources. The analysis area for the wildlife resource varies with species and is described in the wildlife section in chapter 3 of the DEIS.

The East Reservoir analysis area consists of five major drainages: Fivemile Creek, Warland Creek, Cripple Horse Creek, Canyon Creek, and Dunn Creek. These drainages flow from east to west. These drainages are deeply incised by their streams and the ridgelines have fairly gentle slopes. Side slopes between these two features are generally steep.

The East Reservoir analysis area is a diverse landscape that ranges in elevation from a low of about 2,200 feet along the Kootenai River to 6,051 feet at the top of Davis Mountain. The south and west aspects of the analysis area have numerous small natural openings in a ponderosa pine and Douglas-fir canopy. The north and east aspects have a nearly continuous canopy of Douglas-fir, larch, and lodgepole pine. This tree canopy is broken sharply by drainages.

The East Reservoir analysis area provides a variety of recreation opportunities. Recreation activities are varied and occur year round. Activities include snowmobiling, hunting, fishing, off-highway vehicle (OHV) use, hiking, scenic viewing, wildlife viewing, camping and gathering forest products such as berries and firewood. There are several major rock forms visible in this analysis area, especially along Lake Koocanusa Reservoir.

Public, Tribal, and Other Agency Involvement

Public participation helps the Forest Service identify concerns with possible effects of its proposals. It is also a means of disclosing to the public the nature and consequences of actions proposed for National Forest System lands.

The decisions related to this project are based on a fair analysis of the scientific and environmental data, effects analysis, and public response. The Forest Service encouraged public participation from the beginning and maintained throughout the planning process, including condition assessments, issue identification, and the analysis documentation process. Project-specific public comments were used to refine alternative design and ensure a thorough analysis, helping the project interdisciplinary team, district ranger, and me in determining the best course of action for the project.

Proposed Action Development

The Libby Ranger District completed a broad scale assessment of the Cripple Planning Subunit (East Reservoir Landscape Assessment) in 2010. The proposed activities in the East Reservoir EIS were developed from opportunities identified in the East Reservoir Landscape Assessment (Vol. V, Doc 1) and Travel Analysis Process (TAP) (Vol. v, Doc. 2) for the Cripple Planning Subunit. A copy of both these documents can be found in the project file.

Proposed Action Scoping

Site-specific public comments on the East Reservoir Project proposed action were requested in November 2010 through publication of a Notice of Intent (NOI) in the *Federal Register* on November 15, 2010, and public scoping notices in December 2010 in the Kalispell, Montana, *Daily Inter Lake*; and the Libby, Montana, *The Western News*. A notice was also mailed, on December 21, 2010, to individuals, agencies, organizations, and tribal governments on the district mailing list for planning projects; 14 comment letters were received.

Meetings

Meetings and field trips were held with the Kootenai Forest Stakeholders Coalition at their request to clarify the proposal and provide maps (Please see public involvement section of the project file for documentation).

Circulation of the DEIS

Consistent with objection process regulations (36 CFR 218.25(a) (1) and (2), On June 10, 2013, the DEIS was mailed to all required agencies, and a DEIS summary, CD or notice of availability was mailed to all other project participants. A notice of availability was also mailed to all landowners of record in the project area. On June 14, 2013, a Notice of Availability for the East Reservoir Project DEIS was published in the Federal Register. A legal ad appeared in the Kalispell Daily Inter Lake (June 15, 2013) and display ads appeared in the Libby Western News (June 21, 2013) and Kootenai Valley Record (June 18, 2013); 11 comment letters were received (see the chapter 5 of the FEIS for these letters and agency responses). On July 19, 2013 an extension to the comment period was published in the Federal Register. It extended the comment period to August 15, 2013.

In August 2014, we published the FEIS for the East Reservoir Project, including the errata sheets to be attached to the DEIS, copies of comments received, and the Forest Service response to comments received concerning the DEIS.

The Role of the Public in Identifying the Selected Alternative

In accordance with 40 CFR 1503.4 (response to comments), the Forest Service considered comments individually and collectively in order to determine the appropriate response.

The Forest Service also used comments to make factual corrections and clarifications to the DEIS, as described in the errata to the DEIS (FEIS). Where appropriate, the Forest Service provided an explanation of why comments did not warrant further agency response, citing the sources, authorities, or reasons supporting the agency's position.

Tribal Involvement

The concerns of the Kootenai and Salish tribes were solicited through project scoping. In addition, the Confederated Salish and Kootenai Tribes have provided a tribal liaison to work in partnership with the KNF to review project proposals and provide tribal input. No concerns regarding this project were expressed by tribal governments.

Other Agency Involvement

The U.S. Fish and Wildlife Service (FWS), and Montana Department of Fish, Wildlife, and Parks were consulted regarding fish and wildlife habitat. The Lincoln and Sanders County

Commissioners were contacted. The Montana Department of Environmental Quality (MDEQ), the Environmental Protection Agency (EPA), and Department of Interior Office of Environmental Policy and Compliance (DOI) also received project notifications or hard copies.

The U.S. Environmental Protection Agency (FEIS Response to Comments, Letter #1) had some specific edits to the hydrology and air quality sections of the DEIS, which are reflected in the FEIS.

A biological assessment was sent to the FWS on May 31, 2013. On August 8, 2013, the FWS concurred that the project **may affect but is not likely to adversely affect** the grizzly bear. This determination is based on the following: 1) the East Reservoir Project activities fall within the range-of-effects analyzed by the FWS in their programmatic biological opinion (BO) and the Incidental Take Statement for the 2011 Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones and therefore, is not likely to contribute to the loss of grizzly bears from the Tobacco BORZ; 2) there is no helicopter use associated with this project therefore the project is consistent with the management strategies found in the Guide to Effects Analysis of Helicopter Use in Grizzly Bear Habitat (2009) that are not likely to adversely affect grizzly bears; the associated helicopter activities would not prohibit bears from using the area during any period of biological importance such as breeding, late fall foraging (hyperphagia), or denning; 3) the East Reservoir Project does not change the livestock management in the Tobacco BORZ; 4) project activities would not result in an increase in food attractants and would comply with the 2011 KNF Food Storage Order; 5) the project would not result in measurable increases in recreation use of the Tobacco BORZ based on limited improvements; and 6) the project does not involve changes to any type of mining activities within the Tobacco BORZ and would not result in habitat fragmentation between the SCYE and NCDE grizzly bear ecosystems.

The USFWS also concurred that the project **may affect but is not likely to adversely affect** Canada lynx or Canada lynx critical habitat. This determination is based on the facts that: 1) the alternatives of the East Reservoir DEIS comply with all standards, guidelines, and objectives of the Northern Rockies Lynx Management Direction Record of Decision and its activities fall within the scope of those analyzed in the subsequent Biological Opinion (2007), more specifically, the project would not result in habitat conditions that would cumulatively contribute to the low level of species loss estimated by the 2007 BO; 2) these projects do not involve any activities that may result in increased areas of snow compaction, nor permanent loss of lynx habitat; and 3) although this project would temporarily affect the primary constituent sub-element, 'matrix' habitat and stem-exclusion stands, it meets **all** S1 standards, therefore maintaining habitat connectivity within and between associated lynx analysis units (LAU). Additionally, the project would not remove or significantly alter any of the other primary constituent sub-elements including: space; nutritional or physiological requirements; cover or shelter; breeding or rearing sites; or habitats protected from disturbance that represent historic, geographical, and ecological distribution of the species. The FWS concurred with this determination.

The gray wolf Northern Rocky Mountains distinct population segment outside of Wyoming was removed from the list of Endangered and Threatened Wildlife effective May 4, 2009 (Federal Register Vol. 74, No. 62, pp. 15123-15188). Section 7 consultation is no longer required for the gray wolf in Montana.

On February 4, 2013 the FWS published in the *Federal Register* a proposed rule to list the distinct population segment of the North American wolverine occurring in the contiguous United States as a threatened species under the Endangered Species Act. However, on August 13, 2014 (FR Vol. 79 No. 156) the FWS withdrew their proposed rule to list the species as Threatened based on the belief the factors affecting the Distinct Population Segment are not as significant as previously thought. Based on this information, the wolverine is no longer considered a federally proposed species, but remains as a sensitive species for the Northern Region of the Forest Service and Kootenai National Forest. The analysis for the wolverine under the East Reservoir Project is still valid with the change in legal status of the species. A revised determination for the species' sensitive status is that the project "may impact individuals, but will not result in a trend toward federal listing," and is consistent with the previous finding that the project "is not likely to jeopardize the continued existence of the species." No further evaluation is required.

Biological assessments document that the project will have no effect on the Spalding's catchfly, bull trout, bull trout critical habitat, or white sturgeon.

Brief Alternative Description

Alternative 1—No Action

The National Environmental Policy Act (NEPA) requires that an EIS include a "no action" alternative. The no-action alternative is based on the premise that ecosystems change, even in the absence of active management. It is essentially a "status quo" strategy that allows current activities and policies, such as recreation administration, road maintenance, and fire suppression to continue. It proposes no actions that are contained in the action alternatives described in the following paragraphs. This alternative provides a baseline for comparison of environmental consequences of the other alternatives to the existing condition (36 CFR 1502.14) and is a management option that could be selected by the deciding official. The 10,049 acres of fuels and wildlife treatment/prescribed fire shown in table 1 on page 5 has been approved under other planning documentation.

Alternative 2—Proposed Action

Alternative 2 is the proposed action, designed to meet the purpose and need for this project. It includes timber harvest, slash treatment, site preparation, prescribed burning, tree planting, and precommercial thinning that move the landscape toward desired conditions. Other activities included in this action alternative are access management changes, construction of new roads, road storage, and decommissioning activities, temporary road construction, existing road BMP improvements and wildlife habitat enhancement, and improvement of recreation settings, opportunities, and experiences. Table 1 and the DEIS chapter 2, pages 5 to 22, contain more detailed information on these activities as well as appendices 1 and 2 of this ROD. Alternative 2 will require Regional Forester approval for exceeding NFMA opening requirements and 36 CFR Part 219.27(d)(2) which states the maximum regeneration harvest treatment for Montana is 40 acres.

Alternative 2 includes four project-specific forest plan amendments (appendix 11). They are:

- **Project-specific Amendment #1:** Units #40, 73T, 147, 148, 149 and 150 cannot meet MA 15 visuals direction because they are planned for regeneration treatments (seed tree and shelterwood) to exceed 40 acres either singularly or in combination with other units (USDA Forest Service 1987a, III-64-65).

Alternative 2 will reduce tree canopy from fully stocked to a seed tree prescription in concert with exceeding 40 acre limitation as directed by NFMA. Management Area 15 visual quality objective (VQO) is maximum modification. Treatment of these units supports purpose and need statement to re-establish, restore, and retain landscapes that are more resistant and resilient to disturbance.

- **Project-specific Amendment #2:** Unit #362 cannot meet MA 12 visuals direction because it is planned for regeneration treatment (clearcut) to exceed 40 acres. (USDA Forest Service 1987a, III-48-49).

Alternative 2 will reduce tree canopy from fully stocked to a clearcut prescription in concert with exceeding 40 acre limitation as directed by NFMA. Management Area 12 VQO is “maximum modification in areas of low visual significance, modification in areas of moderate visual significance, and partial retention in areas of high visual significance, unless infeasible when attempting to meet the goals of the management area.” Treatment of this unit supports purpose and need to re-establish, restore, and retain landscapes that are more resistant and resilient to disturbance.

- **Project-specific Amendment #3:** Units #73 and 188 cannot meet MA 16 visuals direction because they are planned for regeneration treatment (seed tree) to exceed 40 acres in combination. (USDA Forest Service 1987a, III-69-70).

Alternative 2 will reduce tree canopy from fully stocked to a seed tree prescription in concert with exceeding 40 acre limitation as directed by NFMA. Management Area 16 “minimum VQO is modification.” Treatment of these units supports purpose and need statement to re-establish, restore, and retain landscapes that are more resistant and resilient to disturbance.

- **Project-specific Amendment #4:** Unit 362 results in a 192 acre opening on MA12. Therefore, a site-specific forest plan amendment and Regional Forester approval is necessary for this unit. This unit removes hiding cover and movement corridors resulting in openings greater than 40 acres (DEIS chapter 3, wildlife section for more information on hiding cover and openings). The forest plan standard for opening sizes in MA 12 is to maintain movement corridors of at least two site distances (400 feet) between openings, and generally not to exceed openings over 40 acres (Kootenai Forest Plan p. III-49, wildlife and fish standards #7).

Past management within the analysis area has interspersed the forest with a series of 20- to 40-acre openings with very distinct (hard) edges between harvested and unharvested areas. This disturbance regime provides suitable habitat for species that are adapted to the edges between forested and non-forested areas. However, species that require larger blocks of habitat are at a disadvantage under such a disturbance regime. The analysis presented in the DEIS found the effects of larger openings will not result in adverse effects for big game, however treatments could result in openings that may not be fully utilized by elk as foraging areas, at least diurnally.

Alternative 3—Alternative to the Proposed Action

Alternative 3 was designed to implement projects that meet the purpose and need for action and to meet all standards put forth in the forest plan and NFMA. Briefly these standards include opening size in MA 12 and 15, impacts to old growth forest stands, and amount of motorized trails in project area changing to non-motorized.

Decision Summary

To meet NFMA requirements and the forest plan recommendations for over 40 acre openings, all units were reduced to 40 acres or under (Issue #1). All treatments in old growth units were dropped as a forest plan amendment would have been needed (Issue #2). Two of the six motorized trails will remain motorized creating a loop for recreationist to travel (Issue #3). Further reconnaissance showed the need to add fuel unit F19. Several units were dropped to meet the maximum protection measures for goshawk according to Reynolds, et al. 1992. Unit 68 was dropped due to the presence of a red-tailed hawk nest. The white pine thinning was dropped from this alternative so as not to implement the exception in the Northern Rockies Lynx Management Direction. Overall acres in the fuels and wildlife units could be reduced (by approximately 608 acres) if burning conditions are not favorable within the lynx analysis unit and burning would result in habitat reduction. Treatment units for which this reduction would occur are available in the project file.

No forest plan amendment will be needed for Alternative 3.

Table 3. Alternative Activities Summary

| Activities | Alt 1 | Alt 2 | Alt 3 |
|---|--------------|---------------|---------------|
| Timber Harvest Treatments (acres) | | | |
| Intermediate Harvest | | | |
| Sanitation Salvage | 0 | 332 | 301 |
| Improvement | 0 | 2,799 | 2,696 |
| Commercial Thinning | 0 | 2,256 | 1,702 |
| Improvement/Shelterwood | 0 | 0 | 962 |
| Regeneration Harvest | | | |
| Seedtree with Reserves | 0 | 1,507 | 1,105 |
| Clearcut with Reserves | 0 | 521 | 475 |
| Shelterwood with Reserves | 0 | 297 | 162 |
| Seedtree/Shelterwood | 0 | 135 | 65 |
| Irregular Shelterwood | 0 | 69 | 56 |
| Improvement/Shelterwood | 0 | 929 | 0 |
| Total Harvest | 0 | 8,845 | 7,524 |
| Slash Treatment (acres) | | | |
| Grapple Pile/Burn Piles | 0 | 3,952 | 2,457 |
| Underburn with Timber Harvest | 0 | 2,771 | 3,390 |
| Prescribed Fire without Timber Harvest | 0 | 1,378 | 1,309 |
| Fuels and Wildlife Treatment/Prescribed Fire | *10,049 | 10,049 | 10,049 |
| Total Slash Treatment | 0 | 18,150 | 17,205 |
| Road Construction/Reconstruction (miles) | | | |
| New Permanent Road Construction | 0 | 9.25 | 7.23 |
| Temporary Road Construction | 0 | 4.26 | 3.91 |

| Activities | Alt 1 | Alt 2 | Alt 3 |
|--|--------------|--------------|--------------|
| Road Reconstruction and BMPs (haul routes) | 0 | 176.40 | 167.85 |
| Access Changes (miles) | | | |
| Trails: Motorized Use to Non-motorized Use | | 36.56 | 26.89 |
| Road Access Changes | | 1.79 | 5.34 |
| Undetermined Roads to National Forest System Roads | | 13.50 | 13.37 |
| Undetermined Roads to Decommissioned Roads | | 6.24 | 6.48 |
| Watershed Rehabilitation | | | |
| Miles of Road Put in to Long-term Storage | | 16.00 | 17.62 |
| Miles of Existing Road to be Decommissioned | | 5.93 | 5.93 |
| Number of Stream Crossings Restored (estimate) | | 49 | 49 |
| Stream Bank Stabilization | | Yes | Yes |
| Planting (acres) | | | |
| Conifer Planting | 0 | 3,346 | 1,729 |
| Other Activities | | | |
| Precommercial Thinning (acres) | | 5,563 | 5,687 |
| White Pine Precommercial Thinning (20% of stand acres) | | 212 | 0 |
| Miles of Road Proposed for Cost-share among the FS, DNRC | | 29.72 | 30.29 |

*Covered in other planning documents

Alternatives Considered but not Studied in Detail

The following alternatives, suggested in public comments or by interdisciplinary team members, were considered but dismissed from detailed consideration for the reasons summarized below.

Alternative 4 was also developed to address public concerns on regeneration treatment units over 40 acres, treatments in old growth, treatments in lynx habitat, and motorized trail access. However, subsequent to the application of design measures and management measures for both Alternatives 2 and 3, Alternative 4 did not measurably add to the range of alternatives and was dropped as all public and internal concerns were addressed fully in Alternatives 2 and 3.

Alternative 5 addressed public comments concerning no road storage and no change in motorized trail access. Some of the public was concerned that road storage would limit access for public recreation and forest management. Some public felt that changing motorized trails to non-motorized trails would decrease access for public recreation. Alternative 5 was not analyzed in detail for several reasons. First, road storage (intermittent stored service) is a category to manage existing roads that have adverse impacts on watershed quality. The roads would be closed to traffic and left in a condition that there is little resource risk if maintenance is not performed. Second, road storage would not measurably impede future forest management. Roads that are not needed in the short term (10 to 20 years), but would likely be needed at some time in the future would be stored. Storage may include surface ripping, seeding and/or cross ditching and may include some sections of partial road re-contouring as needed on a site-specific basis, but the majority of the road prism would be retained for future access needs. The majority of road prisms

would be left in place based on the East Reservoir Travel Analysis Process, most of these roads are not needed for short-term (10 to 20 years) access for commercial timber management. The TAP can be found in the project file.

Findings Required by Law

Numerous laws, regulations, and agency directives require that my decision be consistent with their provisions. I have determined that my decision is consistent with all laws, regulations, and agency policy. The following summarizes findings required by major environmental laws:

National Forest Management Act

The National Forest Management Act (NFMA) and accompanying regulations require that several specific findings be documented at the project level. These are:

Consistency with Forest Plan

The 1987 Kootenai Forest Plan establishes management direction for the KNF. This management direction is achieved through the establishment of forestwide goals, objectives, and standards. Additional goals and accompanying standards have been established for specific Management Areas (MA) across the forest. Project implementation consistent with this direction is the process in which the goals described by the forest plan are achieved. The NFMA requires that all projects must be consistent with the governing forest plan (16 USC 1604 (i)) or request project-specific amendments when appropriate.

The DEIS displays the forest plan and MA goals and objectives applicable to the East Reservoir project area (DEIS chapter 1, pages 11–12). The alternative development process and the management goals of the alternatives are described in the DEIS chapter 2, while the environmental consequences of the alternatives in relation to the forest plan standards and guidelines are displayed in the DEIS chapter 3 with supporting information in the project file (as indicated in each resource discussion).

Apart from the project-specific forest plan amendment described below, my decision is consistent with all aspects of the forest plan.

Forest Plan Amendments

The selected alternatives as modified will require four project-specific forest plan amendments as in appendix 11 of this ROD. The forest plan states "if it is determined during project design that the best way to meet the goals of the forest plan conflicts with a forest plan standard, the Forest Supervisor may approve an exception to that standard for that project." I have reviewed the analysis of the amendment and determined the project-specific amendments allow achievement over the overall forest plan goals for MA 15, which is timber production using various standard silviculture practices while providing for other resource values such as soil, air, water, wildlife, recreation, and forage for domestic livestock (Kootenai Forest Plan Vol. 1, pg. III-64); MA 12, which is which is to maintain or enhance nonwinter big-game habitat and produce a programmed yield of timber (Kootenai Forest Plan, Vol. 1, pg. III-48); and MA 16, which is which is to produce timber while providing for a pleasing view (FP, Vol. 1, pg. III-69).

I have also determined these are non-significant project specific amendments because the amendments are for this project only; only apply to the East Reservoir project area; and affect a

small area (ROD appendix 11). With the inclusion of these amendments, this project is consistent with forest plan management direction.

Grizzly Bear

In November 2011 the Record of Decision for the Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones (Access Amendment) was signed. The Access Amendment amended the Idaho Panhandle, Kootenai and Lolo National Forest land management plans (forest plans) to include standards for open motorized route density (OMRD), total motorized route density (TMRD), and Core area within the Selkirk and Cabinet-Yaak grizzly bear recovery zones (Access Amendment 2011 ROD page 5). These habitat security standards were determined through consultation with the FWS, recommendations by the Interagency Grizzly Bear Committee (IGBC), and the research performed by grizzly bear research scientists Wayne Wakkinen (Idaho Department of Fish and Game (IDFG)) and Wayne Kasworm (FWS). In addition, the 2011 Access Amendment also sets linear miles of open and total road standards for areas outside the recovery zones that are experiencing recurring use by grizzly bears (i.e. BORZ) (Access Amendment 2011 ROD page 5).

As stated in the DEIS on page 296, portions of the Tobacco BORZ are within Grizzly Bear Management Situation 2 lands. As habitat managers, the role of the Forest Service in the Tobacco BORZ is to accommodate the biological (food sources) and physical (secure areas) needs of the bear. This is the direction for management of MS-2 lands as defined in the Kootenai Forest Plan (FP A8-4). The East Reservoir Project is consistent with both MS-2 direction and the 2011 Access Amendment by managing vegetation to create better foraging areas for grizzly bears and maintaining, or improving upon, the baseline linear road conditions (table 3.98 of DEIS, page 296) of the Tobacco BORZ. Therefore, managing grizzly bear habitat within the direction of the forest plan and 2011 Access Amendment, and the baseline conditions of the BORZ, meets the extent of the Forest Service's responsibility in managing the risk of grizzly bear mortality from malicious killing or poaching.

The U.S. Fish and Wildlife Service in their letter of concurrence dated, August 8, 2013 agreed that the East Reservoir project activities fell within the range of effects, including anticipated "incidental take" of grizzly bears, covered by their 2011 Biological Opinion for the Access Amendment. Based on this information, the East Reservoir Project will not jeopardize the continued existence of the grizzly bear by not providing additional human access in the Tobacco BORZ above baseline conditions.

I have reviewed documentation in the DEIS (chapter 3, pages 294–306) and the clarifications made in the FEIS (pages 12–15) regarding effects to grizzly bears. After reviewing this information I have determined that the activities associated with Alternative 2 with modifications within the Tobacco BORZ meet all intents of the forest plan Access Amendment.

I also concur with the Deputy Regional Forester's finding that the wildlife biologist considered and appropriately applied best available science for grizzly bear.

Old Growth

Alternative 2 with modifications does propose fuel activities in old growth. Alternative 2 maintains fuel treatments (approximately 173 acres) in some old growth such as on dry types (appendix 2). The purpose of prescribed fire in old growth, as identified in the forest plan, is to maintain old growth characteristics. These will occur in dry land old growth such as south aspects

of lower elevations. Treatments are designed to reduce ladder fuels via a combination of slashing and prescribed burning. By reducing ladder fuels and surface fuels the treatments are expected to maintain or enhance some of the dry land old growth attributes and help ensure the survivability of the old, large diameter trees in these individual stands. The overall goal is to work towards returning these stands to their appropriate fire regime and increase fire resiliency.

The project maintains 12 percent of designated and undesignated old growth in the project area, well distributed across dominate habitat types of suitable National Forest acres below 5,500 feet elevation, and has been designed to conserve old growth attributes wherever they exist outside of old growth management areas. All alternatives will maintain a sufficient amount and distribution of old growth forest habitat as directed by the Kootenai Forest Plan. The 2011 KNF Monitoring Report (FY2010, August 2011) indicates the KNF has 1,869,222 acres below 5,500 feet elevation (minus lakes and highways). Using the stand-level data, there are currently 201,577 acres or 10.8 percent of KNF acres below 5,500 feet that are old growth (designated or undesignated). An additional 97,717 acres are replacement old growth (designated and undesignated). Forestwide, old growth or replacement old growth on the KNF totals 299,294 acres or 16.0 percent of acres below 5,500 feet based on the stand-level data.

Soil and Water Resources

NFMA requires that timber will be harvested from National Forest System lands only where soil, slope, or other watershed conditions will not be irreversibly damaged (16 USC 1604(g)(3)(E)(i)). All activities proposed are consistent with this direction.

The forest plan states that project plans for activities requiring the use of ground-based equipment will establish standards for the area allocated to skid trails, landings, temporary roads, or similar areas of concentrated equipment use (USDA Forest Service 1987a). Analysis for detrimental soil disturbance (DSD) found all units except proposed commercial thin Units 194T, 194S, 330, and 331 would meet Northern Region soil quality standards (SQS) after implementation. Units 194T, 194S, 330, and 331 have an existing measured DSD value of 14 percent (2010–2011 soil surveys). As a result, the post-harvest estimated cumulative DSD values will likely exceed the 15 percent DSD value. Based on these values the restoration goal for these units will be to return the soils back to 15 percent or lower DSD levels within a 3-year timeframe following harvest activities. This will be accomplished by implementing project design standards including incorporating slash material during skid trail scarification and lay-back in proposed harvest units. In these units, slash would be placed by the purchaser as part of timber harvest contract requirements to control erosion and provide organic matter for forest floor function.

Rehabilitation of soil resources ties to direction in the forest plan, NFMA, and the Northern Region SQS. The use of rehabilitation techniques in site-specific instances would move areas of soil disturbance towards improved site potential at a faster rate than if no rehabilitation techniques are used. It is estimated that rehabilitation would reduce soil and forest floor recovery to approximately 20–40 years. Without rehabilitation, recovery of soil and forest floor process and function would be expected to take greater than 40 years (ROD appendix 8).

None of the other activities will exceed the regional soil quality standards for detrimentally disturbed soils (FSM Northern Region Supplement 2500-99-1). The project soils analysis found that the amount of cumulative detrimental soil disturbance is below the regional guideline of 15 percent (DEIS chapter 3 pages 61–102 and ROD appendix 8).

The proposed project is consistent with the goals, objectives and standards for soil and water resources set forth in the Kootenai Forest Plan because project mitigation and BMPs have been included to protect soil and water resources. National Core and Montana State BMPs include soil and water conservation practices at a minimum to control non-point source pollution and protect soil and water resources from permanent damage. The 2012 KNF Monitoring Report (ROD appendix 7) states that monitoring between 1991 and 2011 shows that 94 percent of the BMPs implemented during that time were effective. Each of the alternatives will follow INFS standards and guidelines for any activities in riparian areas.

Suitability for Timber Production

The NFMA directs that no timber harvest, other than salvage sales or sales to protect other multiple-use values, shall occur on lands not suited for timber production (16 USC 1604(k)).

All acres proposed for harvest in the selected alternative were reviewed by a silviculturist and determined to be suitable for timber production and capable of being regenerated within 5 years of timber harvest (DEIS chapter 3, page 58).

Analysis of current and historical regeneration data for the project area supports the conclusion that adequate stocking of the proposed harvest units is assured with site-preparation efforts occurring in a timely manner following harvest (DEIS chapter 3, pages 57–58).

Timber Harvest on National Forest System Lands

A responsible official may authorize site-specific projects and activities to harvest timber on National Forest System lands only where:

- **Soil, slope, or other watershed conditions will not be irreversibly damaged (16 USC 1604(g)(3)(E)(i)).** The selected alternative will avoid impairment of soils through use of specific design features and management measures and site specific rehabilitation for units 194 T, 194S , 330, and 331. This determination is supported by the disclosures in DEIS chapter 3, pages 61–102 and appendix E of the DEIS, appendix 8 of this ROD, and the application of best management practices contained in the Soil and Water Conservation Practices Handbook 2509.22 (USDA Forest Service 1988) to prevent the loss of soil (ROD appendix 6). Documentation of the effects of the selected alternative to site productivity and soil and water resources are contained in the soils analysis and the project file. The estimated cumulative disturbance by harvest unit ranges from 0 to 15 percent, meeting regional guidelines limiting detrimental disturbance to 15 percent. Mitigation measures, including using existing skid trails and ripping and seeding landings and skid trails, are prescribed to ensure that all units will meet the regional standard. Watershed rehabilitation activities are designed to improve the overall conditions of the watershed.
- **There is assurance that the lands can be adequately restocked within five years after final regeneration harvest (16 USC 1604(g)(3)(E)(ii)).** The knowledge and technology currently exists to adequately restock the harvested areas and is documented in the vegetation analysis (DEIS chapter 3, page 58) and project file.
- **Streams, stream banks, shorelines, lakes, wetlands, and other bodies of water are protected 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)).

Alternative 2 with modifications meets all forest plan standards as amended by INFS (DEIS chapter 3, pages 128, 169). All streams and wetlands will be buffered with riparian habitat conservation areas (RHCAs) as directed by INFS. Work at stream crossings on haul routes will occur during the dry season to avoid sediment introduction in to streams when bull trout eggs will be vulnerable to smothering by sediment (ROD appendices 4,5,6, 8, 9).

- **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)).** The decision to implement the selected alternative is based on a variety of reasons as discussed earlier in this decision, not solely on economics. Economics was but one of the many factors which I considered.

Clearcutting and Even-aged Management

A responsible official may authorize projects and activities on National Forest system lands using cutting methods, such as clearcutting, seed tree cutting, shelterwood cutting, and other cuts designed to regenerate an even-aged stand of timber, only where:

- **For clearcutting, it is the optimum method; or where seed tree, shelterwood, and other cuts are determined to be appropriate to meeting the objectives and requirements of the relevant plan (16 USC 1604(g)(3)(F)(i)).** I have determined that clearcutting is the optimal method of treatment for all or portions of Units 41, 61, 68, 362, 363, 364, 365, 366, 367, 367A, 368A, and 368B, in the selected alternative. I have also determined that prescribing other even-aged systems under the selected alternative is appropriate for all or portions of Units 1A, 2, 3, 3C, 6, 7, 8, 9, 10, 11, 12, 13, 14, 14A, 16, 18, 19, 20, 21, 36, 39, 40, 44, 45A, 45B, 46, 47, 51, 52A, 53, 54, 59, 62, 64, 64A, 64B, 69, 70, 70T, 71, 72, 73T, 75, 80, 81, 82, 141, 142, 143A, 144S, 144T, 147, 148, 149, 150, 151, 158, 159A, 170, 185, 185N, 188, 193, 207, 208, 214, and 219. My determination is based upon field reviews; discussion of alternative silvicultural systems, prescriptions, and the use of even-aged management found in the diagnosis (DEIS chapter 3, pages 58, 59; vegetation project file).
- **The interdisciplinary review has been completed and the potential environmental, biological, aesthetic, engineering, and economic impacts have been assessed on each advertised sale area and the cutting methods are consistent with the multiple use of the general area (16 USC 1604 (g)(3)(F)(ii)).** As discussed in the DEIS, the environmental analyses were completed by an interdisciplinary team (see list of preparers in chapter 4 of the DEIS). The cutting methods are consistent with the forest plan goals and objectives for the affected MAs (DEIS chapter 1, page 11–12; chapter 2, pages 9 to 12; chapter 3, page 59).
- **Cut blocks, patches, or strips are shaped and blended to the extent practicable with the natural terrain (16 USC 1604 (g)(3)(F)(iii)).** Treatment units are blended to the natural terrain were practicable and edges feathered and blended, however, Alternative 2 with modifications does not meet forest plan visual quality objectives (VQOs) in six regeneration units. See scenic resource analysis, chapter 3 of the DEIS, pages 362 to 377. These openings are needed to meet the purpose and need of this project (ROD appendix 11)

- **Cuts are carried out according to the maximum size limit requirements for areas to be cut during one harvest operation (16 USC 1604 (g) (3)(F)(iv)).** Alternative 2 with modifications does propose regeneration units with openings that exceed 40 acres in size (DEIS chapter 2, table 2.13). These larger openings are needed to trend the landscape towards a more desirable pattern of patch sizes that mimics natural processes and restores historical patterns of patch size (DEIS pages 41–48,59,60; chapter 3 vegetation); create a pattern of fuel treatments at a landscape scale that is likely to disrupt large fire growth and spread and assist in the efficacy of suppression efforts; design fuel treatments to provide a fuel break immediately adjacent to a major power transmission line (DEIS chapter 3, fire and fuels page 182); and create openings that reduce edge effect and reduce fragmentation, which can result from more numerous treatment areas and still achieve the same objectives (DEIS chapter 3, wildlife pages 224, 300 and 308). Regional Forester approval to exceed the 40-acre size limit has been requested and granted (Project File Vol. S, Doc 31).
- **Timber cuts are carried out in a manner consistent with the protection of soil, watershed, fish, wildlife, recreation, esthetic resources, cultural and historic resources, and the regeneration of timber resources (16 USC 1604 (g)(3)(F)(v)).** The timber harvest conducted under the selected alternative provides the necessary protection for the above resources. This determination is supported by disclosures in chapter 3 of the DEIS. The standards and guidelines contained in the forest plan are designed to provide the desired effects of management practices on the other resource values. Alternative 2 with modifications meets or exceeds applicable standards and guidelines, as noted under "Consistency with Forest Plan" previously in this section. My consideration of these factors is documented throughout Chapters 2 and 3 of the DEIS and the project file.

Diversity of Plants and Animals

The NFMA requires that forest plans shall provide for the diversity of plant and animal communities based on the suitability and capability of the specific land area (16 USC 1604(g)(3)(B)). Sensitive species are managed under the authority of the NFMA and are administratively designated by the Regional Forester (FSM 2670.5). In making my decision, I have reviewed the analysis and projected effects on all sensitive species listed as possibly occurring on the Kootenai National Forest (DEIS chapter 3, wildlife resource pages 246–321; fisheries and aquatic species resources, page 104, 123–131; and plants, pages 191, 192-199).

Based upon consideration of the forest plan, the monitoring plan, the analysis of effects of the in the DEIS and FEIS, I concluded that my decision poses little risk to the diversity of native species. In addition, my conclusion is based on a review of the record that shows a thorough review of relevant scientific information, a consideration of opposing views, and the acknowledgment of incomplete or unavailable information, scientific uncertainty, and risk.

The statement of findings for this project area as follows:

- **No impact** on the Coeur d’Alene salamander, common loon, harlequin duck, northern bog lemming, northern leopard frog, peregrine falcon, and all other sensitive plant species not listed under the “may impact” section below.
- **May impact individuals or habitat, but would not contribute to a trend towards federal listing or cause loss of viability to the population of species** for the bald eagle, bighorn sheep, black-backed woodpecker, fisher, flammulated owl, Townsend’s big-eared

bat, wolverine, western toad, westslope cutthroat trout, western pearlshell mussels, gray wolf, *Allium acuminatum* (taper-tipped onion), *Botrychium ascendens* (upswept moonwort), *Botrychium crenulatum* (wavy moonwort), *Clarkia rhomboidea* (common clarkia), *Heterocodon rariflorum* (western pearl flower), *Phegopteris connectilis* (northern beechfern), *Cypripedium fasciculatum* (clustered lady's-slipper) and *Collema curtisporum* (lichen).

The Clean Water Act and State Water Quality Standards

Beneficial uses of the East Reservoir project area include human uses such as drinking water, irrigation and recreation, as well as protection of fisheries and aquatic life. I believe that the selected alternative complies with applicable Clean Water Act and Montana State Water Quality Standards and maintains beneficial uses through the application of BMPs and other design features as listed in appendix A of the DEIS and appendix 6 of this ROD. These beneficial uses in the East Reservoir project area will be maintained as a result of the application of general and site-specific BMPs contained in the Soil and Water Conservation Practices Handbook 2509.22 (USDA Forest Service 1988) (DEIS appendix C) as well as other protective design features (ROD appendix 3). These include, but are not limited to: 1) harvest will not occur in Riparian Habitat Conservation Areas (RHCA's); 2) temporary road construction will utilize BMPs to reduce erosion and will be recontoured following harvest; 3) haul road maintenance will address currently poor road drainage and will be timed to occur during drier months to avoid sediment mobility during rain events; 4) ground-based logging (approximately 91 percent of this project) is restricted to sustained slopes of 40 percent or less and measurable effects to peak flows are unlikely due to application of RHCA buffers and BMPs; approximately 37 percent required winter harvest; and 5) proposed actions are in compliance and will meet Inland Native Fish Strategy (INFS) standards and guidelines. Specific practices are described in detail in appendix 25 of the forest plan.

As required by the Clean Water Act, the Montana Department of Environmental Quality (MDEQ) has published a list of streams and portions of streams where the state has identified water quality concerns. The Forest Service and MDEQ have a policy that MDEQ will be notified when activities are proposed in watersheds that are on the 303(d) list.

The Environmental Protection Agency comments (Letter #3) are displayed and addressed in the appendix 5 of the FEIS. Ongoing and project specific water quality monitoring is displayed in the appendix 4 of this ROD. This monitoring includes BMP Implementation and effectiveness reviews. These steps will document the results of the protective measures employed in this project and serve as ongoing monitoring of their effectiveness in protecting water quality and downstream beneficial uses.

The Clean Air Act

Upon review of the DEIS (chapter 3, air quality, pages 355–358), I find that the selected alternative will be coordinated to meet the requirements of the State Implementation Plans, Smoke Management Plan, and Federal air quality requirements.

The Endangered Species Act

As required by the Endangered Species Act, biological assessments were prepared addressing the potential impacts to threatened or endangered species utilizing the project area. The analyses

concluded that this project will have **no effect** on Spalding’s catchfly, bull trout, bull trout critical habitat, or white sturgeon.

A biological assessment was submitted to FWS for determination of concurrence on September 11, 2012 (revised May 31, 2013). Through consultation, the FWS concurred that the project **may affect, but is not likely to adversely affect** the grizzly bear, Canada lynx, or designated critical lynx habitat, and will not jeopardized the continued existence of the proposed threatened wolverine. The gray wolf was removed from the list of Endangered and Threatened Wildlife effective May 4, 2009 (Federal Register Vol. 74, No. 62, pages 15123–15188, April 2, 2009). Concurrence was received on August 8, 2013.

National Historic Preservation Act, American Indian Religious Freedom Act, and Native American Grave Protection Act

Heritage resource inventories have been completed on all areas to be impacted by ground-disturbing activities. No heritage resources are expected to be affected by this action. Recognizing that the potential exists for unidentified sites to be encountered and disturbed during project activity, contract provision B (T) 6.24# will be included in all timber sale contracts. This provision allows the Forest Service to unilaterally modify or cancel a contract to protect cultural resources regardless of when they are identified. This provision will be used if a site were discovered after a harvest operation had begun.

Government to Government Relations

The Forest Service consulted with the Confederated Salish and Kootenai Tribes and Kootenai Tribe of Idaho during the analysis process. The intent of consultation has been to remain informed about tribal concerns regarding American Indian Religious Freedom Act (AIRFA) and other tribal issues. In addition, the Salish (Flathead), Kootenai, and Upper Pend d’Oreilles have rights under the Hellgate Treaty of 1855 (July 16, 1855). These rights include the "right of taking fish at all usual and accustomed places, in common with citizens of the Territory, and of erecting temporary buildings for curing; together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land." The federal government has trust responsibilities to tribes under a government-to-government relationship to insure that the tribes’ reserved rights are protected. Consultation with the tribes throughout the project planning helped insure that these trust responsibilities were met.

Environmental Justice

I have considered the effects of this project on low income and minority populations and concluded that this project is consistent with the intent of the Environmental Justice Act of 1994 (Executive Order 12898). Representatives from low income and minority populations were notified of this project through the public participation process and no concerns were received. This project was designed to contribute to the economic wellbeing of local communities (ROD Section IV, purpose and need, and DEIS chapter 3 economics analysis and required disclosures, pages 404–409). Resource analysis disclosed no disproportionate effects to low income or minority populations.

Migratory Bird Treaty Act

On January 10, 2001, President Clinton signed Executive Order 13186 outlining responsibilities of federal agencies to protect migratory birds. Upon review of the effects analysis regarding

neotropical migratory birds in the DEIS chapter 3, pages 322–323, I find that the selected alternative complies with this executive order.

Administration of the Forest Development Transportation System—Roads Policy (36 CFR Part 212)

A travel analysis was prepared for the East Reservoir project area (project file). I have determined that the selected alternative, which includes the construction of approximately 9 miles of new permanent road and approximately 4 miles of temporary road, as well as the storage or decommissioning of approximately 28 miles of unneeded road, complies with the Roads Policy (DEIS chapter 2, tables 2.9 and 2.10A).

National Fire Plan

The proposed action for the East Reservoir project responds to the intent of the National Fire Plan (DEIS chapter 3, page 170). I have determined that the selected alternative meets the goals and objectives of the National Fire Plan to: 1) reduce the number of small fires that become large, 2) reduce the threat to life and property from catastrophic wildfire, 3) increase firefighter safety, and 4) restore natural ecological systems to minimize uncharacteristically intense fires.

Environmentally Preferred Alternative

The DEIS analyzed one no-action and two action alternatives in detail. It is also required by law that one or more of those alternatives be identified in the record of decision as the environmentally preferred alternative. The environmentally preferable alternative is not necessarily the alternative that will be implemented, and it does not have to meet the underlying need of the project. It does, however, have to cause the least damage to the biological and physical environment and best protect, preserve, and enhance historical, cultural, and natural resources (36 CFR 220.6). The environmentally preferred alternative must also “encourage productive and enjoyable harmony between man and his environment,” “promote efforts which will prevent or eliminate damage to the environment and biosphere” and stimulate the health and welfare of man” (42 USC § 4321).

Alternative 2 with modifications is the environmentally preferred alternative. Proposed treatments in old growth were eliminated from this alternative except for one treatment in a fuels unit. This alternative also closes 27 miles of motorized trails to create big game security areas.

Implementation

The Alternative 2 with modifications will result in several timber sale projects, one of which is planned for bid in the fall/winter of 2014. Harvest is expected to be completed by 2019, with slash disposal and reforestation activities completed by 2021. Fuels treatments are anticipated to be accomplished by 2022 if funding is obtained. Typically, BMP work on haul roads will be accomplished prior to haul of timber products. Precommercial thinning activities are expected to be accomplished by 2025.

Pre-decisional Administrative Review (Objection) Process

This project was subject to pre-decisional administrative review and objection, known as the objection process, pursuant to 36 CFR Part 218, subparts A and B. On June 2, 2014 the Alliance

for the Wild Rockies (AWR) submitted an objection to aspects of the East Reservoir Project under the 36 CFR 218 regulations process. On June 6 the Regional Forester sent an invitation to Mr. Michael Garrity of AWR accepting his objection and inviting him to participate in a meeting to discuss the objection process in hopes to resolve issues. Mr. Garrity did not respond to the invitation. The Regional Forester then directed her staff to review points in Mr. Garrity's objection letter.

After a thorough review by an objection review team the Deputy Regional Forester responded to Mr. Garrity's objection letter with a letter dated July 17, 2014. The Deputy responded to Mr. Garrity's issues and also provided instructions to the responsible official (Kootenai National Forest Supervisor) "to review information in the EIS and draft ROD to ensure there is adequate discussion as to how roads within the BORZ will be managed in accordance with the Access Amendment standards both during and after project implementation. It would also be beneficial for the responsible official to include additional discussion in the decision rationale demonstration how the project is in compliance with the Access Amendment".

This review and subsequent clarification is documented on pages 12-15 of the FEIS dated August 2014. I have also included additional discussion in the forest plan consistency section of this ROD under the grizzly bear section.

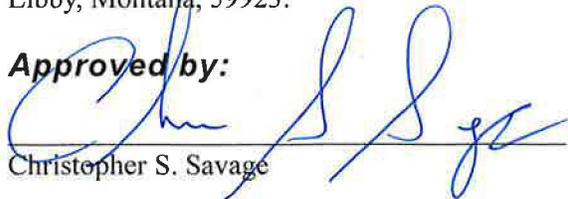
I have reviewed documentation in the DEIS (chapter 3 pages 294-306) and the clarifications made in the FEIS (pages 12-15) regarding effects to grizzly bears. After reviewing this information I have determined that the activities associated with Alternative 2 with modifications within the Tobacco BORZ meet all intents of the forest plan Access Amendment. I have documented how this proposal is consistent with the forest plan under Forest Plan Consistency section of this ROD in regards to management activities in BORZ.

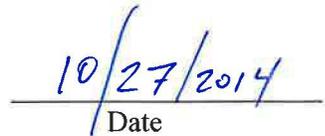
I also concur with the Deputy Regional Forester's finding that the wildlife biologist considered and appropriately applied best available science for grizzly bear.

Contact Information

Copies of the East Reservoir DEIS and FEIS are available at <http://www.fs.fed.us/r1/kootenai/projects/projects/index.shtml>. These documents are also available in other formats upon request. For more information, or questions concerning this project or the comment process, please contact Libby District, Denise Beck, (406) 293-7773, Libby, Montana, 59923.

Approved by:


Christopher S. Savage


Date

Appendix 1—Description of the Decision

Specifics of the Selected Alternative—Alternative 2 with Modifications

I am implementing alternative 2 with some modifications as described on page 1. A summary of treatments can be found in appendix 2 and maps of the activities in selected alternative can be found in appends 13. Alternative 2 with modifications includes more vegetation harvest treatments and disturbs more acreage than Alternative 3 and will result in trending more area towards the desired condition as described in the DEIS.

The following is my decision for various management practices contained in Alternative 2 with modifications:

1) Whether to implement vegetation management activities (silvicultural prescriptions, logging methods, slash treatment, reforestation, prescribed fire), including management measures and design features (ROD appendix 3) to protect resources and, if so, the site-specific location of these activities and practices.

Commercial harvest will be implemented on approximately 8,845 acres to maintain the vigor and long-term productivity of forest stands by:

- Enhancing species diversity trending toward reference conditions (DEIS chapter 3, vegetation) which are better adapted and more resistant and resilient to disturbances. This will occur through regeneration harvest and planting western white pine, western larch, and ponderosa pine.
- Move timber stand toward desired tree stocking densities through commercial thinning, precommercial thinning and improvement harvest trending the stands towards reference density conditions. The risk of tree mortality from insect and disease infestations, primarily mountain pine beetle, will decrease with density reduction, especially on the dry land sites and in lodgepole pine stands.
- Restoration toward reference condition levels of successional stages through regeneration harvests. This alternative will restore successional stage diversity across the landscape that is better adapted to disturbances and will provide foraging areas for various wildlife species including Canada lynx, grizzly bears, large ungulates, and various small mammals.
- Encroachment of Douglas-fir will be reduced on the dry ponderosa pine habitat types, in turn reducing the fire risk in the wildland-urban interface (WUI).

Appendix 2 of this ROD presents a summary of the treatments for each unit. A map of the site-specific locations is attached to this document.

Activity fuels will be treated by yarding tops (26%), grapple piling (43%), underburning (30%), and slashing (1%). Approximately 91 percent (8,053 acres) of the proposed harvest units will utilize ground-based logging systems (tractor yarding) and 9 percent (792 acres) will utilize a skyline yarding system due to steep slopes with available access roads.

Road maintenance and BMP work will be applied to approximately 176 miles of haul roads prior to hauling and maintained through operations.

Design features and management measures to protect resource values, including trails, visuals, soils, streams, noxious weed reduction, and wildlife habitat are included in this decision (ROD appendix 3).

2) Whether to construct temporary roads to access proposed timber harvest units.

Eight temporary roads totaling approximately 4 miles are proposed for construction. These roads are needed to access the various harvest units to meet the purpose and need of this project. These roads will be restored after timber harvest is completed since they will not be needed in the future. Table 4 displays the list of temporary roads, their length, their drainage location, and which units they access.

Table 4. Temporary Roads

| Road # | Miles | Drainage | Unit Access | Road # | Miles | Drainage | Unit Access |
|--------------|-------------------|---------------------|-------------|--------|-------|----------------|-------------|
| T5 | 0.16 | Warland Creek | 17 | T44 | 0.15 | Upper Fivemile | 150 |
| T6 | 0.38 | Cripple Horse Creek | 22 | T45 | 0.25 | Warland Creek | 49 |
| T14 | 0.14 | Davis Mtn | 318 | T53 | 0.37 | Upper Fivemile | 148 |
| T25 | 0.59 | Canyon Creek | 31, 197 | T54 | 0.23 | Canyon Creek | 344 |
| T28 | 0.58 | Canyon Creek | 38, 345 | T55 | 0.31 | Canyon Creek | 343 |
| T37 | 0.12 | Cripple Horse | 340 | T57 | 0.26 | Canyon Creek | 23 |
| T42 | 0.20 | Dunn Creek | 362 | T58 | 0.21 | Cripple Horse | 179 |
| T43 | 0.31 | Dunn Creek | 362 | | | | |
| Total | 4.26 miles | | | | | | |

3) Whether to implement road storage or decommissioning activities and, if so, where.

Road storage and decommissioning is designed to improve watershed conditions and enhance wildlife security. Table 5 displays the roads that will be stored or decommissioned through this project.

Table 5. Intermittent Stored Service and Decommissioning

| Road # | Road Name | Existing Status | Post-project Status | Length (Miles) |
|-----------------------|-----------------|---|---------------------|----------------|
| Fivemile Creek | | | | |
| 4885C | Stenerson Mtn C | 12 – Restricted Seasonally 12/1 – 6/30, including snow vehicles | Stored, undrivable | 0.35 |
| 4885H | Stenerson Mtn H | 12 – Restricted Seasonally 12/1 – 6/30, including snow vehicles | Stored, undrivable | 0.49 |
| 4885I | Stenerson Mtn I | 12 – Restricted Seasonally 12/1 – 6/30, including snow vehicles | Stored, undrivable | 0.81 |
| 4885J | Stenerson Mtn J | 05 – Restricted yearlong to all motorized vehicles | Stored, undrivable | 0.12 |

| Road # | Road Name | Existing Status | Post-project Status | Length (Miles) |
|----------------------------|--------------------------|---|---|----------------|
| 4893A | Middle Fork Fivemile | 09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30 | Stored, open to snow vehicles 12/1 – 4/30 | 1.95 |
| 4895 | Lower Fivemile | 09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30 | Stored, open to snow vehicles 12/1 – 4/30 | 2.29 |
| 5047 | North Upper Fivemile | 09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30 | Stored, open to snow vehicles 12/1 – 4/30 | 0.88 |
| 5050 | Upper Fivemile Face | 09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30 | Stored, open to snow vehicles 12/1 – 4/30 | 0.45 |
| 5049 | Upper Fivemile View | Open yearlong | Decommissioned – not drivable | 0.20 |
| 5050A | Upper Fivemile Face A | Open Yearlong | Decommissioned – not drivable | 0.15 |
| 5050B | Upper Fivemile Face B | Open Yearlong | Decommissioned – not drivable | 0.16 |
| 8843 | South Fivemile | Private Access | Decommissioned – not drivable | 0.01 |
| Warland Creek | | | | |
| 566 | Warland Creek Fivemile | 05 – Restricted Yearlong to all motorized vehicles | Stored, undrivable | 2.03 |
| 4891D | Warland Basin D | 09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30 | Stored, open to snow vehicles 12/1 – 4/30 | 1.85 |
| 5055 | Upper Warland South | 09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30 | Decommissioned – not drivable | 1.98 |
| Cripple Horse Creek | | | | |
| 4904G | Boundary Mtn G | 09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30 | Stored, open to snow vehicles 12/1 – 4/30 | 1.95 |
| 5060 | Summit Springs Unit | Open | Stored, Undrivable | 0.27 |
| 5061 | West Weigel Mtn III | 09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30 | Stored, open to snow vehicles 12/1 – 4/30 | 0.28 |
| 5167 | Cripple Horse Lake Creek | Open | Stored, undrivable | 0.38 |
| XX50 | Summit Springs | 09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30 | Stored, open to snow vehicles 12/1 – 4/30 | 0.30 |
| 4423B | Weigel Mtn B | 09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30 | Decommissioned – not drivable | 0.13 |
| 4823C | Weigel Mtn C | 09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30 | Decommissioned – not drivable | 1.22 |
| 4904K | Boundary Mtn K | 09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30 | Decommissioned – not drivable | 0.11 |
| 4951 | West Weigel Mtn | 09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30 | Decommissioned – not drivable | 0.63 |
| 5062 | West Weigel Mtn IV | 09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30 | Decommissioned – not drivable | 0.16 |

| Road # | Road Name | Existing Status | Post-project Status | Length (Miles) |
|--|--------------------|---|---|----------------|
| 5269 | West Weigel Mtn II | 09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30 | Decommissioned – not drivable | 0.13 |
| Canyon Creek | | | | |
| 4917 | North Canyon | 09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30 | Stored, open to snow vehicles 12/1 – 4/30 | 1.02 |
| Dunn Creek | | | | |
| XX29 | Hornet Ridge | 05 – Restricted Yearlong to all motorized vehicles | Stored, undrivable | 0.58 |
| 4923C | East Wyoma C | 09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30 | Decommissioned – not drivable | 0.75 |
| 4923D | East Wyoma D | 09 – Restricted Yearlong, open to snow vehicles 12/1 – 4/30 | Decommissioned – not drivable | 0.30 |
| Total Stored = 16.00 miles | | | | |
| Total Decommissioned = 5.93 miles | | | | |

4) Whether to construct new permanent roads to harvest units and recreation sites.

Approximately 9 miles of new permanent road construction is proposed in this project. These new roads will access harvest and fuels units (table 6). Approximately 0.20 miles of the new road will be built on Forest Service lands to allow the DNRC access to their lands. The new roads are not only needed for the East Reservoir Project but have been assessed through the travel analysis process to be needed for future management. Table 6 displays the road numbers and corresponding mileages for the proposed new road construction plus the units that are accessed.

Table 6. New Permanent Road Construction

| Road # | Miles | Drainage | Unit Access |
|-----------|-------|-----------|-----------------------------|
| N1 | 0.30 | Fivemile | 4, 132, Dispersed Camp Site |
| N3 | 0.80 | Canyon | 29 |
| N4 | 0.33 | Warland | 15 |
| N5 | 0.46 | Canyon | 203 |
| N6 | 0.87 | Davis Mtn | 62, 62A, 317, 318 |
| N7 (6288) | 0.80 | Warland | 13, 14, 14A, 159, F10 |
| N8 | 1.31 | Canyon | 32, 205 |
| N9 | 0.32 | Dunn | 45A, 45B |
| N11 | 0.17 | Canyon | 192 |
| N12 | 0.25 | Dunn | 45A |
| N13 | 0.36 | Dunn | 45B, F45 |
| N14 | 0.45 | Warland | 9, 158 |
| N15 | 0.32 | Warland | 170 |

| Road # | Miles | Drainage | Unit Access |
|---------------------------|-------|-------------------|----------------------|
| N16 | 0.24 | Warland | 10, 157 |
| N18 | 0.03 | Warland Reservoir | 17 |
| N19 | 0.19 | Cripple Horse | 36 |
| N21 | 0.59 | Davis | 59, 317 |
| N23 | 0.30 | Warland | 170 |
| N39 | 0.20 | Canyon | Cost-share to Sec 36 |
| N40 | 0.76 | Upper Fivemile | 150 |
| N41 | 0.20 | Summit Springs | |
| Total = 9.25 miles | | | |

5) Whether to make improvements to recreation sites.

The recreation proposal involves the dispersed recreation sites on the south side of the mouth of Fivemile Creek and at the Yarnell camping area.

Currently the Fivemile area receives relatively little dispersed camping use due primarily to poor access. Existing roads will be improved. New road construction (N1) to access harvest Units 4 and 132 will be left to provide more opportunities for dispersed camping. Native rock ring fire pits, vault toilets, and signage and other improvements will be provided.

The Yarnell area is a very popular destination for dispersed camping. The site(s) are occupied primarily from Memorial Day through Labor Day and receives steady use. The road infrastructure is in place and the objective would be to improve the road without changing the character of the area.

In addition, several roads that access dispersed camping areas along the Kooconusa Reservoir will be open yearlong, which is a change from seasonal closures. Table 7 displays the roads that are proposed to change access.

Table 7. Reservoir Road Access Changes

| Road # | Road Name | Existing Status | Post-project Status | Miles |
|---------------------------|---------------------------|--|---------------------|-------|
| 4890 | Canyon Creek Access | 10 – Restricted seasonally to motor vehicles, Open to snow vehicles. | Open Yearlong | 0.84 |
| 5296 | Canyon Bay Dispersed East | 10 – Restricted seasonally to motor vehicles, Open to snow vehicles. | Open Yearlong | 0.17 |
| 5298 | Canyon Bay Dispersed West | 10 – Restricted seasonally to motor vehicles, Open to snow vehicles. | Open Yearlong | 0.19 |
| 14519 | Yarnell Access | 10 – Restricted seasonally to motor vehicles, Open to snow vehicles. | Open Yearlong | 0.59 |
| Total = 1.79 miles | | | | |

6) Whether to change motorized trails to non-motorized trails.

Access changes will occur on approximately 27 miles of motorized trails in Alternative 3 (table 8). Trail 281 and 420 will remain as motorized routes creating a loop which includes open National Forest System roads for recreationists to enjoy. By making this change, wildlife security will increase from 28 percent to 33 percent meeting the recommended percent security in the analysis area while keeping trails open to motorized travel. Map 2 in appendix 12 displays the trails changes.

Table 8. East Reservoir Trail Access Changes

| Trail ID | Location | Existing Status | Post-project Status | Miles |
|----------------------------|----------------------|-------------------|---------------------|-------|
| 279 | Warland Ridge | Motorized Allowed | Non-motorized Only | 10.70 |
| 280 | Warland Peak Lookout | Motorized allowed | Non-motorized Only | 2.30 |
| 420 | Canyon Divide | Motorized allowed | Non-motorized Only | 6.38 |
| 426 | Fivemile | Motorized allowed | Non-motorized Only | 1.82 |
| 500 | Hornet Ridge | Motorized allowed | Non-motorized Only | 5.69 |
| Total = 26.89 miles | | | | |

7) Whether to cost-share roads with DNRC and/or PCTC.

The Forest Service and the Montana State Department of Natural Resources and Conservation (DNRC) have proposed to cost-share in several roads in the analysis area. Table 9 displays the roads proposed for cost share and their mileages along with their locations.

Table 9. Cost Share Roads

| Road ID | Miles | Location | Activity | New Construction |
|---------|-------|---|---------------------|------------------|
| 7738 | 1.23 | South Warland Creek – Sec 36 | FS/CS on State Land | No |
| 4907 | 0.34 | Cripple Canyon – Sec 19 | FS/CS on State Land | No |
| 6724 | 0.32 | Gopher Hill – Sec 14 | FS/CS on State Land | No |
| 7713 | 0.22 | Gopher Hill – Sec 14 | FS/CS on State Land | No |
| 7713A | 1.05 | | | |
| 566 | 0.17 | Warland Creek – Sec 25 and 35 | DNRC/CS on FS Land | No |
| 7738 | 0.15 | | | |
| 7738A | 0.19 | | | |
| 7713 | 0.06 | Gopher Hill – Sec 23 | DNRC/CS on FS Land | No |
| 6724 | 1.44 | Gopher Hill – Sec 14 | DNRC/CS on FS Land | No |
| 4904 | 1.18 | Cripple Canyon – Sec 25, 26, 27, 59, 30, 19 | DNRC/CS on FS Land | No |
| 4912 | 3.61 | | | |
| 4925 | 1.41 | | | |
| 4907 | 0.31 | | | |
| 4908 | 2.64 | | | |
| 4908A | 1.25 | | | |
| 4913 | 3.30 | Hornet Ridge – Section 31 | DNRC/CS on FS, PCTC | No |

| Road ID | Miles | Location | Activity | New Construction |
|-----------------------------|------------------------------|---------------------------|---------------------|------------------|
| 334 4953 4953A N39 | 7.30 0.56 0.89 0.20 | South Canyon Creek | DNRC/CS on FS Land | Yes; N39 |
| 4925 | 1.90 | Canyon Creek – Sec 14, 24 | FS/CS on State Land | No |

8) What, if any, specific project monitoring requirements are needed to assure management measures and design features are implemented and effective, or to evaluate success of project objectives.

The monitoring plan in the ROD (appendix 3) will be implemented. This plan includes implementation and effectiveness monitoring activities related to design features and management measures for noxious weeds, soils, protection of trails, wildlife habitat, and fisheries. Design features included in the project are located in the appendix 3 of this ROD.

9) Whether to request Regional Forester approval for regeneration units over 40 acres.

Part of the purpose and need of the East Reservoir Project is to 1) re-establish, restore and retain landscapes that are more resistant and resilient to disturbance (insect and disease infestations, fire) and uncertain environmental conditions such as climate change; 2) create a heterogeneous landscape that provides a variety of habitats to sustain populations of terrestrial and aquatic species; and 3) enhance recreation settings and facilities with the goal of providing high quality experiences. To achieve these objectives, it is necessary to create openings larger than 40 acres in size. Specifically, these larger openings are needed in order to:

- Trend the landscape towards a more desirable pattern of patch sizes that mimics natural processes and restores historical patterns of patch size (DEIS pages 41–48, 59, 60, chapter 3 vegetation).
- Create a pattern of fuel treatments at a landscape scale that is likely to disrupt large fire growth and spread and assist in the efficacy of suppression efforts. Design fuel treatments to provide a fuel break immediately adjacent to a major power transmission line (FEIS errata, DEIS page 182, chapter 3 fire and fuels).
- Create openings that reduce edge effect and reduce fragmentation, which can result from more numerous treatment areas and still achieve the same objectives. (DEIS pages 224, 300, and 308, chapter 3 wildlife).

The proposed action for the East Reservoir Project will create forest openings larger than 40 acres in size through the use of even-aged regeneration methods. Units 36, 40, 62, 80, 147, 148, 149, 150, 170, and 362 are all proposed for a larger than 40-acre opening using even-aged regeneration methods. Units 73T, 75, and 188 are proposed for 40 acres or less but are adjacent to other treatment units and result in an over 40-acre opening. Some of these units, when blocked up with other early-successional stages, will create a larger block that mimics historic patch size conditions and will move into the future as a connected patch of interior forest (DEIS pages 41–48, 59, 60, chapter 3 vegetation). In accordance with direction provided in the Northern Region supplement to FSM 2471.1, Regional Forester approval to exceed the 40-acre size limit has been requested and granted (Project File Vol. S, Doc 31).

Appendix 2—Treatment Tables

Table 10. Timber Harvest Treatment Summary of the Selected Alternative 2 with Modifications (gray shading indicates units require winter logging)

| Unit | Acres | Treatment | MA | Logging System |
|------|-------|-----------------------|------------|----------------|
| 1 | 50 | IMP/S/GP | 11, 16 | Winter Tractor |
| 1A | 11 | SW/S/GP | 11, 16 | Winter Tractor |
| 2 | 13 | ST/S/UB/PLT | 11, 16 | Winter Tractor |
| 2B | 48 | IMP/S/GP | 11 | Winter Tractor |
| 2C | 9 | IMP/S/GP | 11, 12, 24 | Winter Tractor |
| 2D | 67 | IMP/S/GP | 11 | Winter Tractor |
| 3 | 27 | ST/S/UB/PLT | 11, 16 | Winter Tractor |
| 3A | 26 | IMP/S/GP | 11 | Winter Tractor |
| 3B | 37 | IMP/S/GP | 11 | Skyline |
| 3C | 13 | ST/S/GP/PLT | 11 | Tractor |
| 4 | 46 | IMP/S/GP/PLT | 11 | Tractor |
| 5 | 5 | IMP/S | 16, 17 | Tractor |
| 6 | 11 | ST/S/GP/PLT | 16, 17 | Tractor |
| 7 | 19 | ST/S/GP/PLT | 16, 17 | Winter Tractor |
| 8 | 13 | ST/S/GP/PLT | 16 | Tractor |
| 9 | 151 | IMP-SW/S/UB/PLT | 10, 11 | Winter Tractor |
| 10 | 160 | IMP-SW/S/UB/PLT | 10, 11 | Winter Tractor |
| 11 | 102 | IMP-SW/S/UB/PLT | 11 | Winter Tractor |
| 12 | 119 | IMP-SW/S/GP/PLT | 15, 17 | Tractor |
| 13 | 22 | ST/S/GP/PLT | 15 | Winter Tractor |
| 14 | 40 | ST/S/GP/PLT | 15 | Winter Tractor |
| 14A | 26 | SW/S/GP | 15 | Tractor |
| 15 | 22 | IMP/S/GP/PLT | 17 | Winter Tractor |
| 16 | 29 | Irregular SW/S/GP/PLT | 17 | Tractor |
| 17 | 68 | IMP/GP | 17 | Winter Tractor |
| 18 | 40 | Irregular SW/GP/PLT | 15, 16, 17 | Tractor |
| 18A | 20 | IMP/S/GP | 16, 24 | Tractor |
| 19 | 32 | IMP-SW/S/GP/PLT | 11 | Tractor |
| 20 | 41 | IMP-SW/S/GP/PLT | 11 | Tractor |

Appendix 2—Treatment Tables

| Unit | Acres | Treatment | MA | Logging System |
|------|-------|-----------------|----------------|-----------------|
| 21 | 76 | IMP-SW/S/GP/PLT | 11 | Tractor |
| 22 | 83 | IMP/S/GP | 17 | Tractor |
| 23 | 146 | IMP/S/GP | 15, 17 | Tractor |
| 24 | 40 | IMP/S/GP | 15 | Winter Tractor |
| 25 | 139 | IMP/S/UB | 15 | Tractor |
| 26 | 29 | IMP/S/GP | 17 | Winter Tractor |
| 27 | 45 | IMP/S/GP | 5, 17 | Tractor |
| 28 | 31 | IMP/S/GP | 17 | Winter Tractor |
| 29 | 54 | IMP/S/GP | 11, 16 | Tractor |
| 30 | 62 | IMP/S/GP | 11, 18 | Tractor |
| 31 | 698 | IMP/S/UB | 11, 12, 18, 24 | Tractor |
| 32 | 75 | IMP/S/GP | 12 | Tractor |
| 33 | 85 | San-Salvage/GP | 15, 17 | Tractor |
| 34 | 144 | San-Salvage/GP | 17 | Tractor |
| 36 | 41 | ST/S/GP/PLT | 15 | Tractor |
| 39 | 40 | ST/S/GP/PLT | 15 | Tractor |
| 40 | 156 | ST/S/GP/PLT | 15 | Tractor |
| 41 | 40 | CCR/S/GP/PLT | 15 | Tractor |
| 42 | 31 | IMP/S/GP | 11, 12 | Tractor |
| 43 | 26 | IMP/S/GP | 11, 12 | Tractor |
| 44 | 28 | SW/S/GP/PLT | 11 | Tractor |
| 45A | 105 | IMP-SW/S/GP/PLT | 11, 12 | Tractor/Skyline |
| 45B | 39 | ST/S/UB/PLT | 12 | Tractor |
| 46 | 37 | ST/S/GP/PLT | 12 | Skyline |
| 47 | 40 | ST/S/GP/PLT | 12 | Tractor |
| 49 | 64 | IMP/S/GP | 11, 12, 19 | Tractor |
| 51 | 7 | ST/S/GP/PLT | 12 | Tractor |
| 52A | 24 | ST/S/GP/PLT | 12 | Tractor |
| 53 | 40 | ST/S/GP/PLT | 11, 12 | Tractor |
| 54 | 9 | ST/S/GP/PLT | 15 | Tractor |
| 55 | 40 | IMP/S/UB | 11, 18 | Tractor |
| 56 | 207 | IMP/S/UB | 11 | Tractor/Skyline |
| 59 | 39 | ST/S/UB/PLT | 15 | Tractor |
| 61 | 19 | CCR/S/UB/PLT | 15 | Tractor |

| Unit | Acres | Treatment | MA | Logging System |
|------|-------|----------------|------------|-----------------|
| 62 | 77 | ST/S/UB/PLT | 15 | Tractor |
| 62A | 11 | San-Salvage/GP | 15 | Tractor |
| 62B | 20 | San-Salvage/GP | 15 | Tractor |
| 64 | 8 | ST/S/UB/PLT | 15 | Winter Tractor |
| 64A | 28 | ST/S/UB/PLT | 15 | Tractor |
| 64B | 10 | ST/S/UB/PLT | 15 | Tractor |
| 68 | 25 | CCR/S/GP/PLT | 16 | Skyline |
| 69 | 16 | ST/S/UB/PLT | 16 | Skyline |
| 70 | 14 | ST/S/UB/PLT | 16 | Tractor |
| 70T | 9 | ST/S/GP/PLT | 16 | Winter Tractor |
| 71 | 18 | ST/S/GP/PLT | 16 | Tractor |
| 72 | 12 | ST/S/GP/PLT | 16 | Tractor |
| 73T | 31 | ST/S/GP/PLT | 16 | Winter Tractor |
| 75 | 36 | SW/S/UB/PLT | 15 | Skyline |
| 80 | 110 | ST-SW/S/GP/PLT | 15, 16 | Winter Tractor |
| 81 | 36 | ST/S/GP/PLT | 16 | Winter Tractor |
| 82 | 25 | ST-SW/S/GP/PLT | 16 | Tractor |
| 135 | 16 | IMP/S/UB | 16 | Tractor |
| 141 | 24 | SW/S/UB/PLT | 16 | Skyline |
| 142 | 9 | ST/S/UB/PLT | 16 | Skyline |
| 143A | 18 | SW/S/GP/PLT | 16 | Tractor |
| 144S | 22 | ST/S/UB/PLT | 15, 16 | Skyline |
| 144T | 18 | ST/S/UB/PLT | 15, 16, 19 | Tractor |
| 147 | 93 | ST/S/UB/PLT | 15 | Tractor/Skyline |
| 148 | 77 | ST/S/UB/PLT | 11, 15 | Skyline |
| 149 | 65 | ST/S/UB/PLT | 15 | Tractor/Skyline |
| 150 | 103 | ST/S/UB/PLT | 15 | Tractor/Skyline |
| 151 | 40 | ST/S/GP/PLT | 15 | Tractor |
| 157 | 54 | IMP/S/UB | 11 | Winter Tractor |
| 158 | 143 | IMP-SW/S/GP | 10, 11 | Winter Tractor |
| 159A | 18 | ST/S/GP/PLT | 15 | Winter Tractor |
| 170 | 97 | SW/S/UB/PLT | 15 | Skyline |
| 173 | 18 | IMP/S/UB | 5, 19 | Skyline |
| 174 | 29 | IMP/S/UB | 11 | Skyline |

Appendix 2—Treatment Tables

| Unit | Acres | Treatment | MA | Logging System |
|------|-------|------------------|------------|----------------|
| 176 | 15 | IMP/S/UB | 11 | Skyline |
| 179 | 76 | IMP/S/GP | 11 | Tractor |
| 182 | 50 | IMP/S/UB | 11 | Tractor |
| 183 | 68 | IMP/S/GP | 6, 16, 17 | Winter Tractor |
| 185 | 27 | ST/S/GP/PLT | 15 | Tractor |
| 185N | 22 | ST/S/GP/PLT | 15 | Tractor |
| 188 | 40 | ST/S/UB/PLT | 15, 16 | Skyline |
| 190 | 43 | IMP/S/GP | 15, 17 | Winter Tractor |
| 190A | 44 | San-Salvage/S/GP | 15, 17 | Winter Tractor |
| 192 | 40 | IMP/S/UB | 17 | Skyline |
| 193 | 17 | SW/GP/PLT | 11 | Tractor |
| 194S | 36 | IMP/S/UB | 11, 18 | Skyline |
| 194T | 31 | IMP/S/GP | 10, 11, 18 | Winter Tractor |
| 195 | 28 | San-Salvage/S/GP | 16 | Tractor |
| 196 | 14 | IMP/S/GP | 11 | Winter Tractor |
| 197 | 24 | IMP/S/GP | 11, 18 | Tractor |
| 203 | 59 | IMP/S/GP | 12 | Tractor |
| 205 | 34 | IMP/S/GP | 12, 19 | Tractor |
| 207 | 40 | SW/S/GP/PLT | 15, 16, 17 | Tractor |
| 208 | 40 | ST/S/GP/PLT | 15, 16, 17 | Tractor |
| 209 | 24 | IMP/S/GP | 15 | Tractor |
| 214 | 6 | ST/S/GP/PLT | 12 | Tractor |
| 219 | 38 | ST/S/GP/PLT | 12 | Tractor |
| 219A | 26 | CT/YT | 12 | Tractor |
| 305 | 43 | CT/YT | 11 | Winter Tractor |
| 306 | 57 | CT/YT | 11 | Winter Tractor |
| 307 | 305 | CT/YT | 11 | Winter Tractor |
| 311 | 9 | CT/YT | 11, 15 | Winter Tractor |
| 317 | 63 | CT/YT | 15 | Tractor |
| 318 | 131 | CT/YT | 15 | Winter Tractor |
| 319 | 17 | CT/YT | 15 | Winter Tractor |
| 327 | 46 | CT/YT | 12 | Winter Tractor |
| 328 | 31 | CT/YT | 12 | Winter Tractor |
| 330 | 9 | CT/YT | 15 | Winter Tractor |

| Unit | Acres | Treatment | MA | Logging System |
|---------------------------|-------|--------------|------------|----------------|
| 331 | 16 | CT/YT | 15 | Winter Tractor |
| 332 | 10 | CT/YT | 15 | Tractor |
| 333 | 14 | CT/YT | 15 | Winter Tractor |
| 334 | 22 | CT/YT | 15 | Winter Tractor |
| 335 | 20 | CT/YT | 15 | Winter Tractor |
| 337 | 272 | CT/YT | 11, 12, 15 | Tractor |
| 339 | 89 | CT/YT | 15 | Winter Tractor |
| 340 | 266 | CT/YT | 15, 16 | Winter Tractor |
| 343 | 100 | CT/YT | 15 | Tractor |
| 344 | 73 | CT/YT | 15 | Winter Tractor |
| 345 | 45 | CT/YT | 15 | Winter Tractor |
| 346 | 11 | CT/YT | 15 | Winter Tractor |
| 347 | 520 | CT/YT | 11, 12 | Winter Tractor |
| 348 | 14 | CT/YT | 15 | Tractor |
| 349 | 21 | CT/YT | 12 | Winter Tractor |
| 350 | 26 | CT/YT | 15 | Winter Tractor |
| 362 | 192 | CCR/S/GP/PLT | 12 | Tractor |
| 363 | 40 | CCR/S/GP/PLT | 12 | Tractor |
| 364 | 33 | CCR/S/UB/PLT | 12 | Tractor |
| 365 | 25 | CCR/S/UB/PLT | 12 | Tractor |
| 366 | 6 | CCR/S/UB/PLT | 12 | Tractor |
| 367 | 38 | CCR/S/UB/PLT | 12 | Tractor |
| 367A | 40 | CCR/S/UB/PLT | 12 | Tractor |
| 368A | 10 | CCR/S/GP/PLT | 12 | Tractor |
| 368B | 6 | CCR/S/GP/PLT | 12 | Tractor |
| 368C | 7 | CCR/S/GP/PLT | 12 | Tractor |
| 369 | 40 | CCR/S/GP/PLT | 12 | Tractor |
| Total = 8,845acres | | | | |

Key: GS/IMP = Group Select/Improvement IMP = Improvement Cut, ST = Seed Tree w/Reserves, CC = Clearcut CCR = Clearcut w/Reserves, SW = Shelterwood w/Reserves, PLT = Plant, S = Slashing, UB = Underburning, GP = Grapple Pile, San-Salvage = Sanitation-Salvage, CT = Commercial Thin, YT = Yard Tops

Table 11. Alternative 2 with Modifications—Precommercial Thinning

| Unit # | Acres |
|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|
| 1 | 30 | 50 | 55 | 98 | 48 | 146 | 1 | 193 | 31 |
| 2 | 15 | 51 | 11 | 99 | 30 | 147 | 43 | 194 | 23 |
| 3 | 31 | 52 | 18 | 100 | 24 | 148 | 27 | 195 | 44 |
| 4 | 2 | 53 | 16 | 101 | 46 | 149 | 5 | 196 | 38 |
| 5 | 3 | 54 | 11 | 102 | 4 | 150 | 8 | 197 | 49 |
| 6 | 20 | 55 | 5 | 103 | 19 | 151 | 39 | 198 | 19 |
| 7 | 29 | 56 | 32 | 104 | 31 | 152 | 24 | 199 | 21 |
| 8 | 21 | 57 | 73 | 105 | 11 | 153 | 30 | 200 | 9 |
| 9 | 19 | 58 | 27 | 106 | 9 | 154 | 14 | 201 | 51 |
| 10 | 21 | 59 | 63 | 108 | 15 | 155 | 18 | 202 | 63 |
| 11 | 29 | 60 | 74 | 109 | 18 | 156 | 7 | 203 | 47 |
| 12 | 11 | 61 | 7 | 110 | 12 | 157 | 62 | 204 | 26 |
| 13 | 24 | 62 | 3 | 111 | 30 | 158 | 13 | 205 | 41 |
| 14 | 15 | 63 | 3 | 112 | 24 | 159 | 81 | 206 | 32 |
| 15 | 14 | 64 | 12 | 113 | 4 | 160 | 1 | 207 | 22 |
| 16 | 15 | 65 | 9 | 114 | 45 | 161 | 15 | 208 | 11 |
| 17 | 22 | 66 | 8 | 115 | 14 | 162 | 6 | 209 | 109 |
| 18 | 11 | 67 | 37 | 116 | 9 | 163 | 4 | 210 | 37 |
| 19 | 19 | 68 | 7 | 117 | 16 | 164 | 6 | 211 | 20 |
| 20 | 6 | 69 | 13 | 118 | 39 | 165 | 7 | 212 | 28 |
| 21 | 7 | 70 | 43 | 119 | 27 | 166 | 5 | 213 | 20 |
| 22 | 7 | 71 | 2 | 120 | 22 | 167 | 5 | 214 | 40 |
| 23 | 2 | 72 | 28 | 121 | 16 | 168 | 29 | 215 | 15 |
| 24 | 2 | 73 | 85 | 122 | 32 | 169 | 12 | 216 | 32 |
| 25 | 38 | 74 | 15 | 123 | 4 | 170 | 32 | 217 | 29 |
| 26 | 51 | 75 | 3 | 124 | 47 | 171 | 24 | 218 | 48 |
| 27 | 25 | 76 | 63 | 125 | 9 | 172 | 24 | 219 | 40 |
| 28 | 11 | 77 | 53 | 126 | 4 | 173 | 27 | 220 | 50 |
| 29 | 26 | 78 | 34 | 127 | 12 | 174 | 16 | 221 | 17 |
| 30 | 42 | 79 | 24 | 128 | 7 | 175 | 16 | 222 | 46 |
| 31 | 25 | 81 | 26 | 129 | 25 | 176 | 5 | 223 | 25 |
| 32 | 48 | 82 | 11 | 130 | 19 | 177 | 13 | 224 | 12 |
| 33 | 6 | 83 | 31 | 131 | 16 | 178 | 29 | 225 | 57 |
| 36 | 12 | 84 | 35 | 132 | 23 | 179 | 13 | 226 | 18 |
| 37 | 7 | 85 | 40 | 133 | 27 | 180 | 19 | 227 | 7 |

| | | | | | | | | | |
|-------------------------|----|----|----|-----|----|-----|----|-----|----|
| 38 | 6 | 86 | 49 | 134 | 14 | 181 | 12 | 228 | 53 |
| 39 | 11 | 87 | 35 | 135 | 12 | 182 | 27 | 229 | 19 |
| 40 | 12 | 88 | 39 | 136 | 14 | 183 | 23 | 230 | 43 |
| 41 | 14 | 89 | 11 | 137 | 6 | 184 | 38 | 231 | 17 |
| 42 | 28 | 90 | 3 | 138 | 6 | 185 | 38 | 232 | 11 |
| 43 | 6 | 91 | 16 | 139 | 15 | 186 | 24 | 233 | 14 |
| 44 | 57 | 92 | 19 | 140 | 4 | 187 | 46 | 234 | 69 |
| 45 | 13 | 93 | 6 | 141 | 20 | 188 | 47 | 235 | 35 |
| 46 | 7 | 94 | 10 | 142 | 23 | 189 | 37 | 236 | 54 |
| 47 | 20 | 95 | 3 | 143 | 28 | 190 | 24 | 274 | 21 |
| 48 | 42 | 96 | 8 | 144 | 5 | 191 | 39 | 275 | 3 |
| Total = 5,563 ac | | | | | | | | | |

Table 12. Alternative 2 with Modifications—White Pine Daylight Thinning

| Unit # | Lynx Habitat | Acres | Unit # | Lynx Habitat | Acres |
|--|------------------------|-------|--------|------------------------|-------|
| 237 | Stand Initiation | 21 | 256 | Stand Initiation | 11 |
| 238 | Early Stand Initiation | 8 | 257 | Stand Initiation | 28 |
| 239 | Stem Exclusion | 5 | 258 | Stand Initiation | 17 |
| 240 | Early Stand Initiation | 15 | 259 | Stand Initiation | 24 |
| 241 | Stand Initiation | 22 | 260 | Stand Initiation | 20 |
| 242 | Stand Initiation | 44 | 261 | Stand Initiation | 39 |
| 243 | Early Stand Initiation | 2 | 262 | Stand Initiation | 14 |
| 244 | Stand Initiation | 18 | 263 | Stand Initiation | 27 |
| 245 | Stand Initiation | 14 | 264 | Stand Initiation | 33 |
| 246 | Stand Initiation | 23 | 265 | Stand Initiation | 29 |
| 247 | Stand Initiation | 17 | 266 | Stand Initiation | 29 |
| 248 | Stand Initiation | 41 | 267 | Early Stand Initiation | 16 |
| 249 | Stand Initiation | 211 | 268 | Stand Initiation | 60 |
| 250 | Stand Initiation | 56 | 269 | Stand Initiation | 24 |
| 251 | Stand Initiation | 41 | 270 | Stand Initiation | 16 |
| 252 | Stand Initiation | 8 | 271 | Stand Initiation | 36 |
| 253 | Stand Initiation | 20 | 272 | Stand Initiation | 3 |
| 254 | Early Stand Initiation | 31 | 273 | Stand Initiation | 3 |
| 255 | Stand Initiation | 34 | | | |
| Total = 1,060 acres of which only 20% or 212 acres will be treated since only daylight thinning around WWP is proposed. | | | | | |

Table 13. Alternative 2 with Modifications—Proposed Fuel Treatment Units

| Unit | Acres | Treatment ¹ | MA | Unit | Acres | Treatment | MA |
|----------------------------|-------|------------------------|-------------------|-------|-------|------------|--------|
| F1 | 174 | MFT/Burn | 10, 11, 12, 24 | F13 | 24 | Slash/Burn | 15 |
| F1A | 17 | Slash/Burn | 11, 30 | F13OG | 5 | MFT/Burn | 13 |
| F1OG | 38 | MFT/Burn | 12 | F14OG | 43 | MFT/Burn | 13 |
| F2 | 116 | MFT/Burn | 11, 16 | F15 | 9 | MFT/Burn | 17 |
| F3 | 17 | MFT/Burn | 11, 17 | F15OG | 13 | MFT/Burn | 13 |
| F3OG | 20 | MFT/Burn | 13 | F16 | 73 | Slash/Burn | 11, 12 |
| F4 | 17 | Slash/Burn | 10 | F18 | 568 | Burn | 2 |
| F8 | 52 | MFT/Burn | 10, 17 | F19 | 110 | Slash/Burn | 17 |
| F11OG | 54 | Slash/Burn | 13 | F45 | 125 | Slash/Burn | 11, 12 |
| F12 | 11 | MFT/Burn | 11 | | | | |
| Total = 1,486 acres | | | | | | | |

¹MFT = Mechanical Fuel Treatments Slash = hand slashing

Table 14. Alternative 2 with Modifications—Fuels and Wildlife Units

| Unit | Acres | Treatment ¹ | Unit | Acres | Treatment |
|-------|-------|------------------------|---------|-------|-----------------------|
| FW501 | 281 | Slash, Spring/Fall UB | FW544 | 576 | Slash, Spring/Fall UB |
| FW502 | 159 | Slash, Spring/Fall UB | FW545 | 429 | Spring/Fall UB |
| FW503 | 215 | Slash, Spring/Fall UB | FW577 | 147 | Slash, Spring/Fall UB |
| FW509 | 32 | Slash, Spring/Fall UB | FW589 | 335 | Spring/Fall UB |
| FW511 | 34 | Slash, Spring/Fall UB | FW5109 | 170 | Slash, Spring/Fall UB |
| FW512 | 51 | Slash, Spring/Fall UB | FW5111 | 46 | Slash, Spring/Fall UB |
| FW516 | 39 | Slash, Spring/Fall UB | FW5122 | 112 | Spring/Fall UB |
| FW521 | 41 | Slash, Spring/Fall UB | FW5125 | 14 | Slash, Spring/Fall UB |
| FW522 | 642 | Slash, Spring/Fall UB\ | FW50601 | 294 | Slash, Spring/Fall UB |
| FW524 | 484 | Slash, Spring/Fall UB | FW50602 | 913 | Slash, Spring/Fall UB |
| FW525 | 84 | Slash, Spring/Fall UB | FW51101 | 575 | Slash, Spring/Fall UB |
| FW533 | 214 | Slash, Spring/Fall UB | FW51102 | 272 | Slash, Spring/Fall UB |
| FW535 | 142 | Slash, Spring/Fall UB | FW51103 | 743 | Slash, Spring/Fall UB |

| Unit | Acres | Treatment ¹ | Unit | Acres | Treatment |
|-----------------------------|-------|------------------------|---------|-------|-----------------------|
| FW536 | 307 | Spring/Fall UB | FW53401 | 596 | Slash, Spring/Fall UB |
| FW539 | 121 | Slash, Spring/Fall UB | FW53402 | 581 | Slash, Spring/Fall UB |
| FW540 | 538 | Slash, Spring/Fall UB | FW53403 | 646 | Spring/Fall UB |
| FW543 | 215 | Slash, Spring/Fall UB | | | |
| Total = 10,049 acres | | | | | |

¹UB=Underburning

Appendix 3—Design Features and Management Measures

Trails and Roads

Timber sale standards will be included in contracts to require the purchasers to protect specified improvements, such as trails, roads, and fences. Slash disposal adjacent to the Lake Koocanusa Scenic Byway (MSH 37) and Lake Koocanusa is critical to meeting forest plan VQOs.

Soil

Refer to appendix 7 of this ROD for specific management requirements for the soil resource.

Sensitive Plants

Legal and biological requirements for the conservation of endangered, threatened, proposed, candidate and sensitive plants will be met. These species have been identified in cooperation with other agencies such as the FWS and Montana Fish, Wildlife, and Parks (FWP). Plant surveys will be completed prior to any ground-disturbing activities. Emphasis for surveys will be placed on areas with moderate-to-high potential to provide sensitive plant habitat. These surveys will be conducted by the district botanist or a qualified biological technician. If any of these plant species are located prior to or during implementation of any management activities, the activity will be altered so that proper protection measures could be taken. Timber sale contract provision B(T)6.25, Protection of Habitat of Endangered Species, will be included in any subsequent timber sale contract. If necessary, additional modifications will occur through creation of special treatment zones or by relocating unit boundaries to avoid negative impacts. Disturbance to any sensitive plant populations observed during sale activity will be avoided through cooperation between sale administrators and sale purchaser. Surveys for proposed, threatened, endangered, and sensitive plants in instream work areas to improve pool quantity and quality will be completed before implementation.

- Retain all cottonwood, aspen, and birch in all harvest units except in designated skid trails.
- Avoid burning and logging through the western pearl flower (*Heterocodon rariflorum*) population in Unit 16 by creating a special treatment zone.

Noxious Weeds

Noxious weeds can have a large impact on not only rare plant habitat but any native plant habitat. The following measures will be used to manage concerns for the spread of noxious weeds.:

- **Winter Tractor Operations to Avoid Noxious Weed Spread:** Units 2B, 2C, 2D, 3A, 9, 10, 11, 17, 28, 157, 158, 190, 194T, 196, 305, 306, 307, COE1, and COE3.
- Certified weed-free forage is required for use on all national forest lands in Montana (36 CFR 261.50).
- Treat existing noxious weeds on roads to be reconstructed or stored prior to that activity, (if possible schedule spraying two or more seasons before activities are expected to occur to reduce the amount of viable weed seed stored in the soil).

- Treat existing noxious weeds in gravel/rock pits, inspect these sources for weeds, and treat before material is transported.
- Survey and pre-treat existing noxious weeds on proposed trailhead construction site, and access sites for in-stream work.
- Require weed free certified straw for all construction, reconstruction, and restoration activities.
- Seed and fertilize stored roads with certified weed free seed immediately following restoration activities.
- Limit scarification objectives to the minimal required meeting reforestation objectives.
- Pressure-wash logging equipment, road maintenance and restoration equipment before entering the analysis area.
- Require timber sale purchaser to treat existing noxious weeds along haul routes the first operational season for weed spraying (spring or early summer).
- Seed newly constructed roads, trailheads, landings, and major skid trails with certified weed-free seed.
- Prevent road maintenance machinery from blading or brushing through known populations of new invaders. In areas where weeds are established, (and activities are opening and blading restricted or closed roads with significantly lesser infestations); brush and blade road systems from uninfested segments of road systems to infested areas. Limit brushing and mowing to the minimum distance and height necessary to meet safety objectives in areas of heavy weed infestations.
- Minimize soil disturbance and mineral soil exposure during activities. Soil disturbance should be no more than needed to meet project objectives. This includes not exceeding recommended mineral soil exposure for site preparation in regeneration harvest units; and utilizing timing and designated skid trails to minimize mineral soil exposure in harvest units.
- Survey proposed burn units for noxious weeds. Determine the risk of weed spread with prescribed fire. If there is a risk of spread beyond the road corridor, defer burning until the weeds can be treated or ensure post treatment funding for weed control.
- Survey proposed access for mechanized in stream for noxious weeds. Determine the risk of spread with the associated activity. If there is risk of spread, pre-treat the area before activity.
- Continue to monitor/survey the analysis area for new invader weed species. Monitor weed population levels in treated areas, with particular emphasis on haul routes, stored and decommissioned roads, and landings. Re-treat as funding allows.
- Treat and sign sites if new invaders are located and defer ground disturbing activities within those sites until the weed specialist determines the site is no longer a threat, and approves those activities.
- Site-specific guidelines will be followed for weed treatments within or adjacent to known sensitive plant populations. All future treatment sites will be evaluated for sensitive plant habitat suitability; suitable habitats will be surveyed as necessary prior to treatment.
- All noxious weed control activities will comply with state and local laws and agency guidelines.

- As per the 2007 KNF Invasive Plant Management EIS and ROD, all herbicides used in the analysis area will be applied according to the labeled rates and recommendations to ensure the protection of surface water, ecological integrity and public health and safety. Herbicide selection will be based on target species on the site, site factors (such as soil types, distance to water, etc.) and with the objective to minimize impacts to non-target species.
- Keep administrative traffic on closed roads to a minimum. Whenever possible, time activities prior to seed set of the primary weed species or emphasis weeds on a given road.
- Release bio-control agents on applicable sites, as they become available, and funding allows.
- Plan follow up noxious weed treatment the spring or early summer, following final purchaser blading of all haul roads if funds allow (this will be funded with appropriated or KV dollars).
- Design road storage to allow passage of a 4-wheeler to continue treatment of hawkweeds and common tansy in the future. Hawkweed and common tansy populations will continue to expand even after the template has revegetated.

Burning and Noxious Weed Spread

A decision matrix will be developed to address weed concerns and to prioritize the units for burning based on desired objectives of the burning. This decision matrix will identify potential weed concerns and identify target habitat enhancement or fuel reduction objectives. This way weed control efforts can focus on particular species prior and post-burning.

Pile Burning Emissions

The amount of smoke emissions, resulting from prescribed burning of natural and activity fuels will be mitigated by four general methods: fuel loading reduction, reduction in the amount of fuel consumed, flaming combustion optimization, and impact avoidance.

- **Fuel Loading Reduction:** The KNF has encouraged, through sale contract provisions, utilization of non-saw timber material. Improved utilization specifications has encouraged the removal of this material and has led to a decrease in the amount of activity fuel remaining on site, thus, reducing the amount of smoke produced during burning.
- **Reduction in the Amount of Fuel Consumed:** The reduction of the amount of fuel consumed by prescribed burning will be accomplished by burning under higher fuel moisture conditions as long as it still makes these fuels less available for consumption, thereby reducing the fuel consumed. Sometimes this can be part of the resource objective to retain coarse woody debris on the site.
- **Flaming Combustion Optimization:** Methods that increasing the flaming combustion phase will be used when prescribed burning is determined to be the most appropriate fuel treatment. Concentration of logging slash by whole tree yarding or excavator piling increases the amount of material consumed during flaming combustion and also allows material to be burned in the late fall when the risk of escape is low. Purchasers are required to construct piles so they are compact and free of excess soil.

- **Impact Avoidance:** Smoke impact avoidance will be accomplished through daily monitoring of airshed conditions. Burns will be coordinated with Montana/Idaho Smoke Monitoring Unit. This will help ensure smoke impacts are minimized and burning only occurs when dispersion is forecasted to be good and cumulative effects are not likely.

Soil and Water and Aquatic Species

1. **Timber Sale Contract Provisions to be Included:** **B(T)6.311** – Plan of Operations, **B(T)6.4, C(T)6.4** – Conduct of Logging, **B(T)6.42** – Skidding and yarding, **BT(6).422** – Landings and Skid Trails, **B(T)6.6, C(T)6.6** – Erosion Prevention Control, **B(T)6.65** – Skid Trails and Fire Lines, **B(T)6.5** – Stream Course Protection, **B(T)6.27#** – Noxious Weed Control, **B(T)5.2** – Specified Roads, **B(T)5.3,C(T)5.31** – Road Maintenance, and **appropriate clauses for road decommissioning.**
2. **Best Management Practices:** Implementation of the BMPs listed in appendix 6 of this ROD.
3. **Riparian Habitat Conservation Areas:** Implementation of the forest plan RHCA widths for the units, shown in appendices 4, 5, 9 is required to meet the Streamside Management Zone Law and forest plan standards as amended by INFS. Also if any additional streams are found during layout they will also be buffered to meet this requirement.

Forest Vegetation

In addition to the appropriate BMPs, riparian guidelines and standard contract clauses, the following management measures and monitoring will be included:

- a) All harvest units will retain 8 to 33 tons per acre of downed woody material (or recruitment) greater than 4 inches in diameter to provide nutrient recycling and habitat for mammals and invertebrates. The volume and distribution of material may be subject to specific site conditions such as within the wildland urban interface. The tons retained by vegetation response units (VRU) are described in table 3.10 of the DEIS.
- b) All harvest units will be designed to retain adequate levels of replacement snags to provide for cavity-associated wildlife species, genetic seed reservoirs, relic overstory, and long-term soil productivity. Replacement trees will be scattered throughout harvest units to the extent possible. A minimum of 8 to 10 snag and/or replacement snags per acre will be retained. If they are felled for safety purposes, they will be retained on site. Silvicultural and burning prescriptions will be prepared with the goal of protecting large diameter relic trees, during site preparation and fuels treatment.
- c) A marking review will be performed by a silviculturist on a minimum of 10 percent of proposed units to ensure marking guides are being implemented as per the prescription.
- d) All tractor harvest units with an intermediate harvest prescription will have designated skid trails to facilitate removal of designated material while minimizing damage to the residual trees.

- e) Harvest treatments will be designed to mimic natural process, and marking guides will emphasize working with existing stand structures, and will not result in a uniform or evenly spaced residual stand or an evenly spaced seed trees or relic trees.
- f) If insect activity is present in the area, prescribed fire in dry land types may be postponed to a later date to give the residual trees time to recover.
- g) Spring burns in the dryland types will be implemented before the ponderosa pine and bunchgrass are actively growing to minimize damage to native grasses.
- h) Maintain old growth characteristics within old growth character stands (Green, et al. 1992; USDA Forest Service 1987a).
- i) Mitigation for Ips beetle infestations and root disease infection where ponderosa pine is removed.

Wildlife

Minimize Disturbance to Raptors: If raptor-nesting territories are observed, avoid disturbance when possible, during the nesting/fledgling period (4/1–8/1). Include in sale contract if sites are known prior to selling. Consult with Wildlife Biologist on specific buffers and disturbance period dates. Utilize this criterion on Unit 68.

Protect Cripple Horse Goshawk Nest:

- No management activities should occur within 0.5 miles of nest area (as mapped, if active) between April 1 and August 1;
- Route helicopter flights away from nest site and PFA as shown on territory maps (project file); and
- Activities within ½ mile of the nest site should not occur between April 1 and August 1 (also see Criterion #2).

Maintain Cavity-nesting Habitat: Meet snag levels by VRU (identified in the snag section at the 100 percent level). If existing snag levels are not present retain existing potential live replacement snags (preference order: WL, PP and DF) greater than 10-inch dbh and 10 feet in height. Snags and replacements should be marked (or designated as leave trees) and protected during timber harvest and site preparation, as long as safety requirements are met. Use appropriate timber sale contract clauses to reserve snags and replacement snags as prescribed in the silvicultural prescriptions approved by wildlife biologist. If snags are felled for safety, they will be left on site. Maintain the largest snags first. Favor trees further than one tree length from the road prism or any external boundary—pre-sale and harvest.

Provide for Future Cavity-nesting Habitat, Down Woody Habitat Recruitment, and Structural Diversity: KNF snag management protocol will be utilized to provide adequate snags and replacement snags for wildlife habitat. Units in MA 15 will be managed at the 40 percent level as prescribed in the forest plan. All other MAs will be managed at the 100 percent cavity habitat effectiveness level.

Leave Tree Protection: Evenly distribute slash to protect leave trees where necessary.

Maintain Winter Range Integrity: Restrict mechanized activities associated with timber harvest and fuel reduction activities off roads 4885, 4886, 6271, 4916 (Dec. 1–June 30); 6724, 4908A/B

(Oct 15–June 30); 4890, 5298 Sept 1–May 30) to be consistent with the Road Closures as shown and applicable. Except on roads 4885 and 4886 and 4916 where winter logging may occur on units 347, 2B, 2C, 2D, and 3A to avoid noxious weed spread that may be detrimental to ungulate winter range. Logging would generally be expected to be completed during one winter season on these seasonally closed roads.

Provide for Wildlife Security: Determine the time of road restrictions involved with timber sales in the pre-sale roundtable discussion. Implement new road restrictions after timber harvest where applicable and maintain existing restrictions to the public during all operations. This criterion could vary by MA (e.g. summer range versus winter range) and could be influenced by other management boundaries such as BORZ. Generally, roads entering into or within these management boundaries will not be open to the public while treatment activities are occurring.

Meet Standards and Guides of the Lynx Amendment for Management in Lynx Habitat: including use of prescribed fire. Prior to activity as described in effects analysis, chapter 3 of DEIS.

Meet ESA Requirements: If Critical Habitat is identified during implementation of the proposed activities, special protection measures will be implemented by including provision CT6.251 in all applicable timber sale contract packages. This provision is mandatory.

Maintain Minimum/All Associated Old Growth Characteristics within Old Growth Character Stands (Green, et al. 1992; USDA Forest Service 1987a): Ensure burning is planned to minimize impact on the large old tree component and subsequent risk of insect infestation in Units F1OG, F3OG, F11OG, F13OG, F14OG, and F15OG.

Protect Specialized Wildlife Habitats: Protect currently unknown (not mapped) specialized habitats (e.g., wetlands, fens, bogs, elk wallows, nests, etc.) found during timber sale preparation activities with appropriate buffers. When new sites are found consult wildlife biologist, fish biologist, or hydrologist for direction.

Temporary Roads within the Tobacco BORZ: Temporary roads (T14, T44, T53) within the Tobacco BORZ will be returned to contour immediately following harvest and slash activities or within one active bear year (4/1 to 11/30), unless unforeseen circumstances (e.g. weather) prevents completion of the treatment units accessed by these temporary roads. Temporary roads needed for another work season will be closed with the appropriate restriction device (barrier) if work is not completed within 1 year.

Scheduling of Timber Sales/Activities: From 2011 Access Amendment, “Timber harvest activities that would occur in multiple watersheds shall be scheduled such that disturbance to grizzly bears resulting from road use is minimized.” This design element would be applicable to Fivemile Creek (BORZ) watershed and met by avoiding implementing major timber harvest activities (e.g., harvesting, hauling, machine piling, etc.) in Fivemile Creek and adjacent Warland Creek simultaneously. In general, scheduling timber harvest activities in more than three watersheds of the East Reservoir Project area, at any given time, should be avoided when possible in order to allow areas for resident species to displace to diurnally. Similarly, scheduling activities over more than 50 percent of ungulate winter range within the East Reservoir boundary should be avoided. Winter, especially late winter, (January through March) can be a critical period for wintering ungulates as much of their energy reserves have already been depleted. Scheduling for winter range can be easily managed by watershed boundaries. When resource values compete such as when winter harvesting to assist with weed control on winter range versus daytime

disturbance to wintering ungulates, favor the situation with the long-term benefit. For example, winter harvesting on winter range to avoid the spread of noxious weeds will likely benefit ungulates more in the long term than prohibiting winter harvesting on winter range to avoid daytime disturbance of ungulates.

Heritage Resources

Heritage resource surveys were completed on all treatment units. The action alternatives were designed to protect known cultural sites, provide for protection of sites discovered during implementation, and protect treaty rights. These concerns will be addressed through ongoing consultation with tribal representatives. Appropriate Timber Sale Contract Provisions will be included in any timber sale contract. The appropriate provision specifies that the Forest Service may modify or cancel the contract to protect cultural resources, regardless of when they were identified. Winter logging will be required for Units 1 and 1A.

Scenic Resources

To meet visual quality objectives the following measures will be taken:

- Units 2, 3, 6, 16, 18: Implement high level of slash disposal along Highway 37.
- Units 7, 8, 59, 62, 80, 147, 148, 149, 150, 151: Leave 10 to 12 trees per acre in units.
- Units 41, 81: Leave tree islands (1–2 acres) left in units.
- Unit 6: Leave 10 to 15 trees per acre in unit.

U.S. Corps of Engineer Land

The following BMP must be employed within the boundary of recorded archaeological sites and/or in areas where additional archaeological identification work cannot be completed prior to project implementation.

- Soil and duff moistures must be high enough to prevent thermal damage to artifacts that may be present in the lower duff layers or soil. Duff moistures of greater than 120 percent tend not to burn (Timmons, et al. 1996); consequently, the burn shall take place in the spring and/or late fall when conditions favor high duff moistures.
- Any stumps within recorded archaeological sites that will be burned must be protected by wetting or foaming prior to ignition.
- To keep excavation of soil to a minimum, control lines for prescribed burn operations must be located on existing roads, trails, topographical breaks, and any other natural barriers. Wet lines and/or foam lines are strongly recommended.
- Slash piling, for the purpose of burning, will not occur within recorded archaeological sites. Many areas on COE fee-owned land are considered high probability. Slash piling, for the purpose of burning, shall be avoided where feasible.
- Mechanical timber harvest must be done on frozen ground within recorded archaeological sites and high probability areas and in accordance he following stipulations:
 - Logging must be performed over frozen ground or over an accumulation of a minimum of one foot of compacted snow.
 - A rubber-tired skidder shall be used.

Appendix 3—Design Features and Management Measures

- Logs will be limbed at the stump.
- Dispersed skidding.
- Logging landings shall be designated in areas outside of recorded archaeological sites and high probability areas. Landings will be clearly delineated by the COE archaeologist on the ground for the sale administrator and the contractor.
- Slash piling will not occur within any recorded archaeological sites or high probability areas. Appropriate areas must be clearly delineated by the COE archaeologist on the ground for the sale administrator and the contractor.

Appendix 4—East Reservoir Water Resources Management Requirements and Design Criteria

The following mitigation measures are intended to assist planning, contract preparation, and project contract administration by highlighting some of the most important requirements of Forest Service Handbook 2509.22, Soil and Water Conservation Practices, Montana Water Quality Best Management Practices (BMPs), and the Kootenai Forest Plan, including the Inland Native Fish Strategy. For additional detail, please review these guiding documents.

For modifications to these requirements, contact the hydrologist or fish biologist.

INFISH Buffers: Boundaries of RHCAs would be delineated prior to activities to exclude ground-based equipment and other activities. Incidental fire is allowed within the RHCAs, but no equipment or building of fire lines is allowed.

Best Management Practices (BMPs) for Forestry: BMPs for forestry would be met for all ground based operations. At a minimum, basic surface drainage requirements will be met for project roads with the intent of working towards meeting all required BMPs required under the Forest Service Handbook 2509.22, Soil and Water Conservation Practices, and National Core and Montana Water Quality Best Management Practices.

BMP Timing: Prior to timber haul, implement, and maintain all BMPs needed to control surface drainage on project roads. If winter haul will occur before planned road BMPs, the timber sale administrator will contact the appropriate engineer or hydrologist to assure that typical winter operation requirements are sufficient to mitigate sediment effects, or if specific BMPs will be necessary prior to winter operations.

Erosion Control Measures: Erosion control measures (i.e. straw bales, wattles, silt fences, hydro mulching, etc.) would be implemented where necessary and remain in place during and after ground disturbing activities. To ensure effectiveness, erosion control measures would remain functional until disturbed sites (roads, culverts, landings, etc.) are stabilized; typically for a minimum period of one growing season after ground disturbing activity occurs. Where necessary and as additionally described in the soils mitigation requirements, the timber sale administrator will determine and apply one or more of the following techniques to reduce the potential of soil detachment from disturbed areas such as skid trails, decommissioned roads, harvest units, sky-line corridors, or landings:

- Facilitate rain and snow-melt infiltration by applying specified sub-soiling techniques to decompact areas that are excessively compacted;
- Encourage ground cover by applying certified weed-free seed and/or mulch (mulch as approved wood fibers or straw);
- Reduce rain drop energy, create shade, and facilitate wood deterioration for microbial soil functions by mechanically or hand applying appropriate quantities and sizes of wood slash; and
- Reduce concentration and magnitude of overland flow (should it occur) by installing water bars at appropriate spacing.

Appendix 5—Standard RHCA Widths

Standard RHCA widths for four categories of stream or water body are:

- 1) Fish bearing streams—minimum 300 feet each side of the stream;
- 2) Perennial non fish bearing streams—minimum 150 feet each side of stream;
- 3) Ponds, lakes, and wetlands greater than 1 acre—minimum 150 feet from maximum pool elevation; and
- 4) Intermittent and seasonally flowing streams, wetlands less than 1 acre, landslides, and landslide prone areas—minimum 50 feet from edge except in priority watersheds (streams identified by the FWS as being of the highest importance for bull trout survival) where the minimum distance would be 100 feet.

Streams in the project area fall into categories 2 and 4 and should use appropriate buffering for management activities.

Appendix 6—East Reservoir Best Management Practices

Federal agency compliance with pollution control is addressed through Section 313 of the Clean Water Act, Executive Order 12580 (January 23, 1987), National Nonpoint Source Policy (December 12, 1984), USDA Nonpoint Source Water Quality Policy (December 5, 1986) and the Environmental Protection Agency in their guidance "Nonpoint Source Controls and Water Quality Standards" (August 19, 1987). In order to comply with State and local non-point pollution controls the Forest Service will apply BMPs to all possible non-point sources which may result from management activities proposed in this DEIS. These National Core and Montana State BMPs are the soil and water conservation practices described in the Forest Service Handbook (FSH) 2509.22.

BMPs are the primary mechanism for achievement of water quality standards (EPA 1987). This appendix describes the Forest Service's BMP process in detail, and lists the key soil and water conservation practices that have been selected to be used in the action alternatives analyzed in this DEIS.

BMPs include, but are not limited to, structural, and non-structural controls, operations, and maintenance procedures. BMPs can be applied before, during, or after potential pollution-producing activities to reduce or eliminate the introduction of pollutants into the receiving watershed (40 CFR 130.2, EPA Water Quality Standards Regulation). BMPs are usually applied as a system of practices rather than a single practice. They are selected on the basis of site-specific conditions that reflect natural background conditions and political, social, economic, and technical feasibility.

The Forest Plan states that soil and water conservation practices, as outlined in the Soil and Water Conservation Practices Handbook (FSH 2509.22, May 1988), will be incorporated into all land use project plans as a principal mechanism for controlling non-point pollution sources, meeting soil and water quality goals, and protecting beneficial uses. Activities found not to comply with the soil and water conservation practices or State standards will be brought into compliance, modified, or stopped (USDA Forest Service, 1987a, pp. 11–23). Montana State Water Quality Standards require the use of reasonable land, soil, and water conservation practices (analogous to BMPs) as the controlling mechanism for non-point pollution. The use of BMPs is also required in the Memorandum of Understanding between the Forest Service and the State of Montana as part of the agency's responsibility as the designated water quality management agency on National Forest System lands.

BMP Implementation Process

In cooperation with the State, the Forest Service's primary strategy for the control of non-point sources of pollution is based on the implementation of preventive practices (i.e., BMPs). The BMPs have been designed and selected to protect the identified beneficial uses of the watershed.

The Forest Service non-point source management system consists of the following steps:

1. **BMP Selection and Design**—Water quality goals are identified in the forest plan. These goals meet or exceed applicable legal requirements including State water quality regulations, the Clean Water Act, and the National Forest Management Act. Environmental assessments for projects are tiered to forest plans using the National Environmental Policy Act process. The appropriate BMPs are selected for each project by an interdisciplinary team. In each new location, there is flexibility to design

different BMPs depending on local conditions and values and downstream beneficial uses of water. The BMP selection and design are dictated by the proposed activity, water quality objectives, soils, topography, geology, vegetation, and climate. Environmental impacts and water quality protection options are evaluated, and alternative mixes of practices are considered. A final collection of practices are selected that not only protect water quality but meet other resource needs. These final selected practices constitute the BMPs for the project.

2. **BMP Application**—The BMPs are translated into contract provisions, special use permit requirements, project plan specifications, and so forth. This insures that the operator or person responsible for applying the BMPs actually is required to do so. Site-specific BMP prescriptions are taken from plan-to-ground by a combination of project layout and resource specialists (hydrology, fisheries, soils, etc.). This is when final adjustments to fit BMP prescriptions to the site are made.
3. **BMP Monitoring** —When the resource activity begins (e.g., timber harvest or road building), timber sale administrators, engineering representatives, resource specialists, and others insure the BMPs are implemented according to plan. BMP implementation monitoring is done before, during, and after resource activity implementation. This monitoring answers the question: Did we do what we said we were going to do? Once BMPs have been implemented, further monitoring is done to evaluate if the BMPs are effective in meeting management objectives and protecting beneficial uses. If monitoring indicates that water quality standards are not being met or beneficial uses are not being protected, corrective action will consider the following:
 - a) Is the BMP technically sound? Is it really best or is there a better practice that is technically sound and feasible to implement?
 - b) Was the BMP applied entirely as designated? Was it only partially implemented? Were personnel, equipment, funds, or training lacking which resulted in inadequate or incomplete implementation?
 - c) Do the parameters and criteria that constitute water quality standards adequately reflect human-induced changes to water quality and beneficial uses?
4. **Feedback**—Feedback on the results of BMP evaluation is both short and long term in nature. Where corrective action is needed, immediate response will be undertaken. This action may include: modification of the BMP, modification of the activity, ceasing the activity, or possibly modification of the State water quality standard. Cumulative effects over the long term may also lead to the need for possible corrective actions.

Site-specific Best Management Practices

Description of the soil and water conservation practices from the Forest Service Soil and Water Conservation Handbook (FSH 2509.22) will be applied in all alternatives. The location where the practices will be applied is specified in the table below. For a more detailed description of a specific BMP, refer to the Soil and Water Conservation Handbook.

Abbreviations used in the table below:

| | |
|---|--|
| SPS = Special Project Specification | KNF = Kootenai National Forest |
| TSC = Timber Sale Contract | PSF = Pre-sale Forester |
| TSA = Timber Sale Administrator | ER = Engineering Representative |
| SMZ = Streamside Management Zone | COR = Contracting Officer's Representative |
| IDT = Interdisciplinary Team | SAM = Sale Area Map |
| SWCP = Soil and Water Conservation Practice | FMO = Fire Management Officer |

Table 15. KNF BMP Selection and Design Form (KNF–BMP–1) (Revised 3/12)

| SWCP | SWCP Objective | Percent (%) Effective | Recommended BMPs by IDT/TSA | Considerations For BMPs | Person(s) Responsible | Contract Provisions |
|-------|---|-----------------------|---|---|-----------------------|---------------------|
| 14.01 | Timber Sale Planning — To incorporate soil and water resource considerations into Timber Sale Planning | 94% | <ol style="list-style-type: none"> 1. Unit design, mitigation, and effects analysis was done by IDT. 2. TSC will be prepared by PSF that will include management constraints and Design Criteria from EIS. 3. Use standard interim RHCA widths unless modified through watershed analysis. 4. Use exiting skid trails where feasible. | IDT has evaluated watershed characteristics and estimated response to proposed activities. EIS identifies design criteria to protect soil and water resources. Timber sale contracts will include provisions to meet water quality, soils, and other resources as directed by the Decision. | IDT; PSF | N/A |

| SWCP | SWCP Objective | Percent (%) Effective | Recommended BMPs by IDT/TSA | Considerations For BMPs | Person(s) Responsible | Contract Provisions |
|-------|--|-----------------------|--|---|-----------------------|---|
| 14.02 | Timber Harvest Unit Design —To insure that timber harvest unit design will secure favorable conditions of water flow, maintain water quality and soil productivity, and reduce soil erosion and sedimentation. | 95% | <ol style="list-style-type: none"> Cumulative effects analysis and unit design were performed by IDT. The prescriptions and unit design are consistent with direction outlined in the considerations for Best Management Practices. Use standard interim RHCA widths unless modified through watershed analysis. Use exiting skid trails where feasible. | Proposed activities were evaluated to estimate the potential watershed response. Prescriptions will be designed to assure an acceptable level of protection for soil and water resources. Management will protect soil/water values by avoiding sensitive areas, adjusting unit boundaries, adding specific BMPs to meet specific SWCPs, implementing the KNF Riparian Area Guidelines, applying mitigation, and applying implementation/ effectiveness monitoring. | IDT | N/A |
| 14.03 | Use of Sale Area Maps (SAM) for Designating Soil and Water Protection Needs —To delineate the location of protected areas and available water sources and insure their recognition, proper consideration, and protection on the ground. | 93% | <ol style="list-style-type: none"> Water courses identified and protected using SMZ buffers as a minimum. Skidding on dry, frozen, or snow-covered soil conditions. Designated skid trails in units with previous harvest. Use standard interim RHCA widths unless modified through watershed analysis. | The IDT will identify water courses to be protected, unit boundaries, and other features required by other means such as "C" provisions. Ground verification and preparation of SAMs to be included in TSC will be done by PSF. TSA reviews areas of concern with purchaser before operations. | IDT; PSF; TSA | B(T)1.1 B(T)6.5 C(T)6.50# |
| 14.04 | Limiting the Operation Period of Timber Sale Activities —To minimize soil erosion, sedimentation, and a loss in soil productivity by insuring that the purchaser conducts his/her operations in a timely manner. | 99% | <ol style="list-style-type: none"> Units located on soils sensitive to compaction and/or displacement have been identified. Designate units needing harvest on frozen or snow covered ground. All other ground disturbing activities will occur during dry, frozen, or snow-covered conditions. | If limited operating periods are identified and recommended during the analysis by the IDT, the PSF will prepare a contract that includes provision C(T)6.316 and/or C(T)6.4#. | IDT; PSF; TSA | B(T)6.31 B(T)6.311 B(T)6.6 C(T)6.6 C(T)6.316# C(T)6.4# |

| SWCP | SWCP Objective | Percent (%) Effective | Recommended BMPs by IDT/TSA | Considerations For BMPs | Person(s) Responsible | Contract Provisions |
|-------|--|-----------------------|---|---|-----------------------|---|
| 14.05 | Protection of Unstable Areas —To protect unstable areas and avoid triggering mass movements of the soil mantle and resultant erosion and sedimentation. | 96% | <ol style="list-style-type: none"> 1. Unstable landtypes will be identified during the planning process. 2. Units found to need further protection will use alternative yarding techniques, seasonal restrictions, and/or unit boundary adjustments. | If the NEPA analysis concluded that soils/geology in the area were unstable, BMPs would be designed to prevent irreversible soil and water damage. | IDT; PSF; TSA | C(T)6.4# |
| 14.06 | Riparian Area Designation —To minimize the adverse effects on riparian areas with prescriptions that manage nearby logging and related land disturbance activities. | 90% | <ol style="list-style-type: none"> 1. Identify areas with or adjacent to wet areas. 2. Default RHCA widths will be adhered to unless modified through watershed analysis. 3. SMZ widths will be used as a minimum if modification is proposed. 4. Areas found during sale layout will be reported to the Hydrologist and afforded the same protections as those identified during the planning process. | All streams and wetlands in the decision area will comply with KNF Riparian Area Guidelines (Appendix 26) and KNF Forest Plan as amended by INFS/UCRB. The width of the riparian areas will be decided upon by the IDT. These widths will be included on the sale area map and marked on the ground. This information will be included in the timber sale contract. | IDT; PSF; TSA | B(T)1.1 B(T)6.5, C(T)6.4# C(T)6.41# C(T)6.50# |
| 14.07 | Determining Tractor-loggable Ground —To protect water quality from degradation caused by tractor logging ground disturbance. | 97% | <ol style="list-style-type: none"> 1. Tractor loggable units (slopes < 40%) have been identified during the planning process. 2. Those areas found not to be tractor loggable were designated as cable, forwarder, or winter harvest units; or were dropped from the unit. | IDT has identified tractor-loggable ground (in conjunction with personnel from timber operations) during transportation and timber sale planning process. The results have been used to determine intensity of and restrictions for land disturbance activities. PSF will prepare a TSC that includes provisions stating areas and conditions under which tractors can operate. | IDT; PSF | C(T)6.4# SAM |
| 14.08 | Tractor Skidding Design —To minimize erosion and sedimentation and protect soil productivity by designing skidding patterns to best fit the terrain. | 97% | <ol style="list-style-type: none"> 1. Identify units with designated or dispersed skid trails. 2. TSA and purchaser agree on proposed locations before operation. | IDT has identified sensitive areas during the planning process. The TSA will execute the plan on the ground by locating the skid trails with the timber purchaser or by agreeing to the purchaser's proposed locations prior to operation. | IDT; TSA | B(T)6.422 C(T)6.4# |

| SWCP | SWCP Objective | Percent (%) Effective | Recommended BMPs by IDT/TSA | Considerations For BMPs | Person(s) Responsible | Contract Provisions |
|-------|---|-----------------------|--|---|-----------------------|---|
| 14.09 | Suspended Log Yarding in Timber Harvesting —To protect the soil from excessive disturbance and accelerated erosion and maintain the integrity of the riparian areas and other sensitive areas. | 95%. | <ol style="list-style-type: none"> 1. Units that have slopes that are unsuitable for or sensitive to ground base skidding will be identified. 2. Units with sustained slopes >40% will be designated cable harvest units. | IDT recognizes the hazards associated with operating on steep and/or rocky slopes. Areas found to be of concern will use appropriate harvest systems that provide for a safe work environment and protect natural resources. | IDT | B(T)6.42 C(T)6.4# C(T)6.50# |
| 14.10 | Log Landing Location and Design —To locate in such a way as to avoid soil erosion and water quality degradation. | 99% | <ol style="list-style-type: none"> 1. TSA and purchaser agree on landing locations before operation. 2. Use least excavation needed. 3. No side-cast material into sensitive areas or waterways. 4. Install proper drainage. | TSA must agree to landing locations proposed by the purchaser. Approved landing locations will meet the criteria of: minimal size, least excavation needed, minimum skid roads necessary, no side-cast material into sensitive areas, and have proper drainage. | TSA | B(T)6.422 C(T)6.422 |
| 14.11 | Log Landing Erosion Prevention and Control — To reduce erosion and subsequent sedimentation from log landing through the use of mitigating measures. | 98% | <ol style="list-style-type: none"> 1. Proper drainage will be installed and maintained during operation. 2. Landings will be scarified, seeded, and fertilized upon completion harvest activities. 3. TSA will assess conditions and take necessary steps to insure soil and water protection. | PSF and TSA assess what is necessary to prevent erosion from landing and to insure stabilization. It is up to the TSA to request technical assistance as needed. | PSF; TSA | C(T)6.6 BT6.64 B(T)6.6 C(T)6.633# |
| 14.12 | Erosion Prevention and Control Measures During the Timber Sale Operation —To insure that the purchaser's operations shall be conducted reasonably to minimize soil erosion. | 91% | <ol style="list-style-type: none"> 1. Designate units with seasonal restrictions. 2. Do not operate during wet periods including spring-snowmelt and/or intense or long-duration rain storms. 3. TSA insures that erosion control is kept current and prevents operation when excessive impacts are possible. | PSF and TSA sets purchaser's responsibility to prevent soil/water resource damage in TSC. TSA insures that erosion control is kept current and prevents operation when excessive impacts are possible. | PSF; TSA | A13 B(T)6.6 B(T)6.64 C(T)6.6 C(T)6.601# C(T)6.633# |

| SWCP | SWCP Objective | Percent (%) Effective | Recommended BMPs by IDT/TSA | Considerations For BMPs | Person(s) Responsible | Contract Provisions |
|-------|--|-----------------------|--|--|-----------------------|--|
| 14.13 | Special Erosion Prevention Measures on Areas Disturbed by Harvest Activities —To prevent erosion and sedimentation on disturbed areas. | 93% | <ol style="list-style-type: none"> 1. Waterbar, seed, fertilize, and place woody debris on skid trails, landings. 2. Recontour, seed, and place woody debris on constructed skid trails and temporary roads. 3. BMPs may be adjusted by the TSA to meet operational requirements | IDT identifies locations needing special stabilization measures. If any such areas are identified, BMPs may be adjusted by the TSA to meet operational requirements | IDT | C(T)6.601# C(T)6.32# C(T)6.633# |
| 14.14 | Revegetation of Areas Disturbed by Harvest Activities —To establish a vegetative cover on disturbed areas to prevent erosion and sedimentation. | 95% | <ol style="list-style-type: none"> 1. Seed and fertilize areas of exposed soil with KNF approved vegetative and fertilizer mix. | IDT has established vegetation and fertilizer mix to be used in the project area with outlines on the extent to which it should be used. TSA is responsible for seeing that revegetation work required by purchaser is done correctly and in a timely manner. The purchaser will be responsible for revegetation immediately after the completion of harvest. Funds will be collected for the District to do follow-up seeding/fertilizing in years two and three after harvest. | IDT; TSA | C(T)6.01# C(T)6.633# |
| 14.15 | Erosion Control on Skid Trails —To protect water quality by minimizing erosion and sedimentation derived from skid trails. | 89% | <ol style="list-style-type: none"> 1. Insure proper skid trail location. 2. Insure proper drainage on skid trails. 3. Recontour, seed, and place woody debris on constructed skid trails and temporary roads. 4. Insure maintenance of erosion control structures by purchaser. | Erosion control measures may be recommended by the IDT, but site-specifically adjusted by the TSA. TSA will insure erosion control measures are applied prior to expected hydrologic events (spring runoff, high-intensity storms, etc.). Maintenance of erosion control structures by the purchaser may be necessary and requested by the TSA. | TSA | C(T)6.6 C(T)6.633# B(T)6.6 B(T)6.65 B(T)6.66 |
| 14.16 | Wet Meadow Protection During Timber Harvesting —To avoid damage to the ground cover, soil, and water in meadows. | 87% | <ol style="list-style-type: none"> 1. Identify units with or adjacent to wet meadows. 2. Units with unmapped wet areas will be reported to Hydrologist and afforded the same protection as those identified during the planning process. 3. Standard interim RHCA widths will be adhered to unless modification is in place. 4. The SMZ law will be met or exceeded. | IDT has identified areas needing special protection. PSF will verify the areas needing protection and prepare the contract to prevent damage to meadows. The TSA will be responsible for on-the-ground protection of meadows. If meadows are found by the TSA during operations, it is their responsibility to either afford them the proper protection or pursue a contract modification. | IDT; PSF; TSA | B(T)1.1 B(T)5.1 B(T)6.422 B(T)6.61 C(T)6.4# C(T)6.62# |

| SWCP | SWCP Objective | Percent (%) Effective | Recommended BMPs by IDT/TSA | Considerations For BMPs | Person(s) Responsible | Contract Provisions |
|-------|--|-----------------------|---|--|-----------------------|---|
| 14.17 | Stream Channel Protection (Implementation and Enforcement) —Protect natural stream flows; provide unobstructed passage of flows; reduce sediment input; and restore flow if diverted by timber sale activity. | 92% | 1. Standard interim RHCA widths will be adhered to unless modification is in place. 2. SMZ widths will be used at a minimum if modification in place. 3. SMZ law will be met or exceeded. | IDT has identified the location of channels in the decision area. PSF will prepare a SAM locating the channels needing protection. Layout crew marks boundaries and trees according to HB-731 and FP guidelines. TSA will see that TSC items are carried out on the ground. Technical assistance will be consulted as needed. | IDT; PSF; TSA | B(T)1.1 B(T)6.5 B(T)6.6 C(T)6.50# C(T)6.6 |
| 14.18 | Erosion Control Structure Maintenance —To insure that constructed erosion control structures are stabilized and working effectively. | 92% | 1. During the period of the TSC, the purchaser is responsible for maintaining their erosion control features. | During the period of the TSC, the purchaser is responsible for maintaining their erosion control features. If work is needed beyond this time, the District will pursue other sources of funding. | IDT; PSF; TSA | B(T)6.66 B(T)6.67 |
| 14.19 | Acceptance of Timber Sale Erosion Control Measures Before Sale Closure —To assure the adequacy of required erosion control work on timber sales. | 97% | 1. TSA reviews erosion prevention work before each harvest unit is considered complete. 2. The inspection will determine if the work is acceptable and will meet the objective of the erosion control feature. | A careful review of erosion prevention work will be made by the TSA before each harvest unit is considered complete. The inspection will determine if the work is acceptable and will meet the objective of the erosion control feature. A feature is considered not acceptable if it does not meet standards or is not expected to protect soil/water values. Technical assistance will be used as necessary. | TSA | B(T)6.36 |
| 14.20 | Slash Treatment in Sensitive Areas —To protect water quality by protecting sensitive tributary areas from degradation that would result from using mechanized equipment for slash disposal. | 93% | 1. Where harvest is proposed within riparian areas, either slash should be removed with the tree or scattered and not treated. 2. Mechanical fuels treatments should occur on slopes < 40%. | All activities will comply with the KNF Riparian Area Guidelines (FP, Appendix 26). Where harvest within riparian areas is proposed, either the slash would be removed with the tree or scattered and not treated. | TSA; FMO | B(T)6.5 C(T)6.50# B(T)6.7 C(T)6.7 C(T)6.71 C(T)6.753 |

| SWCP | SWCP Objective | Percent (%) Effective | Recommended BMPs by IDT/TSA | Considerations For BMPs | Person(s) Responsible | Contract Provisions |
|-------|--|-----------------------|--|---|-----------------------|----------------------------------|
| 14.22 | Modification of the TSC —To modify the TSC if new circumstances or conditions indicate the timber sale will cause irreversible damage to soil, water, or watershed values. | 100% | 1. Environmental modification procedure. | If TSC is not adequate to protect soil/water resources, the TSA and Contracting Officer are responsible for recommending modification of the TSC. | TSA | B(T)8.33 |
| 15.01 | General Guidelines for Transportation Planning —To introduce soil and water resource considerations into transportation planning. | 100% | 1. Complete a roads analysis. 2. Transportation plans include installation and maintaining proper drainage. | A roads Analysis has been completed. The IDT has evaluated watershed characteristics and estimated the response of soil and water resources to proposed transportation alternatives and activities. | IDT; ER | N/A |
| 15.02 | General Guidelines for the Location and Design of Roads and Trails —To locate and design roads and trails with minimal soil and water impact while considering all design criteria. | 96% | 1. Follow INFS Standards and Guidelines for road management. 2. Identify sensitive landtypes, riparian areas, and wetlands during planning. 3. Use the minimum amount of roads and trails necessary. | The IDT has insured that the location and design of roads and trails are based on multiple resource objectives. Mitigation measures have been designed to protect the soil and water resources identified in the NEPA process. Contract provisions will be prepared by the ER that meets the soil and water resource protection requirements. | IDT; ER | N/A |
| 15.03 | Road and Trail Erosion Control Plan —To prevent, limit, and mitigate erosion, sedimentation, and resulting water quality degradation prior to the initiation of construction by timely implementation of erosion control practices. | 95% | 1. Seed and fertilize disturbed areas. 2. Install proper ditching and road slope. 3. Install proper drainage. 4. Incorporate road grade breaks. 5. Use minimum road or trail length/width necessary. 6. Avoid wet areas or areas of sensitive soil types. | IDT has established soil/water conservation objectives and mitigation measures. ER will then prepare a contract that reflects the objectives. ER will see that erosion control measures are approved and completed in a timely manner. IDT reviews projects to check effectiveness of erosion control features. | IDT; ER | B(T)6.31 B(T)6.6 B(T)6.312 |

| SWCP | SWCP Objective | Percent (%) Effective | Recommended BMPs by IDT/TSA | Considerations For BMPs | Person(s) Responsible | Contract Provisions |
|-------|---|-----------------------|---|---|-----------------------|---|
| 15.04 | Timing of Construction Activities —To minimize erosion by conducting operations during minimal runoff periods. | 97% | 1. Avoid construction during wet periods. | IDT has outlined detailed erosion control measures in NEPA process. ER puts these measures into contract provisions. Compliance is assured by Contracting Officer or ER. | IDT; ER | B(T)6.31 B(T)6.312 B(T)6.6 SPS 204 |
| 15.05 | Slope Stabilization and Prevention of Mass Failures —To reduce sedimentation by minimizing the chances for road-related mass failures, including landslides and embankment slumps. | 99% | Avoid construction across unstable areas. Construct embankments following approved engineering practices. 3. Use minimum road or trail length/width necessary. | Road and trail construction in mountainous terrain requires cutting and loading natural slopes which may lead to landslides and/or embankment failures. In areas with intrinsic slope stability problems, appropriate technical resource personnel must be involved in an interdisciplinary approach to route location. | IDT; ER | N/A |
| 15.06 | Mitigation of Surface Erosion and Stabilization of Slopes —To minimize soil erosion from road cutslopes, fill slopes, and travel ways. | 94% | 1. Seed and fertilize cut and fill slopes. 2. Install proper ditching and road slope. 3. Install proper drainage. 4. Incorporate road grade breaks. 5. Install ditch relief culverts before/after stream crossings. | IDT has outlined detailed erosion control measures in the NEPA process. Stabilization techniques are included in contract provisions. Compliance is assured by Contracting Officer or ER. | IDT; ER | SPS 203, 204, 206A 210, 412 619, 625, 626 630 B(T)5.3, B(T)6.31 B(T)6.6, B(T)6.62 B(T)6.66 B(T)6.312, C(T)6.6 C(T)6.601# |
| 15.07 | Control of Permanent Road Drainage —To minimize the erosive effects of concentrated water and degradation of water quality by proper design and construction of road drainage systems and drainage control structures. | 94% | 1. Avoid long, steep grades. 2. Maintain adequate surface drainage. 3. Prevent erosion of culvert fills. 4. Maintain ditches. 5. Ditch relief culverts before/after stream crossings. | IDT has identified locations, design criteria, drainage control features, and mitigation. Compliance will be assured by the ER/Contracting Officer. | ER | B(T)5.3 C(T)5.31# B(T)6.311 B(T)6.6 C(T)6.6 |

| SWCP | SWCP Objective | Percent (%) Effective | Recommended BMPs by IDT/TSA | Considerations For BMPs | Person(s) Responsible | Contract Provisions |
|-------|--|-----------------------|---|--|-----------------------|--|
| 15.08 | Pioneer Road Construction —To minimize sediment production and mass wasting associated with pioneer road construction. | 100% | <ol style="list-style-type: none"> 1. Insure stable slopes during construction. 2. Seed and fertilize exposed soil. 3. Avoid construction during wet periods. 4. Use slash filter windrows. | ER/Contracting Officer will be responsible for enforcing contract specifications. The purchaser is responsible for submitting an operating plan that includes erosion control measures. | ER | B(T)6.6 B(T)5.23 B(T)6.31 B(T)6.312 B(T)6.311 SPS 204 |
| 15.09 | Timely Erosion Control Measures on Incomplete Roads and Stream Crossing Projects —To minimize erosion of and sedimentation from disturbed ground on incomplete projects. | 96% | <ol style="list-style-type: none"> 1. Avoid construction during wet periods. 2. Use slash filter windrows or silt fence. 3. Seed and fertilize disturbed areas. | IDT has identified project location and mitigation measures in NEPA process. Protective measures will be kept current on all areas of disturbed, erosion-prone areas. TSA insures contract compliance. | IDT; TSA | B(T)6.31 B(T)6.6 B(T)5.23 B(T)6.66 C(T)6.6 |
| 15.10 | Control of Road Construction, Excavation, and Side-Cast Material —To reduce sedimentation from unconsolidated excavated and side-cast material caused by road construction, reconstruction, or maintenance. | 96% | <ol style="list-style-type: none"> 1. Do not side-cast into waterways or sensitive areas. 2. Use slash filter windrows or silt fence. | IDT has identified project location and mitigation measures in NEPA process. Protective measures will be kept current on all areas of disturbed, erosion-prone areas. TSA insures contract compliance. | IDT; TSA | B(T)5.3 C(T)5.31# SPS 203 SPS 204 |
| 15.11 | Servicing and Refueling Equipment —To prevent contamination of waters from accidental spills of fuels, lubricants, bitumens, and other harmful materials. | 99% | <ol style="list-style-type: none"> 1. Insure proper fuel storage and transportation. 2. Keep fuel from streams, wetlands, ponds, and lakes. | ER/TSA/Contracting Officer will designate the location, size, and uses of service refueling areas. All projects will adhere to the KNF Hazardous Substance Spill Plan in case of accidents. | ER; TSA | B(T)6.222 B(T)6.34 B(T)6.341 |

| SWCP | SWCP Objective | Percent (%) Effective | Recommended BMPs by IDT/TSA | Considerations For BMPs | Person(s) Responsible | Contract Provisions |
|-------|---|-----------------------|--|--|-----------------------|---|
| 15.12 | Control of Construction in Riparian Areas —To minimize the adverse effects on riparian areas from roads. | 97% | <ol style="list-style-type: none"> 1. Follow INFS Standards and Guidelines for construction within riparian areas. 2. Use slash filter windrows or silt fence. 3. Install ditch relief culverts and surface water deflectors before/after stream crossings. | Proposed new and temporary roads will adhere to guidelines in the Montana Streamside Management Zone Law (HB-731). All road activities will follow INFS Standards and Guidelines for road management. | ER; TSA | B(T)6.5 B(T)6.62 C(T)6.50# SPS 206 SPS 206A |
| 15.13 | Controlling In-channel Excavation —To minimize stream channel disturbances and related sediment production. | 94% | <ol style="list-style-type: none"> 1. Use silt fence to minimize introduced sediment. 2. Use minimum amount of road. 3. Construct minimum number of crossings. | BMP improvements at crossings would adhere to the guidelines in Montana Streamside Management Zone Law (HB-731) and the INFS Standards and Guidelines for road management. | ER; TSA | B(T)6.5 SPS 204 SPS 206 206A |
| 15.14 | Diversion of Flows Around Construction Sites —To minimize downstream sedimentation by insuring all stream diversions are carefully planned. | 93% | <ol style="list-style-type: none"> 1. Divert streamflow around construction. 2. Use silt fence to minimize introduced sediment. 3. Construction during low flow | The IDT has determined, where stream crossings meet multiple resource objectives, the crossings would require a State 124 permit. This would require the State Fish, Wildlife, and Parks to review the adequacy of the proposed mitigation. Compliance with contract provisions would be done by the ER. | IDT; ER | B(T)6.5 B(T)6.31 C(T)6.50# C(T)6.6 |
| 15.15 | Stream Crossings on Temporary Roads —To keep temporary roads from unduly damaging streams, disturbing channels, or obstructing fish passage. | 96% | <ol style="list-style-type: none"> 1. Consult Hydrologist on placement of crossing. 2. Use minimum number of stream crossings. 3. Construction during low flow. 4. Follow INFS Standards and Guidelines for construction within riparian areas. | The IDT identifies areas in need of a temporary road during the NEPA process. Proposed stream crossings would adhere to the guidelines in Montana Streamside Management Zone Law (HB-731). | PSF | N/A |
| 15.16 | Bridge and Culvert Installation —To minimize sedimentation and turbidity resulting from excavation for in-channel structures. | 98% | <ol style="list-style-type: none"> 1. Installation should be done during periods of low flow. 2. Instream sediment retention devices should be used throughout implementation. | IDT has identified project location and mitigation measures in NEPA process. Protective measures will be kept current on all areas of disturbed, erosion-prone areas. TSA insures contract compliance. | IDT; TSA | C(T)6.5# |

| SWCP | SWCP Objective | Percent (%) Effective | Recommended BMPs by IDT/TSA | Considerations For BMPs | Person(s) Responsible | Contract Provisions |
|-------|---|-----------------------|---|--|-----------------------|-------------------------|
| 15.17 | Regulation of Borrow Pits, Gravel Sources, and Quarries —To minimize sediment production from borrow pits, gravel sources, and quarries and limit channel disturbance in those gravel sources suitable for development in floodplains. | 98% | | | ER | B(T)6.5 C(T)6.50# |
| 15.18 | Disposal of Right-of-Way and Roadside Debris —To insure that debris generated during road construction is kept out of streams and prevent slash and debris from subsequently obstructing channels. | 97% | 1. Debris and slash generated during road construction should not be side-cast into streams. | Proposed road construction will adhere to the guidelines in the Montana Streamside Management Zone Law (HB-731). | ER | Std Spec 201 SPS 201 |
| 15.19 | Stream Bank Protection —To minimize sediment production from stream banks and structural abutments in natural waterways. | 98% | 1. Take precautions to minimize or eliminate disturbance to stream banks. 2. Maintain instream structures. | IDT has identified project location and mitigation measures during NEPA process. Protective measures will be kept current on all areas of disturbed soils. TSA and ER insures contract compliance. | IDT; ER; TSA | Std Spec 619 |
| 15.20 | Water Source Development Consistent with Water Quality Protection —To supply water for road construction and maintenance and fire protection while maintaining water quality. | 91% | | | ER; FMO | Std Spec 207 |

| SWCP | SWCP Objective | Percent (%) Effective | Recommended BMPs by IDT/TSA | Considerations For BMPs | Person(s) Responsible | Contract Provisions |
|-------|--|-----------------------|---|---|-----------------------|--|
| 15.21 | Maintenance of Roads —To maintain all roads in a manner that provides for soil and water protection by minimizing rutting, failures, side-cast, and blockage of drainage facilities. | 96% | 1. Contract Clause CT 5.31#. | Road maintenance associated with a timber sale is the responsibility of purchaser. The ER/SA will insure that the purchaser maintains roads according to the appropriate maintenance level. | ER; SA | B(T)5.12 B(T)5.3 B(T)6.6 C(T)6.6 C(T)5.32# B(T)6.31 |
| 15.22 | Road Surface Treatment to Prevent Loss of Materials —To minimize the erosion of road surface materials and, consequently, reduce the likelihood of sediment production. | 97% | 1. Maintenance of road surface should include proper blading and/or dust abatement. 2. Use crush gravel where necessary. | Protective measures will be kept current on all areas of disturbed, erosion-prone areas. ER insures contract compliance. | IDT; ER | B(T)5.3 C(T)5.31# C(T)5.314# |
| 15.23 | Traffic Control During Wet Periods —To reduce the potential for road surface disturbance during wet weather and reduce sedimentation. | 96% | 1. Avoid hauling during wet periods. | Road restrictions and traffic control measures will be implemented on all haul roads when damage would occur during spring breakup. The decision to restrict a road is made by the ER. Hauling restrictions would be controlled by the TSA. | ER; TSA | B(T)6.6 C(T)6.6 C(T)5.316# C(T)5.41# |
| 15.24 | Snow Removal Controls —To minimize the impact of snow melt on road surfaces and embankments and reduce the probability of sediment production resulting from snow removal operations. | 96% | 1. Be careful not to leave snow berm at edge of road where possible. 2. Where a berm cannot be avoided, insure proper drainage by opening sections of berm to allow water to leave road surface. | Snow removal will be kept current on all roads associated with winter logging operations. The TSA insures compliance with contract provisions. | IDT; TSA | C(T)5.316# Std Spec 203.09 |

| SWCP | SWCP Objective | Percent (%) Effective | Recommended BMPs by IDT/TSA | Considerations For BMPs | Person(s) Responsible | Contract Provisions |
|-------|---|-----------------------|--|---|-----------------------|---|
| 15.25 | Obliteration of Temporary Roads —To reduce sediment generated from temporary roads by obliterating them at the completion of their intended use. | 95% | <ol style="list-style-type: none"> 1. Re-contour road fully where feasible. 2. Seed and fertilize exposed soil. 3. Pull slash and woody debris back onto rehabilitated road. | This work will be done on all new temporary roads in the decision area. The work will be done by the purchaser with compliance by the TSA. | TSA | B(T)6.63 C(T)6.6 C(T)6.632# C(T)6.633# |
| 18.03 | Protection of Soil and Water From Prescribed Burning Effects —To maintain soil productivity, minimize erosion, and prevent ash, sediment, nutrients, and debris from entering surface water. | 100% | <ol style="list-style-type: none"> 1. Follow INFS Standards and Guidelines for burning in RHCAs. 2. Adhere to SMZ Law. 3. Where harvest within riparian areas is proposed, either the slash should be removed with the tree or scattered and not treated. | Broadcast burning adjacent to riparian areas will adhere to guidelines in the Montana Streamside Management Zone Law (HB-731). Prescribed burn plans identify the conditions necessary to prevent soil damage and meet site preparation objectives. | FMO | N/A |

Appendix 7—Soil Rehabilitation Plans and Mitigations for East Reservoir Project Area

Overview

The level of detrimental soil disturbance (DSD) will depend in large part on how skid trails are laid out and properties of surface soil layers, specifically soil texture, the amount and size of rock fragments and soil moisture conditions at the time of use. Coarse textured soils and abundant rock fragments in the soils would both reduce the depth and width of detrimental soil disturbance beneath the tire or tracks of mechanical harvesting equipment. Dry soils would not become as compacted as wet soils (Han, et al. 2006). Whether compacted or not, the basic soil resource along skid trails would remain intact providing soil erosion is controlled.

Major Sources of Detrimental Soil Disturbance

Soil compaction may involve soil erosion due to rutting or inadequate erosion control on strongly sloping to moderately steep grades; potential topsoil displacement; and loss of soil productivity and surface A-horizon in old skid roads.

Analysis for DSD found that all except four units in proposed East Reservoir Project would meet Northern Region SQS after implementation. Rehabilitation of soil resources ties to direction in the Kootenai Forest Plan (forest plan), NFMA, and the Northern Region SQS. The use of rehabilitation techniques in site-specific instances would move areas of soil disturbance towards improved site potential at a faster rate than if no rehabilitation techniques are used. It is estimated that rehabilitation would reduce soil compaction and thereby significantly enhance soil and forest floor recovery timeframes. This timeframe of recovery is more dependent on the landtype present and season of timber harvest operations as significant variables which impact soil rehabilitation success (L. Kuennen pers. comm. 2009).

Rehabilitation actions would be effective at breaking up the area extent and magnitude of detrimental soil disturbance and provide for improved aeration and hydrologic function within the soil. Rehabilitation actions start the ultimate goal of soil restoration; that is to provide the building blocks from which soil organisms and plants can continue to modify and build soil structure and chemistry. By providing these building blocks, Northern Region SQS are met since steps have been made to move the treatment units towards improved soil and site condition. Promoting biologic activity is the best way to remediate damaged soils (Powers 1990). Biologic activity influences many physical characteristics of the soil, e.g. soil aggregation and associated water infiltration and gas exchange as well as soil chemistry.

Rehabilitation Treatments

Soil rehabilitation techniques may include either natural (passive) restoration or non-natural aggressive restoration techniques.

Natural (Passive) Restoration

Natural (passive) restoration includes seeding/planting; scarification, treatment of noxious weeds, or a combination of techniques. Natural processes include freeze/thaw and wet/dry cycles, forest floor building, and biological activity. Biological activity includes both above ground flora and fauna and soil flora and fauna. It is anticipated that all units within the East Reservoir analysis area would be exposed and influenced by natural passive restoration activities; however, the effectiveness would be dependent on varying features such as freeze-thaw cycles, soil

temperatures, vegetative response units (VRUs), and local soil factors such as landtype, soil texture, aspect, slope, and elevations (Kuennen and Gerhardt 1995).

Seeding or Planting

The Kootenai National Forest (KNF) has a localized seed mix that is included in each timber or stewardship contract package. Seeding or planting with shrubs or trees is recommended where noxious weeds could invade or at high value sites.

Scarification with a piece of equipment to a depth of 6–12 inches to roughen the soil surface improves seedling germination and survival by creating microsites. On areas with deep compaction, sub-soiling or other decompaction techniques to the depth of compaction improves the seedbed.

Fertilization is not recommended. Fertilization has been found to increase weed presence through changes in the soil nutrient cycles which favor fast growing opportunistic vegetation.

Non-natural (Aggressive) Restoration

Ripping, Sub-soiling and other Soil Decompaction Techniques

Rehabilitation of soil compaction should be prescribed on a site-specific basis. Those units in the East Reservoir analysis area where such activities should occur in at least one of the alternatives include proposed units 194S, 194T, 330, and 331. For more depth refer to the Soils Resource analysis.

Ripping, sub-soiling, or other decompaction techniques (e.g. using an excavator bucket to pierce the soil surface) are prescribed to accelerate the recovery of compacted soils through reducing bulk density. Several types of equipment are available including rock rippers, large disks, slash-rakes, winged rippers, winged sub-soilers, and excavators with specialized buckets.

The objectives for this technique are to loosen the upper (6–12) inches of soil to allow natural processes (such as root penetration, soil microbial activity, water infiltration, gas exchange, freeze-thaw cycles) to operate and restore soil function and aggregation in the rooting zone. As plants and soil organisms modify soil structure and chemistry, they continue to naturally restore soil process. By providing the building blocks through decompaction, the Northern Region soil quality guidelines are achieved since steps have been made to move the treatment units toward improved soil and site condition.

Ripping or sub-soiling should only be used on severely compacted soils and in relatively small areas, e.g., landings, main skid trails, and temporary roads. Ripping skid trails is appropriate if trails are benched with obvious cut and fill slopes or deeply trenched with obvious outside berms can be accomplished with Timber Sale Contract Provision C(T)6.6.32# Temporary Road and Tractor Road Obliteration. Where soils contain 35 percent or greater rock content such activities may only be marginal in effectiveness (L. Kuennen pers. comm. 2009).

Sub-soiling done correctly does not mix soil horizons or create deep furrows, instead the winged tines and till bars shatter the compaction. Mixing may occur if the tines encounter large rocks or buried logs. To effectively loosen or decompact existing soil conditions, the soils need to be heavily compacted and the compaction needs to be continuous. No evidence of soil resettling on medium textured landings two years after sub-soiling was noted (Carlson 2002, monitoring observation).

Ripping and topsoil restoration on fine textured soils is challenging due to the difficulty of timing field operations to coincide with optimum soil moisture conditions. Sub-soiling significantly reduced the bulk density of soils in heavily used landings with the overall reduction of bulk density dependent on soil texture, with coarser soils showing the greatest improvements in bulk density (Plotnikoff, et al. (2002). In addition to ripping, wood chips incorporated into the soil surface were found successful in reducing bulk densities (B.C. Ministry of Forests 2002, 2000).

The rehabilitation techniques are not expected to immediately reduce historic detrimental soil conditions. However, by breaking up the subsurface compaction, natural processes (such as root penetration, soil microbial activity, water infiltration, and freeze-thaw cycles) will be accelerated and will be more capable of returning the soil to pre-disturbance condition. Within a 5 to 10 year timeframe, the rehabilitated soils are anticipated to more closely resemble the reference condition. The soil productivity of the unit will be improved from its current condition.

The analysis of this project assumes that 50 percent of historic skid trails in ground based units would be reused for units containing 8 percent or greater existing DSD values. Thus for all such units the statistical average of percent DSD was reduced by half to determine an estimated cumulative effects value on a unit-by-unit basis.

Organic Matter Placement

Placing slash on old and new skid trails and leaving slash of various sizes throughout the activity area would occur in conjunction with conventional erosion control measures required under the Timber Sale contract. Such activities are suggested to occur where the greatest impacts to soils dominantly occurs as a result of skid trail convergence (typically lower 25 percent of harvest unit). Such activities are the best way to promote biological activity and reduce soil compaction. Placement of slash on a landing or skid trail would: 1) decrease erosion through the creation of microsites; 2) decrease the amount of surface sealing (caused when mineral soil is exposed to rain); 3) provide shade and associated soil moisture; 4) provide germination substrates and microsites that encourage native species while deterring weedy species; and 5) increase biologic activity and all associated benefits. Such activities are proposed for East Reservoir Units 194S, 194T, 330, and 331. Additionally, such activities should also be used in units with proposed ground based operations that are near a cumulative value of 15 percent DSD. This includes units : 2, 2B, 3, 7, 10, 13, 14, 15, 24, 26, 64, 70T, 73T, 74T, 80, 81, 159A, 183, 190, 190A, 194T, 196, 305, 307, 311, 318, 319, 327, 328, 330, 331, 334, 335, 339, 340, 344, 345, 346, 347, 349, 350 and COE6.

Placing slash on skid trails for erosion control and soil rehabilitation can be effective as it provides a physical buffer between raindrop energy and the bare soil surface. It also reduces soil sealing, raindrop slash soil particle detachment, and provides roughness and microsites for the settling and storage of any soil movement. In addition, placing slash on skid trails improves soil productivity by providing fines to the bare forest floor ameliorating (lessening) soil heating, providing microsites for plant establishment, and improving soil water retention. Where available such activities would aid in increasing the biological resiliency and native plant re-establishment.

Suggested Slash Depth and Coverage (Erosion Control, Site Amelioration)

Place slash (all size classes, both <3” and greater than 3”) in conjunction with erosion control measures on all sites where material is available. Ensure contact with the soil surface. Measure coverage at the time of placement. The retaining tons of woody material are dependent if harvest

prescription is regeneration harvest operations and what the VRU is for that timber stand (refer to soils table 10 of soils report).

Landing Rehabilitation

In contrast to temporary roads, landings do not generally require cut and fill operations provided they are correctly sited. Selection of a relatively flat area is the prime consideration.

Abundant rock fragments in surface soil layers also reduce the overall level of soil compaction. In some instances, the presence of grassland vegetation in an area may indicate soil conditions that make sites unsuitable for use as landings. Examples include: areas of shallow groundwater (wet soils), or heavy clay soil textures.

Burning of large slash piles on a portion of the landing has the potential for creating DSD immediately below the pile due to severe burning. In extreme cases, this could reduce long-term soil productivity of the mineral soil resource itself due to changes associated with extremely high soil temperatures. Loss of organic substrates and coarse woody debris are the most obvious impacts of burn piles. These would likely be temporal impacts and in most cases can be mitigated. Unlike extreme wildfires, burned areas under slash piles are isolated from adjacent burned areas. While significant soil impacts occur at landings, the topsoil resource remains largely intact so long as adequate erosion control is provided.

In order to minimize the effects from landing construction and burning of landing slash, the following design features and mitigation measures will be incorporated into the timber sale contract.

Constructed landings should be rehabilitated on a unit specific basis as soon as possible by the purchaser if the timber sale is still active by doing the following:

- Spread larger woody material on landing where available following harvest activity.
- Machine-scarify the soil surface to improve moisture drainage characteristics in areas of high intensity burns where soils contain hydrophobic conditions. Depending on soil texture, access, and existing recovery levels, the landing could be sub-soiled or ripped. Avoid turning the soil. Recontour previously excavated and graded material back across the landing site to re-establish natural contours. Re-spread the surface soil back over the scarified or re-contoured landing.
- Seed with grasses and forbs or plant shrubs/trees on the site (per C6.601 – Erosion Control Seeding).

Note that currently the FS normally burns landings following harvest operations. If available such activities could be funded through KV funds to treat landings following harvest operations if the purchaser is no longer available and the sale has closed. Where the purchaser is responsible for treating burned landing area – purchaser would have to burn landing.

Skyline Corridor Rehabilitation

Skyline corridor concerns may be present on a site-specific basis in areas of concern due to a lack of single-end suspension or deflector problems. In such areas the exposed mineral soil should be water-barrred (B(T)6.65 – Skid Trails and Fire Lines), seeded, and fertilized (C(T)6.601 – Erosion Control Seeding). In lieu of (or in conjunction with conventional EC measures) water-barring in

some cases, erosion control measures involving slash placement on exposed mineral soil areas can be more effective at reducing erosion. Such activities apply to Unit 194S.

Road Intermittent Stored Service

Following the KNF Intermittent Stored Service/Decommissioning Policy, the roads listed in tables 2.9 and 2.21 (DEIS chapter 2) would be placed in Intermittent Stored Service (ISS). The identified roads would be placed in a condition that there is little resource risk if maintenance is not performed (FSH 5409.17-94-2).

Closure of Temporary Roads

Many factors can affect the actual level of DSD created at landings or along temporary roads. These same factors determine both the suitability and effectiveness of different mitigation procedures. For temporary roads, it is assumed that some blading of the road bed would occur prior to the start of harvesting and that trees along the road corridor would be tipped over and removed, root ball and all. Topsoil loss would be the major concern. Topsoil displacement and mixing with underlying subsoil is inevitable. Not all of the topsoil resource would be lost; however, as much of it would just be redistributed to the downslope side of the road. Soil compaction and loss of organic substrates are also issues along temporary roads. Despite a lot of attention, these are secondary and more short-term concerns on temporary roads than potential topsoil loss.

Factors affecting the level of DSD created along temporary roads include steepness of the terrain, soil texture and the amount of rock fragments in both the topsoil and underlying subsoil horizons, as well as the depth of blading. Within the constraints of suitable road construction standards, depth of blading should be minimized to the extent practical during road construction if maintaining soil productivity within the road corridor is a consideration.

The degree of lost soil productivity in the road corridor would often depend on differences in soil properties of topsoil layers relative to underlying subsoil. If little difference exists, both are good or both are poor, then changes in soil productivity would be limited. If there are dramatic differences in soil chemical and/or physical properties between topsoil and subsoil layers, then loss of topsoil layers would result in a significant loss of soil productivity. If the primary difference between topsoil and subsoil is in the amount of soil organic matter and organic substrates, then lost soil productivity may be dramatic at the start but would recover over time. In soils that are shallow or very shallow over bedrock, removal of the topsoil layer would result in permanent loss of soil productivity.

Table 18 provides a listing of those harvest units where temporary road scarification would be required on a unit-by-unit basis in at least one of the proposed alternatives of the East Reservoir analysis area. Such concerns can be addressed on a unit specific basis by scarification and seeding the road prism and pulling slash material onto the temporary road prism where present. Such activities would occur on all temporary road prisms by the contractor when harvest activities are completed.

Table 16. Calculated DSD Related to Temporary Road Construction

| Temporary Road # | Length (miles) | Unit # | Unit Acres Alt 2/Alt 3 | Road DSD by Unit (ac) Alt 2/Alt3 | Percent (5%) DSD Related to Temporary Road by Unit Alt 2/Alt3 |
|------------------|----------------|--------|------------------------|----------------------------------|---|
| T5 | 0.2 | 17 | 68/68 | 0.4/0.4 | <1/<1 |
| T6 | 0.4 | 22 | 83/83 | 0.8/0.8 | 1/1 |
| T14 | 0.1 | 318 | 131/0 | 0.2/0 | <1/0 |
| T25 | 0.5 | 31 | 698/698 | 1.0/1.0 | <1/<1 |
| T25 | 0.1 | 197 | 24/24 | 0.2/0.2 | 1/1 |
| T28 | 0.4 | 345 | 45/45 | 0.8/0.8 | 2/2 |
| T37 | 0.1 | 340 | 266/266 | 0.2/0.2 | <1/<1 |
| T42 | 0.2 | 362 | 192/0 | 0.4/0 | <1/0 |
| T43 | 0.3 | 362 | 192/0 | 0.6/0 | <1/0 |
| T42 | 0.2 | 362B | 0/40 | 0/0.4 | 0/1 |
| T43 | 0.3 | 362C | 0/39 | 0/0.6 | 0/2 |
| T44 | 0.2 | 150 | 103/40 | 0.4/0.4 | <1/1 |
| T45 | 0.3 | 49 | 64/64 | 0.6/0.6 | 1/1 |
| T53 | 0.4 | 148 | 77/40 | 0.8/0.8 | 1/2 |
| T54 | 0.2 | 344 | 73/64 | 0.4/0.4 | 1/1 |
| T55 | 0.3 | 343 | 100/93 | 0.6/0.6 | <1/<1 |
| T57 | 0.3 | 23 | 146/146 | 0.6/0.6 | <1/<1 |
| T58 | 0.2 | 179 | 76/0 | 0.4/0 | 1/0 |
| Alt 2 | 4.3 | | | 8.6 | |
| Alt 3 | 4.1 | | | 8.2 | |

^aRoad length rounded to the nearest tenth of a mile.

^{*}Only those units where new temporary road construction would be required are listed above.

Temporary roads and landings locations and construction standards for the sale(s) would be agreed upon by the Forest Service (FS) and purchaser. These areas would be constructed and used in adherence to BMPs and RHCAs to minimize their impacts to soils. Instances where a controlled temporary road location is desirable, timber sale contract provisions C(T)5.1 (Construction of Temporary Roads in Sensitive Areas) and/or C(T)5.102 (Construction of Temporary Roads) may be used.

Prevention versus Rehabilitation

The results of a study completed by Rawinski and Page (2008) and Powers and others (2005) indicate that sites with low recovery rates were sites located in frigid temperature regimes. These studies concluded that perhaps freeze-thaw cycles in cool, temperate and boreal life zones are not particularly effective of ameliorating the impact of soil compaction below 10 cm. As a result, prevention of soil compaction is generally preferred over restoration measures. Careful design and spacing of skid trails can keep soil impacts within soil standards. Winter logging on snow or frozen conditions can also minimize soil impacts. Alternatively, operating on dry soil conditions

can be useful in managing soil impacts. Use of a winged subsoiler to ameliorate soil compaction concerns can bring areas considered detrimentally disturbed and exceeding the 15 percent DSD threshold back down to and below the threshold levels for both aerial extent and compaction.

Unit Specific Rehabilitation Plan

Analysis for DSD found all units except proposed commercial thin Units 194T, 194S, 330, and 331 would meet Northern Region SQS after implementation. Regarding Units 194T, 194S, 330, and 331 the existing measured DSD value was found to be 14 percent (2010–2011 soil surveys). As a result, the post-harvest cumulative DSD values were all found to exceed 15 percent DSD values. Based on these values the restoration goal for these units will be to return the soils back to 15 percent or lower DSD levels within a 3-year timeframe following harvest activities. These activities are described below. Where post-harvest DSD values are calculated to exceed 15 percent project design standards includes incorporating slash material during skid trail scarification and lay-back in proposed harvest units. In these units, slash would be placed by the purchaser as part of timber harvest contract requirements to control erosion and provide organic matter for forest floor function.

Rehabilitation of soil resources ties to direction in the forest plan, NFMA and the Northern Region SQS. The use of rehabilitation techniques in site-specific instances would move areas of soil disturbance towards improved site potential at a faster rate than if no rehabilitation techniques are used. It is estimated that rehabilitation would reduce soil and forest floor recovery to approximately 20 to 40 years. Without rehabilitation, recovery of soil and forest floor process and function would be expected to take greater than 40 years.

Skid Trails

Skid trails have a much lower level of proportion of detrimental soil disturbance than either temporary roads or landings. They are also more likely to recover over time providing adequate erosion control measures. The amount of material being removed from a stand would determine how many trips would be made along skid trails. Fuel treatments require fewer trips than clearcutting. In general, fewer trips means less DSD although some research indicates that most of the soil compaction occurs the first couple of passes of equipment (Han, et al. 2006).

Under timber sale contract provision C(T)6.4# (Conduct of Logging) re-use existing skid trails where possible and feasible. Upon completion of harvest the contractor would obliterate skid trails and rehabilitate landings in order to reduce the detrimental soil disturbance values over time include Units 17, 22, 23, 31, 49, 148, 150, 179, 194T, 194S, 197, 318, 330, 331, 340, 343, 344, 345, 362, 362B, and 362C (refer to Soils Resource Report).

Soil Recovery Trends on the KNF Following Harvest Operations

Currently a research study is on-going which is subjectively comparing post-harvest soil disturbance values with re-sampled unit DSD calculations. This study has just began in the spring of 2012 but has already displayed remarkable decreases in currently existing DSD values as compared to what was sampled by L. Kuennen between 1992–2006.

Season of Operation and Impact on Soils Requirements

The KNF identified a number of units in the East Reservoir analysis area where soils, weed species, and/or archeology are a factor of concern. As a result these units are recommended for winter harvest operations to reduce potential impacts.

Winter Tractor Based on Archeology

The East Reservoir analysis area contains two units where winter operations are required based on archeology concerns. These are proposed harvest Units 1 and 1A. This is required based on the fact that harvest of these units during the winter season is less likely to disturb existing historical sites. As a result, it is expected that the DSD results associated with harvesting Units 1 and 1A will be 50 percent of what is expected during summer operations under both Alternatives 2 and 3.

Winter Tractor Based on Noxious Weeds

An additional restoration activity would be the treatment of weeds in the project area, primarily on landings and roads. The presence of noxious weeds alters vegetative cover and soil stability especially on droughty soils. Knapweed on droughty soils effectively reduces the cover of native plant species through allelopathic chemicals and the plant itself does not provide good soil cover or rooting structure. Treating noxious weeds would increase soil productivity over the long term, greater than 5 years. One of the best ways to treat noxious weeds is through avoidance of spreading. Such activities can be accomplished by harvesting during winter seasons. This is also expected to benefit soils and reduce soil compaction by operating heavy equipment on frozen soils. Such conditions lead to significantly lower over DSD as a result of harvest activities. As a result the following units will be winter harvested based on weed concerns: 2C, 2D, 3A, 9, 11, 17, 28, 157, 158, 158A, and 306. As a result, it is expected that the DSD values will be 50 percent of what is expected during summer operations.

Winter Tractor Units Based on Soils

Post-harvest soil monitoring data collected from the KNF (1992–2012) has displayed an overall reduction of approximately 50 percent in DSD when comparing winter tractor to summer tractor operations. As a result it was determined for those units with currently existing higher DSD values to propose such units be harvested in the winter season on frozen grounds. The following units were identified as winter tractor operations: 2, 2B, 3, 7, 10, 13, 14, 15, 24, 26, 64, 70T, 73T, 74T, 80, 81, 159A, 183, 190, 190A, 194T, 196, 305, 307, 311, 318, 319, 327, 328, 330, 331, 334, 335, 339, 340, 344, 345, 346, 347, 349 and 350.

Appendix 8—Forest Plan Standards and Guidelines

Kootenai National Forest Plan/INFS

Prior to 1995 the Forest Plan contained only qualitative direction, which could be used to measure existing fisheries habitat conditions or possible effects of management activities on populations or habitat (discussed below). In 1995 standards and guidelines were developed through the Inland Native Fish Strategy (INFS). This strategy is intended to provide interim direction for forest management on National forests, including the Kootenai. The purpose of INFS is to maintain options for native fish by reducing the risk or loss of populations and reducing potential negative impacts to aquatic habitat.

Goals and Objectives (II-1 thru II-12)

The goals outlined in the forest plan include:

- Construct and reconstruct roads only to the minimum standards necessary to prevent soil loss and maintain water quality.
- Meet or exceed State water quality standards.

In order to accomplish these goals the following objectives were identified:

Timber

The amount of timber harvest allowed will depend on the rate of hydrologic recovery after timber has been removed. The soil and water conservation practices specified in FSH 2509.22 will be applied during Forest Plan implementation to ensure that Forest water quality goals are met.

Soil and Water

Ground disturbing activities such as road construction, road reconstruction, and timber harvest will be accompanied by mitigating measures to prevent or reduce increases in sedimentation and stream channel erosion. The amount of timber harvest allowed will depend on the rate of hydrologic recovery after timber has been removed. Soils and water conservation practices as outlined in the Soil and Water Conservation Practices Handbook (FSH 2509.22) or those activities or standards, which will prevent or reduce stream sedimentation will be implemented. Examples include; location of roadbeds out of stream bottoms, design of stream crossing structures to allow water to freely pass, rock surfacing of roads at stream crossings, keeping equipment from operating in or alongside streams, and maintenance of roads to allow proper drainage. These practices will be implemented in order to maintain water quality. Each project plan for which the use of heavy equipment is required shall evaluate the effect of operating that equipment on soil productivity.

Riparian Areas

Site specifically identify and map all riparian areas on the Forest before project activity.

Forest Plan Standards

Protect and maintain important riparian zone features, marshes, and water bodies.

Soil and water conservation practices as outlined in the Soil and Water Conservation Practices Handbook (FSH 2509.22) will be incorporated into all land use and project plans as a principal mechanism for controlling non-point pollution sources and meeting soil and water quality goals and to protect beneficial uses. Activities found not in compliance with the soil and water conservation practices or State standards will be brought into compliance, modified, or stopped.

A floodplain/wetlands analysis will be made for all management actions involving wetlands, streams, or bodies of water.

Each project plan for which the use of heavy equipment is required shall evaluate the effect of operation that equipment on soil productivity as described in the Soil and Water Objectives portion of the forest plan.

Projects involving significant vegetative removal will, prior to including them on implementation schedules, require a watershed cumulative effects feasibility analysis to ensure that water yield or sediment will not increase beyond acceptable limits. The analysis will also identify opportunities, if any exist, for mitigating adverse effects on water-related beneficial uses.

Riparian Areas (II-28 thru II-33)

The goal for riparian area management is to manage the vegetation to protect the soil and water resources and to provide high quality water and fisheries habitat.

Riparian Area Standards

Assure that there are streamside timber stands to provide for log and debris recruitment necessary for sufficient pool development and organic energy (organic debris) into the aquatic ecosystem.

Identify the riparian areas in each allotment that domestic livestock can use. Prevent livestock use of other than permitted segments of riparian areas.

Simultaneous openings resulting from timber harvest on both sides of a stream are not permitted, unless the results can be shown to be an enhancement for the riparian area.

Dozer scarification and landings are not permitted in riparian areas unless the results can be shown to be an enhancement of the riparian area.

Special uses, rights of way and cost share roads are permitted and riparian area management objectives will be incorporated into all agreements and permits.

Roads that parallel streams will be located at a distance determined by sediment transport models, and outside the 100-year floodplain.

When funds for road maintenance are limited, roads and drainage structures in riparian zones will be a top priority.

Necessary stream course crossings will insure fish passage, non-erosive water velocities and channel stability, and insure erosion control on cuts, fills and road surfaces.

Road closures will be used to protect the riparian habitat and values.

Inland Native Fish Strategy (INFS)

INFS includes eight riparian goals listed below that establish the characteristics of healthy, functioning watersheds, riparian areas, and associated fish habitats. Also included in INFS are interim riparian management objectives (RMO) (discussed below) that are indicators of ecosystem health, are quantifiable, and are subject to accurate repeatable measurements. In order to reach the goals of INFS standards and guidelines are outlined which apply to riparian habitat conservation areas (RHCA) and to projects and activities in areas outside RHCAs that would degrade RHCAs. All activities occurring on Forest Service lands are required to meet the standards and guidelines outlined in INFS.

Since the quality of water and fish habitat in aquatic systems is inseparably related to the upland and riparian areas within watersheds, these goals were established to maintain or restore watershed, riparian and stream channel conditions including:

1. Water quality.
2. Stream channel integrity, channel processes, and the sediment regime under which the riparian and aquatic ecosystems developed.
3. Instream flows to support healthy riparian and aquatic habitats, the stability and effective function of stream channels and the ability to route flood discharges.
4. Natural timing and the variability of the water table elevation in meadows and wetlands.
5. Diversity and productivity of native and desired non-native plant communities in riparian ecosystems.
6. Riparian vegetation to: provide an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems; provide adequate summer and winter thermal regulation within the riparian and aquatic zones; help achieve rates of surface erosion, bank erosion, and channel migration characteristics of those under which the communities developed.
7. Riparian and aquatic habitats necessary to foster the unique genetic fish stocks that evolved within the specific geo-climatic region.
8. Habitat to support populations of well distributed native and desired non-native plant, vertebrate and invertebrate populations that contributes to the viability of riparian dependent communities.

Riparian Management Objectives (RMO)

The Inland Native Fish Strategy identifies 6 parameters (RMOs) using stream inventory data for pool frequency, large woody debris, bank stability and lower bank angle, width to depth ratio, and water temperature. These objectives have been determined to be good indicators of ecosystem health and represent a good starting point to describe the desired condition for fish habitat. These RMOs for stream channel conditions provide the criteria against which attainment or progress toward attainment of the riparian goals are measured. Actions that reduce habitat quality, whether existing conditions are better or worse than objective values, would be inconsistent with the purpose of this interim direction (INFS EA, page E-3).

of Pools – Pool frequency has been identified as the key feature in meeting the life history requirements of fish communities inhabiting a watershed. Pools are the least common stream habitat component in a watershed. They are also sensitive to non-point land use effects. Most fish species use pools at some stage in their lifecycle, and pools are particularly important as extreme low-flow refuge habitat. Pools are bowl shaped depressions in the stream channel where the stream surface is nearly flat. The desired pool frequency varies by channel width with larger stream channels having fewer pools.

Pieces Large Woody Debris – large woody debris (LWD) in forested streams is critical to habitat composition and cover for fish populations. It is important in pool formation, channel bank stability, fine sediment and gravel storage, and organic nutrient storage (USDA Forest Service, 1994b). A decrease in LWD can have major effects on these physical habitat parameters. Channel and bank instability resulting from decreases in LWD can have a direct effect on survival of some juvenile salmonids during peak flow events (Reimer and McIntyre 1993). Loss of habitat formed by LWD reduces overwinter survival of fish. LWD also creates structure for storing spawning gravel. Reduction in LWD could result in less spawning area and decreased natural production. In addition, nutrient stored in the fine sediment trapped by the LWD and the wood itself is used by macroinvertebrates which are a food source for fish (USDA Forest Service, 1994b).

LWD is the tree stems that are (or will be) part of the stream channel structure. Woody debris comes in four varieties, fine particulate matter being transported by the streamflow, coarse particulate matter that is temporarily stored on the stream bottom (leaves and stem fragments), small woody debris (stems) that are larger than 4" at its largest end and large woody debris that is larger than 6" at its largest end. The desired situation and that which was used to measure large woody debris would be 1 piece, >12" in diameter, and greater than 35' long, every 250 feet of stream length.

Bank (channel) Stability – bank stability looks at the stability of streambanks rather than the whole channel. This is different than the Pfankuch channel stability procedure used for many years in determining water yield increases on the Kootenai, although the relative condition of the stream channel would be considered similar with either measurement. Fisheries research has found that the channel stability survey has enough bias and variability in it that fish abundance is not related to that estimate. A variety of species use streambanks as cover at some time of the year. By measuring this habitat element, we directly measure hiding cover availability and indirectly approximate the availability of other types of cover that disappear as streambanks erode and send sediment downstream. Stream channel stability is determined from observation of a series of channel parameters and given a numerical rating based on those observations. Channel stability for a given stream reach for that particular set of parameters is then determined as fair, good or poor. By using both bank and channel stability measurements we are able to identify weak links in the stream system. The percent stable banks have a desired level of 80 percent.

Stream Temperature – temperature is a major factor affecting fish survival, distribution, production, and community composition in forest streams of the Pacific Northwest (Beschta, et al. 1987). Elevated temperatures from exposed riparian areas are expected to increase summer daily temperatures. What we want to know is whether a stream is near or above the thermal maximum for cold-water biological communities or whether there is an extreme range in temperatures over the course of several days. INFS recommends no measurable increase in maximum water temperature (7 day moving average of daily maximum temperature measured as the average of the maximum daily temperature of the warmest consecutive 7 day period).

Maximum water temperatures below 59 degrees within adult holding habitat and below 48 degrees within spawning and rearing habitats.

Width/Depth Ratio – There are two Rosgen channel types that naturally meet the standards identified in INFS for this parameter. Types B and C have a width/depth ratio greater than 12. These RMO standards need to be adjusted to match geomorphic stream types and not attempt to make all streams fall into a single category this will better match conditions on the Kootenai National Forest.

Riparian Habitat Conservation Areas (RHCA)

RHCAs are portions of watersheds where riparian dependent resources receive primary emphasis and management activities are subject to specific standards and guidelines. RHCAs include traditional riparian corridors, wetlands, intermittent streams and other areas that help maintain the integrity of aquatic ecosystems by (1) influencing the delivery of coarse sediment, aquatic matter, and woody debris to streams, (2) providing root strength for channel stability, (3) shading the stream and (4) protecting water quality (Naiman, et al. 1992). In order to reach the goals of INFS, standards and guidelines are outlined which apply to RHCAs and to projects and activities in areas outside RHCAs that would degrade them.

Appendix 9—East Reservoir Monitoring Plan

Table 17. East Reservoir Monitoring Plan Table

| Resource | Objective | Timing | Methodology | Responsibility |
|-------------------|--|---|--|------------------------------|
| Forest Vegetation | Monitor silvicultural prescription implementation | After project implementation | Check all units following harvest to document existing condition, and recommend future stand treatment needs | Silviculturist |
| Forest Vegetation | Ensure reforestation success | After project implementation | Monitor all regeneration units for reforestation success. | Silviculturist |
| Soils | Ensure compliance with Northern Region soil quality standards | During the life of the timber sale | Monitor harvest units for compliance with Northern Region soil quality standards as described in the KNF Plan Monitoring and Evaluation Report for Fiscal Year 2011 (project file). | Soil Specialist |
| Fuels | Ensure the fuel treatments are effective | After project implementation | Monitor the fuel treatments on a minimum of 10% of the units to ensure objectives are met. | Fuels Specialist |
| Botany | Ensure viability for sensitive plants, particularly taper-tipped onion | Through the prescribed burning covered in project | Monitor the effect of weed control and burning on rare plant populations. Monitor overall weed control efforts. Monitor status of sensitive plants within the project area during and after treatments. | Botanist |
| Wildlife #1 | Collect reserve tree and snag numbers | During the marking of the regeneration units that require leave tree marking | Conduct a representative sample of units within each VRU (2 units in each VRU represented in the Analysis Area). This item would provide baseline numbers for monitoring items #2 and #3 below. The timber marking crew would tally snag and reserve tree numbers during marking and only in those regeneration harvest units with leave tree marking. | Timber/Pre-sale Marking Crew |
| Wildlife #2 | Monitor snag retention | After harvest and site-preparation has occurred, but generally within five years from end of harvest. | Within those regeneration harvest units surveyed in #1(above) to determine if snag management strategies are meeting Forest Plan cavity habitat direction. Work would be completed concurrent with reforestation surveys. | Silviculture Crew |
| Wildlife #3 | Monitor reserve tree retention within those regeneration harvest units surveyed in #1 (above). | After harvest and site-preparation have occurred, but generally within five years from the harvest. | Maintenance of reserve trees insures that future cavity-nesting habitat and down woody recruitment is available to help provide future denning, feeding, and nesting habitat. Work would be completed concurrent with reforestation surveys. | Silviculture Crew |

Appendix 9—East Reservoir Monitoring Plan

| Resource | Objective | Timing | Methodology | Responsibility |
|-----------------|--|---|--|---|
| Wildlife #4 | Monitor the changes created by vegetative treatments on the attributes of old growth in treatment units | Pre-treatment surveys. Two post-treatment surveys, at one and five years. | Conduct pre- and post-treatment surveys to collect vegetation data on a representative sample of units. Data must, at a minimum, include snags, coarse woody debris, large trees, basal area, canopy closure, and structural layers (Green, et al. 1992). Conduct these surveys to collect vegetation data using the common stand exam process. Data collected by the Common Stand Exam has broader application both forest and region wide. | District Silviculturist, Fire Management Officer |
| Hydrology | Ensure continued stream function, stability, and high water quality | After project implementation | Resurvey all Rosgen Level II and KNF Level III Fish Habitat sites in East Reservoir analysis area. | Hydrologist |
| Hydrology | Implementation and effectiveness of applicable BMPs. | During and immediately following project activities. | BMP inspection reports and/or Timber Sale Inspection Reports. Inspection reports would be completed as part of the annual district BMP effectiveness monitoring program. | Timber Sale Administrator, Engineering Representative/COR, Hydrologist, IDT. |
| Hydrology | Ensure continued stream function, stability and high water quality. | On going | Monitor TSS and discharge at the USGS site. | Hydrologist |
| Hydrology | Monitor protection and management of stream channels, riparian areas, and riparian habitat conservation areas during timber harvest and road reconstruction. | During implementation of activities that occur in or near riparian areas or wetlands. | This monitoring would occur as a fundamental component of timber sale administration. | Timber Sale Administrator, Engineering Representative/COR, District Hydrologist |
| Hydrology | Monitor success of revegetation efforts on disturbed sites. | During initial seeding and the years following | Field inspection of seeded sites at the close of the sale and 2 to 3 years after the sale. Additional seeding would then be done if the success rate is low. | Timber Sale Administrator, District Hydrologist |
| Hydrology | Water quantity and quality monitoring. | On going | Field collection of stream flow, temperature, and suspended sediment samples, following USGS protocols | District Hydrologist |
| Hydrology | Channel geometry monitoring to assess trends in channel condition | Every three to five years for sites within the planning subunit | Repeated cross-section and channel geometry surveying in designated and monumented reaches | District Hydrologist |

| Resource | Objective | Timing | Methodology | Responsibility |
|-----------------|---|---------------|--|---------------------------|
| Weeds | Noxious weed control | On going | Monitor/survey the project area for new invader weed species. Monitor weed population levels in treated areas, with particular emphasis on haul routes, stored roads, and landings. Pre- and post-activity surveys for areas scheduled for burning | Weed Specialist, Botanist |
| Recreation | Ensure compliance with road/trail closures. | On going | Bi-annual monitoring of motorized vehicle closure devices and effective closure of ATV trespass trails. | Recreation Specialist |

Appendix 10—Montana Airsheds and Impact Zones

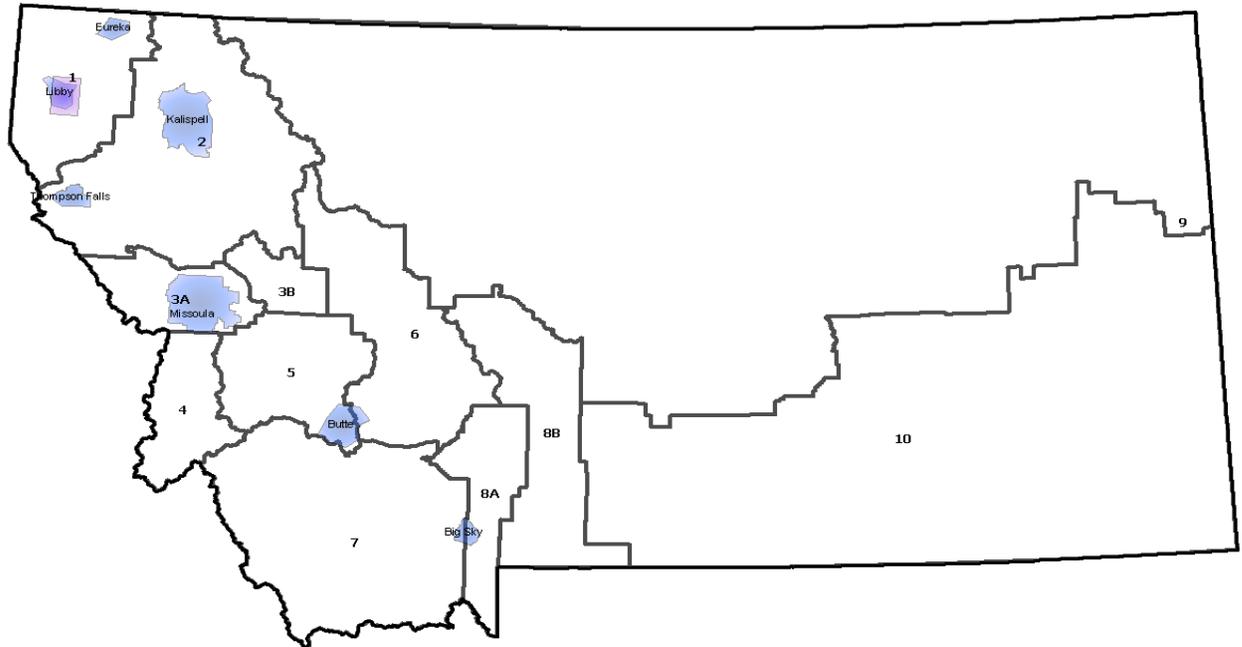


Figure 1. Montana Airshed 1 and 2 Boundary Descriptions

1) **Airshed 1** contains all of Lincoln County and the northwest tip of Sanders County. The area of Sanders County included is bordered on the north and east by Lincoln County, on the west by the Idaho border, on the south by the southern edge of the Beaver Creek drainage, through Noxon Reservoir, and the southern edge of the Vermillion River drainage.

- The **Libby Impact Zone**, within Airshed 1, includes all land within the following described areas: Beginning at Kootenai Falls (1), going southeast to Scenery Mountain (2), then south to Indian Head (3), then south to Treasure Mountain (4), then south to Mount Snowy (5), then east to Double N Lake (6), then across Highway 2 going northeast to McMillan Mountain (7), then north to Swede Mountain (8), then northeast across Highway 37 to the Vermiculite Mine (9), then west to Sheldon Mountain (10), then west-northwest to Flagstaff Mountain (11), then southwest to Kootenai Falls (1), the point of the beginning.

2) **Airshed 2** contains all of Flathead and Lake Counties and all of Sanders County except for the northwest tip (described in paragraph 1), which is part of Airshed 1. Airshed 2 also contains the northern portions of Missoula and Powell Counties, which lies in the Swan River drainage, and the South Fork of the Flathead River drainage. The boundary here is the divide between the Swan River and the Clearwater River drainages in Missoula County and the divide between Monture Creek and the South Fork of the Flathead River drainage in Powell County. Also, the northern

half of Mineral County (that portion north of Superior) is included in Airshed 2. This line runs east and west between T16N and T17N, M.P.M., then north along Mineral County to Sanders County line.

- The **Kalispell Impact Zone**, within Airshed 2, includes all land within the following described area: Beginning in the town of Hungry Horse, cross the Flathead River and head northwest to Teakettle Mountain, then west-southwest to a point on Trumbull Creek between sections 24, 25 in T31N, R21W. Go directly west to the corner of sections 20, 21, 28, and 29 in the same township and range, then head north to the corner of sections 16, 17, 20, and 21, same township and range. Now head west to the line that divides R21W and R22 W, then north to Big Mountain, then southwest down Big Mountain Ridge face toward Whitefish Lake at a point just southeast of where Hell Roaring Creek enters the lake. Cross the lake to a point called “Vista” in section 9, T31N, R22W, and then generally follow the higher points, through Woods Lake, Murray Lake, crossing Highway 93 in section 24, T31N, R23W. Continue through Little Bootjack Lake and follow the high points generally west-southwest to a point on Tally Lake where Logan Creek enters the lake. The boundary crosses the lake generally south-southwest to Talley Mountain, then generally south to Reid Point Lookout, then south along the 39 “Reid Divide” to the boundary between T30N, T29W, and R23W, and R24W. Turn southeast and follow the ridge to a point on Big Lost Creek in section 16, T29N, R23W, then follow the ridge around to “McMannamy Draw” in section 26, T29N, R23W, then generally following the ridges South to Boorman Peak and then South along the Pack Trail to a point where “Dower Draw” enters Ashley Creek. Cross Ashley Creek to a point at the foot of the ridge in section 19, T27N, R22W, then follow this ridge up to Wild Bill Mountain, then straight to Eagle Mountain, then straight to Blacktail Mountain, then generally northwest to Lion Mountain, then head straight southeast through Baldy Mountain, and on to the Flathead/Lake County line on Highway 93 in section 33, T26N, R20W. Boundary now head directly east across Flathead Lake to Highway 35 and then follows the shore line north along the Flathead/Lake County line to the corner of sections 4, 5, 8, and 9 in T26N, R19W, then directly north to Hash Mountain, then straight to Doris Mountain then straight to Columbia Mountain and finally straight back to the start point in the town of Hungry Horse, the point of the beginning.

Appendix 11—Forest Plan Amendments

The East Reservoir Environmental Impact Statement would suspend the following four project-specific Forest Plan standards in order to implement Alternative 2 with modifications.

Project-specific Amendment #1

The current standard for Management Area 15, Visual Objective Standard #4 (Forest Plan, Vol. 1, p. III-65) is: "The Visual Quality Objective (VQO) is maximum modification."

The Kootenai National Forest Plan, page III-65, in Management Area 15 (MA15) is modified for Recreation Standard #4, to suspend the requirement that the VQO is maximum modification, in the East Reservoir project area. Proposed logging in the selected alternative would result in unacceptably moderate (UM) visual quality in areas for a period of 15-25 years. The modification applies only to the project area that is located on the Libby Ranger District. Please see the map in the EIS.

The Forest Plan states "If it is determined during project design that the best way to meet the goals of the Forest Plan conflicts with a Forest Plan standard, the Forest Supervisor may approve an exception to that standard for that project."

This project-specific amendment allows achievement of the overall Forest Plan goal for MAI 5 which is "timber production using various standard silviculture practices while providing for other resource values such as soil, air, water, wildlife, recreation and forage for domestic livestock." (FP, Vol. 1, pg. 111-64). Project-specific amendments must comply with the National Environmental Policy Act procedures. Compliance with these procedures and rationale for this project-specific amendment is contained in the East Reservoir Project DEIS, FEIS and draft ROD.

Project-specific Amendment #2

"The Visual Quality Objective (VQO) of maximum modification in areas of low visual significance, modification in areas of moderate visual significance, and partial retention in areas of high visual significance, unless infeasible when attempting to meet the goals of the management area" (Forest Plan, Volume I, page 111-48).

The Kootenai National Forest Plan, page III-48, in Management Area 12 (MA12) is modified for Recreation Standard #2 to suspend the requirement that the VQO is maximum modification, in the East Reservoir project area in areas of low visual significance. Proposed logging in the selected alternative would result in unacceptably moderate (UM) visual quality in areas of low visual significance for a period of 15-25 years. The modification applies only to the project area that is located on the Libby Ranger District. Please see the map in the EIS.

The Forest Plan states, "If it is determined during project design that the best way to meet the goals of the Forest Plan conflicts with a Forest Plan standard, the Forest Supervisor may approve an exception to that standard for the project."

This project-specific amendment allows achievement of the overall Forest Plan goal for MA 12 which is to maintain or enhance non-winter big-game habitat and produce a programmed yield of timber (FP, Vol. 1, pg. 111-48) Alternative 2 with Modifications proposes activity in big game habitat. This begins the process of shifting the cover/forage ratio toward one more suitable for elk with no reduction in security (FEIS, Ch. 3, pg. 226).

Project-specific amendments must comply with the National Environmental Policy Act procedures. Compliance with these procedures and rationale for this project-specific amendment is contained in the East Reservoir Project DEIS, FEIS, and draft ROD.

Project-specific Amendment #3

"The minimum Visual Quality Objective (VQO) is modification." (Forest Plan, Volume I, page 111-69).

The Kootenai National Forest Plan, page III-48 in Management Area 16 (MA16) is modified for Recreation Standard #4, to suspend the requirement that the VQO is modification, in the East Reservoir project area. Project activities, specifically timber harvest, will result in maximum modification visual quality for a period of 15 to 25 years. The modification applies only to the project area that is located on the Libby Ranger District. Please see the map in the EIS.

The Forest Plan states, "If it is determined during project design that the best way to meet the goals of the Forest Plan conflicts with a Forest Plan standard, the Forest Supervisor may approve an exception to that standard for the project."

This project-specific amendment allows achievement of the overall Forest Plan goal for MA16 which is to produce timber while providing for a pleasing view (FP, Vol. 1, pg. 111-69). Visually, within 15-25 years of the proposed treatments, intermediate/tall shrubs and tree regeneration would be noticeable in the treated areas (FEIS, Ch. 3, pg. 376). These larger patch-sized stands will result in a more pleasing view in the long term.

Project-specific amendments must comply with the National Environmental Policy Act procedures. Compliance with these procedures and rationale for this project-specific amendment is contained in the East Reservoir Project DEIS, FEIS, and draft ROD.

Project Specific Amendment #4

"Maximize edge effect within economical timber harvest constraints, by shaping timber harvest units and maintain movement corridors of at least two sight distances between openings. When the edge is maximized, the shape becomes more important than the size of the units, but generally the unit size should not exceed: elk and mule deer - 40 acres or less; moose and whitetail deer - 20 acres." (Forest Plan, Volume I, page 111-49).

The Kootenai National Forest Plan, page 111-49, in Management Area 12 (MA12) is modified for the Wildlife and Fish Standard #7, to maintain or enhance non-winter big-game habitat, in the East Reservoir project area. Harvest unit sizes within MA 12 will exceed the recommendation for elk (40 acres) and whitetail deer (20 acres). The modification applies only to the project area that is located on the Libby Ranger District. Please see the map in the EIS.

The Forest Plan states, "If it is determined during project design that the best way to meet the goals of the Forest Plan conflicts with a Forest Plan standard, the Forest Supervisor may approve an exception to that standard for the project."

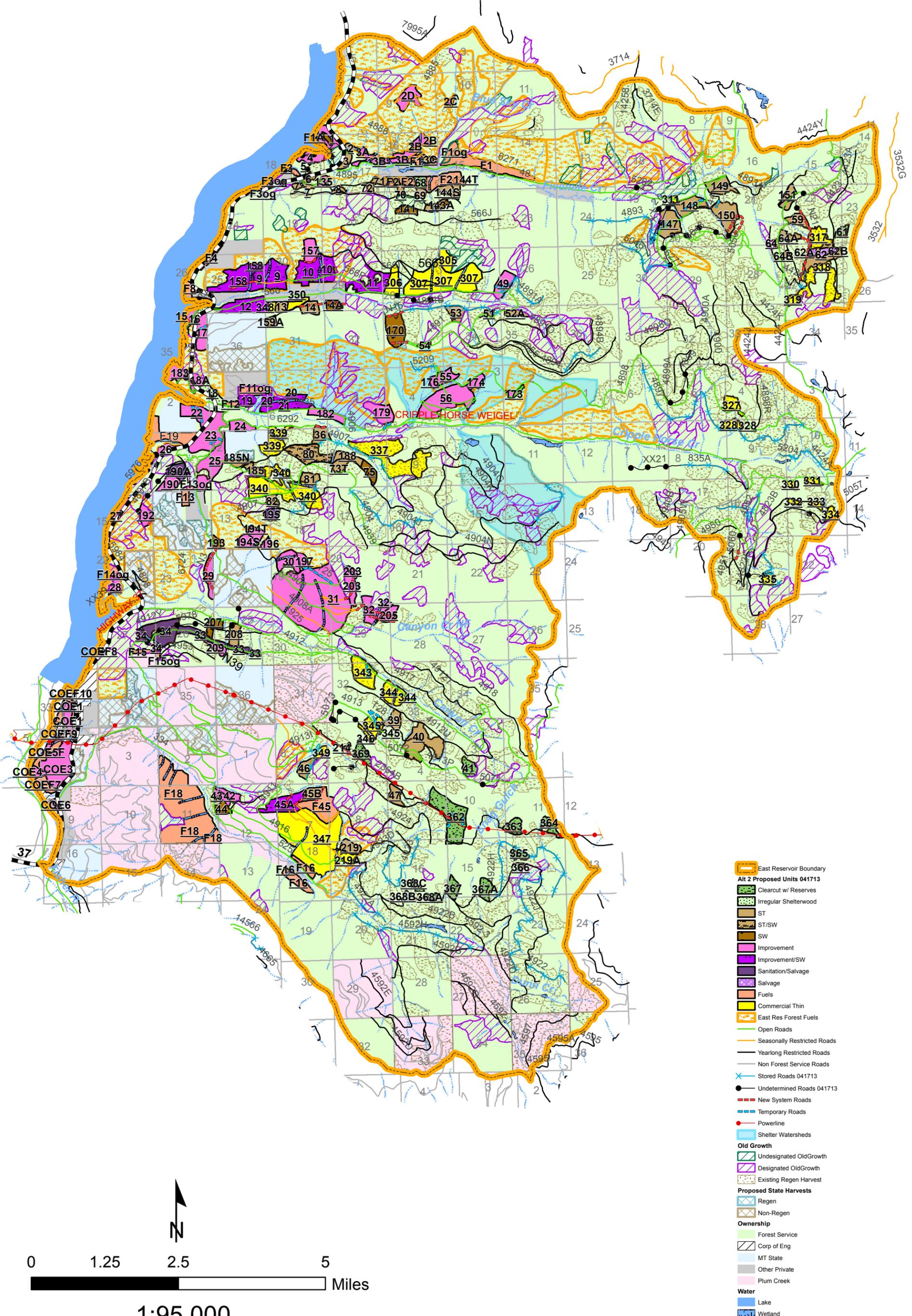
This project-specific amendment allows achievement of the overall Forest Plan goal for MA 12 which is to maintain or enhance non-winter big-game habitat and produce a programmed yield of timber (FP, Vol. 1, pg. 111-48). Alternative 2 with Modifications will reduce tree canopy from

fully stocked to a seedtree and/or shelterwood prescription in concert with exceeding 40 acre limitation as directed by NFMA. While local movement of big game may be affected as a result of one 192 acre unit, one unit results in less edge effect than a number of units (in this case up to five units at 40 acres each) with forested corridors of 600 feet separating the units. Reducing edge effect is favorable for many resident species including goshawks, various woodpeckers, fisher, and once the 192 unit re-establishes hiding cover (approximately 15 years) a large block of uniform interior forest will result for those species more associated with interior forest habitats.

Project-specific amendments must comply with the National Environmental Policy Act procedures. Compliance with these procedures and rationale for this project-specific amendment is contained in the East Reservoir Project DEIS, FEIS, and draft ROD.

Appendix 12—Maps

EAST RESERVOIR PROJECT ALTERNATIVE 2 WITH MODIFICATIONS MAP 1- PROPOSED UNITS

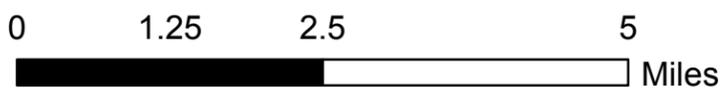
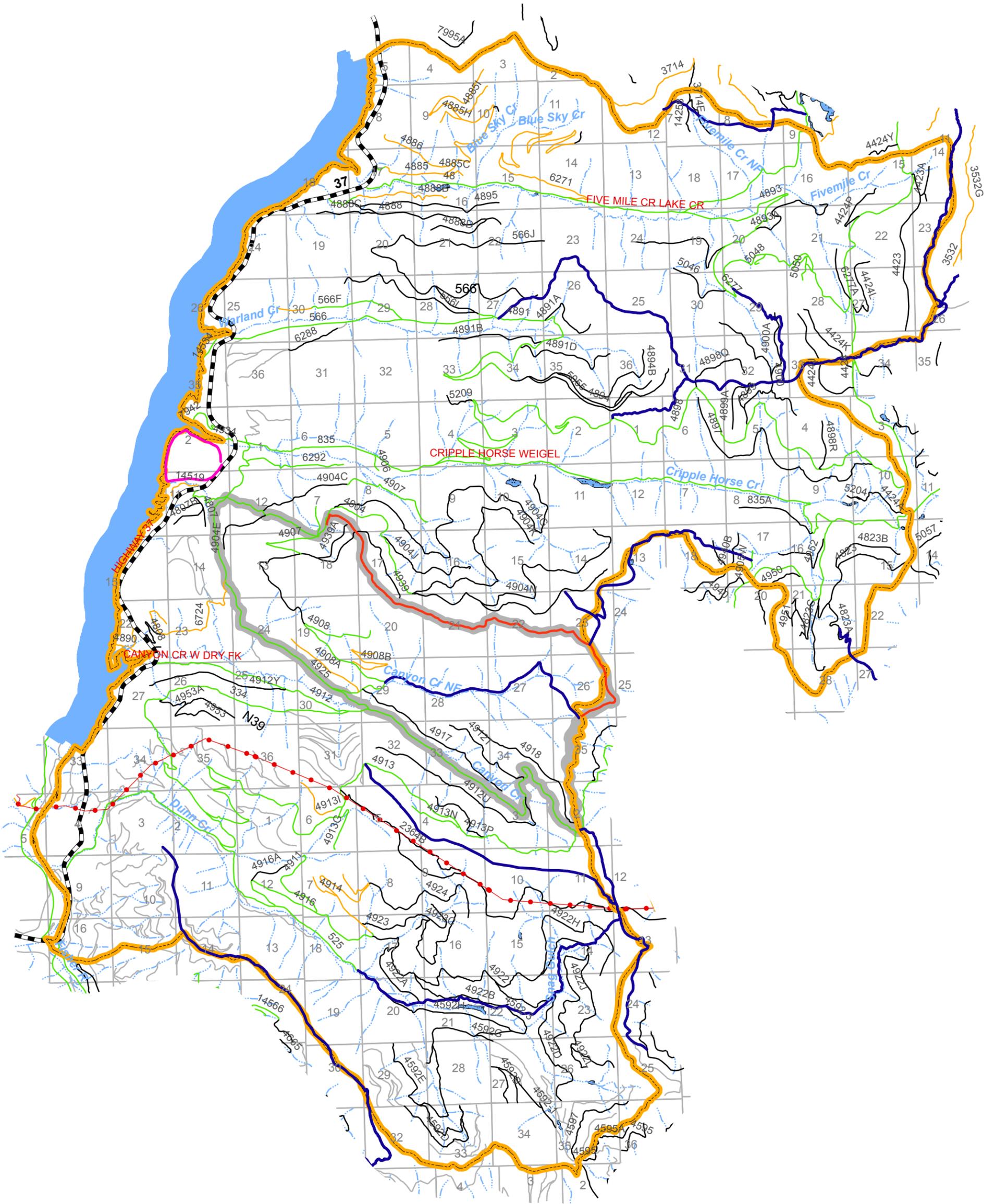


- East Reservoir Boundary
- Alt 2 Proposed Units 041713
- Clearcut w/ Reserves
- Irregular Shelterwood
- ST
- ST/SW
- SW
- Improvement
- Improvement/SW
- Sanitation/Salvage
- Salvage
- Fuels
- Commercial Thin
- East Res Forest Fuels
- Open Roads
- Seasonally Restricted Roads
- Yearlong Restricted Roads
- Non Forest Service Roads
- Stored Roads 041713
- Undetermined Roads 041713
- New System Roads
- Temporary Roads
- Powerline
- Shelter Watersheds
- Old Growth
- Undesignated OldGrowth
- Designated OldGrowth
- Existing Regen Harvest
- Proposed State Harvests
- Regen
- Non-Regen
- Ownership
- Forest Service
- Corp of Eng
- MT State
- Other Private
- Plum Creek
- Water
- Lake
- Wetland

0 1.25 2.5 5 Miles

1:95,000

EAST RESERVOIR PROJECT ALTERNATIVE 2 WITH MODIFICATIONS MAP 2 - TRAILS



1:95,000

- Boundary Mountain Loop Trail
- Non-Motorized Trails
- Motorized Trails
- Cripple Horse Walking Trail
- East Reservoir Boundary
- Open Roads
- Seasonally Restricted Roads
- Yearlong Restricted Roads
- Non Forest Service Roads
- Powerline

EAST RESERVOIR PROJECT ALTERNATIVE 2 WITH MODIFICATIONS MAP 3 - PROPOSED ROAD CHANGES

