United States Department of Agriculture

Bitterroot Front Project Environmental Assessment

Appendix A-Volume 1: Bitterroot Front Environmental Assessment – Design Features

Forest Service

BRF, Stevensville and Darby-Sula Ranger Districts, October 2025

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Introduction

Appendix A, Volume 1 outlines the design features developed for the Bitterroot Front project and to which activity cards they apply (Appendix A, Volume 2). The design features ensure that each activity card will be consistent with the Forest Plan as amended; other laws, regulations, or policies constraining the activity; and that the activities will remain within the environmental effects analyzed in the EA and authorized by the Decision Notice. These features are also intended to ensure resource-specific needs are adequately considered and incorporated during project implementation.

Resource Specific Guidelines and Design Features

For each row, cells with a Y indicate that the design feature applies to the corresponding activity card. Cells with a N indicate that the design feature does not apply to the corresponding activity cards.

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
Botany																												
BT -1 Areas of potentially suitable habitat for rare plants within the proposed treatment areas would be determined following the R1 Botany evaluation process. A qualified botanist would approve the evaluation and habitat determination. If potentially suitable rare habitat is identified during the evaluation process, botany surveys would be completed to verify habitat and presence of rare plants. Surveys would be completed prior to project implementation during the survey window. The survey process and conditions would be in compliance with R1 Botany Survey and Analysis Protocol.	Project-wide. Pre-implementation.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
BT-2 Microsites of highly suitable rare plant habitat that occur within proposed treatment units, including seeps, springs, and other seasonally or perennially wet areas, would be protected from all project activities by site-specific buffers established by a qualified botanist.	Project-wide. Pre-implementation. During implementation.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
BT-3 A botanist would determine if identified rare plant populations and habitats require a buffer from specific activities. Buffers would be excluded spatially and flagged for avoidance from specific project activities proposed in that area. With the botanist's recommendation in certain instances, treatments within rare plant buffers could occur. These would be implemented during winter conditions over snow.	Project-wide. Pre-implementation. During implementation.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
BT–4 Contact a botanist if operations are found to disturb or damage any known/identified rare plant species in the area.	Project-wide. During implementation.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
BT-5 If additional, undocumented rare plant populations are located within the project area, they would be evaluated by a botanist. The botanist would apply appropriate mitigation measures to retain population viability. This could include dropping units from activities, modifying units, boundaries, adding additional buffers, or implementing timing activity restrictions.	Project wide. Pre-implementation and during implementation.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
BT-6 To minimize invasive species' spread, the Forest Service would reestablish vegetation on bare mineral soil due to disturbance activities which include but are not limited to temporary roads, landings, skid trails, burn piles, etc. using weed-free native species. The Forest Service would utilize the Bitterroot seed transfer zone mix for revegetation purposes. Shrub planting could also be used as a revegetation technique. The Forest Service botanist would be the person to contact for local seeding guidelines, seed sources, detailed procedures, and appropriate mixes. Seeding should occur in spring and fall. The Forest Service would preserve adjacent vegetation and local native seed sources (adjacent soil, soil and native species on surface of proposed ground disturbance, etc.) as	Project wide. Implementation and post-implementation.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
much as feasible. The contractor would consult the Forest Service botanist if changes to the seed mix are necessary due to supply or site conditions. Restricted species would not be included (FSM 2070 and Region 1 do-not-use list). The Forest Service would monitor the site to ensure proper establishment of native species.																												
BT-7 Train personnel to identify the five needle pines to ensure project activities do not result in more adverse effects than described in the project description. When working in commercial harvest units retain all mature cone producing whitebark pine if present. In timber cutting units ground disturbing activities should be avoided that may damage and /or cause mortality to healthy unsuppressed whitebark pine. Protect established and unsuppressed and healthy whitebark pine when working in regenerating whitebark pine stands. (Healthy whitebark pine can be described as having a live crown with absence of yellowing or dying needles, absence of dead top, free of insects and visual indicators of pathogens). When in whitebark pine habitat, botanists or silviculturists will work with the Timber Contracting Officer or Sale Administrator on the placement of slash piles and landings. "Plus" trees will be protected. Treatments such as hand thinning, leave tree protection, duff pull-back, or slashing to protect plus tree individuals from proposed treatments will	Project-wide. -Pre-implementation and during implementation.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
be implemented if treatments, such as prescribed fire within 0.25 miles could cause harm to Plus trees.																												
BT-8 When daylighting whitebark pine and jackpot burning, slash should be pulled back a minimum 20 feet. A stand diagnosis including pre-thinning surveys and daylight surveys will be completed prior to implementation. Where surveys are not feasible, a model may be used to determine presence.	Project-wide. -Pre-implementation and during implementation.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
BT-9 Objectives of prescribed burning will determine the design features to be used. Whitebark pine (healthy, non-suppressed) will be protected from potential fire mortality in prescribed burning areas through directional felling of encroaching stems away from whitebark pine, reducing fuel loads adjacent to whitebark by pulling slash away and/or piling slash to be burned in piles and designing ignition patterns to limit fire intensity to whitebark pine. Additionally, fireline may be used to exclude fire and to protect whitebark pine individuals. Depending on the amount of slash and the burn objective, a 20-foot to 50-foot buffer would be employed around healthy mature whitebark pine. Fuels Specialists will consult with a botanist or silviculturist on the placement of fire lines and burn piles to ensure no live, mature whitebark pine trees are impacted and minimal impacts to seedlings and saplings. When appropriate, implement a variety of fuels reduction techniques, such as prescribed fire, fuel augmentation, and/or pile burning to reduce shade tolerant trees and promote whitebark pine habitat. Avoid locating hand or machine piles adjacent to whitebark pine to limit torching or mortality while burning. In broadcast burn treatments, pull back slash 20 feet away from healthy and mature whitebark pine. Ignition patterns through healthy whitebark pine should be limited to mimic backing fire to reduce burn intensities. Reduce fuel loads by pulling slash away or piling slash away from the dripline of mature trees, 20 feet minimum suggested, to avoid	Project-wide. -Pre-implementation and during implementation.	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
crown scorch and bark scorching. · DBH < 20 inches – limit crown scorch <10% · DBH >20 inches - limit crown scorch <20% · Limit bark charring around the tree to <50% of the circumference of the bole, regardless of char height (Hood 2025).																												
BT-10 When working in whitebark pine suitable habitat, surveys will be conducted prior to implementation of any planned changes to existing, or decommissioned roads.	Project-wide. -Pre-implementation and during implementation.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
BT-11 A Pesticide Use Proposal is necessary for the use of fungicides (USDA Form FS-2100-2). Herbicide treatments should maintain a minimum distance of 3.3 ft from a whitebark pine tree. Ground-based broadcast applications should maintain a minimum distance of 10 ft from the trunk of a whitebark pine tree.	During and post-implementation.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Design Features	Applicable Area/Timing	VM-03	VM-05	VM-06	VM-07	VM-08	VM-09	VM-10	VM-11	VM-12	VM-13	VM-14	FM-01	FM-02	FM-03	FM-04	FM-05	FM-06	FM-07	FM-08	FM-09	FM-10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
BT-12 Seedlings will be planted outside the drip line of any live trees that are present. Seedling placement should be near logs or other material when possible, to ameliorate environmental conditions immediately around the seedling (micrositing). Whitebark planting guidelines in McCaughey et.al. 2009 provide general sideboards for successful planting. Seedlings should represent a minimum of 20 mother trees per planting area, preferably more (Jenkins, 2022; Mahalovich et.al., 2006; USDA, 2022). Rust resistant seedlings will be utilized in planting efforts. Rust-resistant whitebark pine seedlings will be utilized in planting efforts.	During and post-implementation.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fisheries																												
FI-1 The Inland Native Fish Strategy (INFISH) riparian habitat conservation area (RHCA) buffers (USDA Forest Service, 1995) that are applicable to this project are: Category 1 – Fish-bearing streams: RHCAs consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to 300-foot slope distance. Category 2 – Permanently flowing non-fish-bearing streams: RHCAs consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to 150-foot slope distance. Category 3 – Ponds, lakes, reservoirs, and wetlands greater than 1 acre: RHCAs consist of the body of water or wetland and the area to 150-foot slope distance from the edge of the maximum pool elevation of constructed ponds and reservoirs or from the edge of the wetland, pond or lake.	All RHCAs in the project area. Applies at all times.	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
Category 4 – Seasonally flowing or intermittent streams, wetlands less than 1 acre, landslides, and landslide-prone areas: Within Priority Watersheds (Category 4d) RHCAs must include the area from the edges of the stream channel, wetland, landside, or landside-prone area to 100-foot slope distance. Outside of Priority Watersheds (Category 4e) RHCAs must include the area from the edges of the stream channel, wetland, landside, or landside-prone area to 50-foot slope distance. Maps of the RHCAs in the project area are available in the project file.																												
FI-2 RHCA boundaries would be designated and marked on the ground in consultation with the fisheries biologist or hydrologist and botanist if rare plant protections may apply.	All RHCAs in the project area. Applies at all times.	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
FI-3 All activities would be prohibited in the RHCAs with the exception of hauling, road maintenance, existing landing use and felling hazard trees. Fire is allowed to back down into RHCA's.	All RHCAs in the project area. Applies at all times.	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
FI-4 New landings would be located outside of RHCAs. Exceptions may be granted for previously used landings or natural openings that are located within RHCAs. These sites would not be used for landings until field reviewed and approved by the fisheries biologist or hydrologist.	All RHCAs in the project area. Applies at all times.	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
FI-5 In situations where existing roads cross RHCAs, ground-based equipment could drive on the roads without approval of the fisheries biologist or hydrologist.	All RHCAs in the project area. Applies at all times.	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
FI-6 In RHCAs, trees could be felled when they pose a safety risk. Felled hazard trees would be left on-site unless their removal is deemed necessary for safety reasons by the Timber Sale Administrator (TSA). If a felled hazard tree in an RHCA falls across a road, the portion of the felled tree blocking the road would be cut out. All portions of	All RHCAs in the project area. Applies at all times.	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	N

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the felled tree not blocking the road would be left on site.																												
FI-7 No storing fuels, mixing of fuels, or refueling equipment in RHCAs. If there would be no alternatives, refueling in RHCAs may occur, but it must be pre-approved by the fisheries biologist or hydrologist, and have an approved spill containment plan. Small pumps (for example, Mark III) and chainsaws could be refueled within the RHCA as long as proper spill containment actions are implemented.	All RHCAs in the project area. Applies at all times.	Y	Y	Y	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y
FI-8 Log hauling would occur when roads are adequately frozen or dry. Hauling will cease during periods that are wet enough to produce movement of fines on the road surface. The Timber Sale Administrator (TSA) is responsible for determining when conditions are too wet to haul. The TSA or resource specialists would monitor road conditions during log hauling operations.	All RHCAs in the project area. Applies at all times.	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
FI-9 Drainage features on haul roads would be maintained during all hauling periods. This includes, but is not limited to, providing water access to ditches and inlets of ditch relief pipes, and ensuring that outlets are kept free of blockage. Holes in snow berms would be established during the first plowing and kept open throughout the duration of winter hauling.	All haul roads in the project area. Applies at all times during haul.	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
FI-10 Snow removal: No road surface disturbance may occur as a result of plowing operations. Dozers or skidders shall not be used to plow snow on system roads without written approval of Forest Service. If approved, dozers and skidders must be equipped with shoes or runners to keep the plow blade a minimum of two inches above the road surface. Openings in snow berms will be provided and maintained as required for surface drainage. Avoid drainage outlets on erodible fills. If the snow berm can be satisfactorily pushed off the road shoulder without sidecasting into streams or causing snow and ice damming of stream channels, openings in the snow berm may not be needed. This must be assessed on a case-by-case basis by the fisheries biologist. Restore damage from snow removal by the following summer. Examples of this are damage or excessive erosion of road surface, damage to cross drain structures and damage or excessive erosion on cut and fill slopes.	All haul roads in the project area. Applies at all times.	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
FI -11 Dust abatement shall not include the use of petroleum-based compounds on roads within 100 feet of streams.	Applies at all times	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N
FI-1 12If drafting from streams occurs, intake hoses would be fitted with a screen mesh equal to or smaller than 3/32 inch.	All water drafting sites. Applies at all times.	N	N	N	Y	N	N	N	N	N	N	N	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	Y	N	N	N
FI-13 Prior to entering the project area or moving between drafting sites equipment that has the potential to come into contact with water must be inspected, clean, and dry.	All water drafting equipment. Applies at all times.	N	N	N	Y	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
FI-14 Roads used for log hauling would be brought up to current best management practices standards (Volume 1, FS-990a, April 2012) prior to hauling and would include addition or improvement of existing drivable dips, grading, and shaping roads. Special attention will be paid to	All haul roads in the project area.	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

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eliminate or otherwise reduce the effect of ditches that drain into streams.																												
FI-15 The following design features apply to reconditioning and reconstructing roads used for haul at road-stream crossings. 1) Leave as much of the existing vegetation on the travel way as possible when grading at road-stream crossings. 2) Sidecasting is prohibited in RHCAs. 3) Install drivable dips or other drainage structure on the uphill approach within 100-200 feet of the stream crossings to divert water and sediment from the travel way prior to the road entering the stream crossing area. The exact location and need of the drainage structure will depend on individual site conditions such as road slope, presence of ditch in the road design, rock outcrops, and channel location will be designated by fisheries biologist or hydrologist. 4) Addition of surface rock on roads at stream crossings would be dependent upon site conditions and consultation with engineering, fisheries, or hydrology.	Applies at all times.	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N
FI-16 Herbicides would not be applied in RHCAs.	All RHCAs in the project area Applies at all times.	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N
FI-17 Helicopter ignition and hand ignition would not occur in RHCAs. Fire would be allowed to back into and burn across the RHCAs.	All RHCAs in the project area. Applies at all times.	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N
FI-24 18 Hand fireline would not be dug in the RHCAs.	All RHCAs in the project area. Applies at all times.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N
FI-19 Temporary roads would not be built in RHCAs. Where road prisms already exist in RHCAs (such as undetermined roads), those roads may be used for temporary roads as approved by a Fisheries Biologist or	All RHCAs in the project area. Applies at all times.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N

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Hydrologist. No temporary road-stream crossings would be installed on fish bearing streams.																												
FI-20 Recontoured and decompacted roads and trails would be seeded and slashed.	All recontoured roads, decompacted roads, and TLM trails. No timing restrictions.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	Y	Y
FI-21 Where culverts with flowing water would be removed, a straw bale check dam would be installed below the outlet prior to removing the culvert.	All culvert removal sites with flowing water. Applies at all times.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	N
FI- 22 The following NFSR will be restricted (NO HAUL) from hauling to reduce affects to bull trout. NFSR 733 above USFS property on Fred Burr Creek (past end of private property above USFS small block). NFSR 429 above the NFSR 5621 bridge (Lost Horse Creek)• NFSR 374 between 374A junction and the NFSR 62887 junction (South Fork Chaffin Creek).	During life of the Project	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
FI – 23 Prior to hauling, bridge decks will be cleaned, approaches will be graded, smoothed and rocked 100 feet on each side of the bridge with dust abatement during haul at the following locations: NFSR 734 South Fork Chaffin Creek Bridge NFSR 639B Tin Cup Creek Bridge NFSR 5621 Lost Horse Creek Bridge	During life of the Project	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
FI – 24 Prior to hauling: • NFSR 639 after the 639B junction will be in-sloped, graded and rocked for 275 feet. • NFSR 639 at FS boundary to 639B junction will be in-sloped, graded and rocked	During life of the Project	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

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Fire and Fuels																												
FU-1 Slash disposal would be accomplished through a combination of related fuels management activities. Site specific slash treatment plans based on existing and desired future conditions would be developed and incorporated into implementation planning and contracts prior to award.	All vegetation management activities that produce slash. Prior to award and implementation.	Y	Y	Y	Y	N	Y	Y	N	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
FU-2 Prescribed burning would take place under the guidelines set forth in an approved prescribed fire burn plan that meets the requirements of the Interagency Prescribed Fire Implementation Guide and objectives of the silvicultural prescription.	All prescribed fire activities within the project area. No timing restrictions.	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N
FU-3 Prescribed burning would be implemented in full compliance with the Montana Department of Environmental Quality (DEQ) air quality program through coordination with the Montana/Idaho Airshed Group.	All prescribed fire activities within the project area. Prior to ignition.	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N
FU-4 Prescribed burning will occur prior to tree planting.	All prescribed fire activities within the project area. Prior to ignition.	N	N	N	N	Y	N	N	N	N	N	N	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N
FU-5 Landing piles shall be of a size and location which will not impair road use or result in damage to residual trees. Size specifications and locations for landing piles will be determined based on-site specific conditions, harvest unit size and volume.	All prescribed fire activities within the project area. Prior to ignition.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N
Heritage																												
HR-1 Avoid adverse effects to Historic Properties.	Project-wide / Prior to implementation	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
HR-2 Cease activities in areas where a post-review or inadvertent discovery of a heritage resource occurs.	Project-wide/During implementation	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
HR-3 Avoid impacts to religious sites and American Indian Religious Sites.	Project-wide/Consultation prior to implementation and mitigations placed during implementation	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Design Features	Applicable Area/Timing	VM-03	VM-05	VM-06	VM-07	VM-08	VM-09	VM-10	VM-11	VM-12	VM-13	VM-14	FM-01	FM-02	FM-03	FM-04	FM-05	FM-06	FM-07	FM-08	FM-09	FM-10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
Range and Weeds																												
NX-1 Unless treated, avoid areas with infestations of Priority 1A, 1B, and 2A Montana Listed Noxious Weeds. Consult with invasives specialist or botanist if treatment will be adequate.	Project-wide	Y	Y	Y	Y	N	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
NX-2 Remove all mud, dirt, seed and plant parts from all equipment before moving into the project area. Cleaning must occur prior to entering Forest lands (this does not apply to vehicles that would stay on the roadway, traveling frequently in and out of the project area).	Project-wide/ prior to and during treatment	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
NX-3 Regularly inspect, remove, and properly dispose of weed seed and plant parts found on clothing and equipment.	Project-wide/ prior to and during treatment	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
NX-4 In order to minimize invasive species establishment and spread, reestablish vegetation on bare ground exceeding 100 square feet caused by implementation disturbance. Utilize the Bitterroot seed transfer zone mix for revegetation purposes. Shrub planting may also be used as a revegetation technique. Contact the botanist/native plant coordinator for local seeding guidelines, seed sources, for detailed procedures, and appropriate mixes. Seeding should occur in spring and fall. Preserve adjacent vegetation and local native seed sources (adjacent soil, soil and native species on surface of proposed ground disturbance, etc.) as much as feasible. Consult with the Forest native plants coordinator or the botanist if changes to the seed mix are necessary due to supply or site conditions. Do not include restricted species (FSM 2070). Monitor the site to ensure proper establishment of native species.	Project-wide. During and post implementation.	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
NX-6 Minimize the creation of sites suitable for weed establishment. Soil disturbance should be minimized to meet project objectives.	Project-wide	Y	Y	Y	N	N	Y	Y	N	N	Y	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
NX-7 Treat haul routes prior to and following completion of project implementation.	Project-wide/prior to & following treatment	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
NX-8 All gravel sources would be clean and free of weed seed.	Project-wide/prior to treatment	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	N
NX-9 Treat weed infested roads that are accessible to spray equipment prior to decommissioning.	Project-wide/ prior to & following completion of treatment	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N
NX-10 Forest Service will ensure notification measures for herbicide application: Traffic control and signing during weed-treatment operations would be used as necessary to ensure safety of workers and the public. Signs regarding herbicide use would be placed at access points to treatment areas prior to initiating treatment. Signs would list herbicides to be used, effective dates, and name and phone number of Forest contact.	Project-wide/prior to treatment	Y	Y	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Recreation																												
RR-1 Protect all signs and recreation infrastructure along roads and within campgrounds. Recreation facilities would be marked on the ground and the contract map.	Developed recreation sites Pre- Implementation and during implementation.	Y	Y	Y	N	N	Y	Y	N	N	N	N	Y	Y	Y	Y	Y	Y	N	Y	Y	N	N	N	N	N	N	N
RR-2 Close roads/areas, as necessary, for public safety during active harvest operations and log hauling; place closure devices and signs on roads and trails, as needed, to inform the public and protect the public by restricting access into the area.	Developed recreation sites or other areas of high recreational use.	Y	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	Y	N	N	N	N	N	Y	N	N	N

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
RR-3 Develop timing of project activities, when practical, that are in or near high use developed recreation sites or rental facilities, or along roads that access high use recreation sites, to reduce disruptions of public use and reduce potential site closures during seasons of high use. If project activity occurs in or near high use recreation sites during high use seasons, then work with recreation staff on best methods to inform the public in advance of activities and determine best mitigations for public safety	Developed recreation sites or other areas of high recreational use.	Y	Y	Y	N	N	Y	N	N	N	N	N	Y	Y	Y	Y	N	N	N	Y	Y	N	N	N	Y	N	N	N
RR-4 To control unauthorized vehicular travel on non-open roads, use signage, slash, downed logs, earthen humps or berms, or boulders.	Adjacent to motor vehicle use map (MVUM) authorized vehicle routes and Forest boundaries	Y	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N
RR-5 Official Forest system trails willl be marked on the ground and the contract map for protection. All trees or posts with trail signs or related information shall remain in place or be replaced in-kind. Where feasible, use existing Forest system trails for skidding and temporary road, to avoid new skid trails running parallel to existing recreational trails. When skid trails must cross Forest system trails, they would do so at a right angle whenever possible. All Forest system trails and their constructed features in the project area would be maintained, restored, or replaced in-kind to their original design according to the USDA Forest Service Standard Trail Plans and Specifications	Forest Service System Trails	Y	Y	Y	Y	N	Y	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N	N	N
RR-6 Unauthorized OHV trails may be obliterated and rehabilitated by: sub-soiling, seeding, fertilizing, and covering with slash. If illegal off-highway vehicle (OHV) trails are used for skidding operations, contractor would be required to perform erosion control rehabilitation, as described in the water quality and fisheries design features. Contractor will not be required to sub-soil.	Project-wide	Y	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
RR-7 Develop silvicultural prescriptions unique to the specific recreation site to maintain and enhance vegetation that provides privacy screening between sites and roads and provides shade.	Developed recreation sites	Y	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
RR-8 If work occurs adjacent to developed recreation sites, pile slash, burn piles, chip, or masticate.	Developed recreation sites	N	N	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	N	N	N	N	N	N
RR-9 Log hauling may be restricted on weekends or Federal holidays.	Haul routes near high-use recreation areas	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
RR-10 Use existing FS system trails as a fireline instead of constructing a new fire line close to a trail. Rehabilitate fireline if fireline takes off of a Forest system trail. If any timber structures are present on a trail that would be used as a fireline, clear woody debris and vegetation 24 inches away from the structure.	FS System Trails	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N
RR-11 Evenly disperse chips on the downhill side of Forest system trails.	FS System Trails	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N
RR-12 Maintain a footprint to accommodate historical nonmotorized recreational use of the road where feasible to do so while still meeting the decommissioning objectives to reduce adverse environmental effects.	On roads that have historical non-motorized recreational use or on roads that could create new non-motorized recreation opportunities	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	Y	N
Scenery																												
SR-1 To the extent possible: mimic and borrow natural topographic and vegetation forms, lines, textures, colors, and use changes in these features for boundaries	Project-wide	Y	Y	Y	N	Y	Y	Y	N	N	N	N	Y	Y	Y	Y	N	Y	Y	N	Y	N	Y	Y	N	N	N	N
SR-2 To the extent possible, vary leave tree clumping size, shape, and distribution.	Project-wide	Y	Y	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	N	N	N	N
SR-3 Create a gradient and feathered edge along boundaries with nontreatment edges. Fire may be used to create feathered edges.	Project-wide	Y	Y	Y	N	N	Y	Y	N	N	N	N	Y	Y	Y	Y	N	Y	N	N	N	N	Y	Y	N	N	N	N
SR-4 Use harvest tree marking or harvest by species. If leave tree marking is required, use black paint to mask visible markings post implementation or other designation method where	Project-wide. Applicable key observation points to be identified prior to implementation. Design feature to be applied post	Y	Y	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
paint is not visible from observation point post harvest.	implementation in identified areas																											
SR-5 If a linear feature is parallel to topography and slope, vary leave trees downslope of the feature to screen and vary appearance. Avoid construction of a linear feature bisecting topography and slope. If it must bisect, do so for the shortest distance possible and vary leave trees around it	Project-wide. Linear features to be identified prior to implementation. Design feature to be applied during implementation	Y	N	Y	N	N	Y	Y	N	N	N	N	Y	Y	Y	Y	N	Y	Y	N	N	N	Y	Y	Y	Y	N	N
SR-6 Plant for artificial regeneration in a manner that mimics the natural vegetation pattern, texture, form, color, and scale.	Project-wide during implementation	N	N	N	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SR-7 Reduce skyline corridor width and vary distance between corridors. Many narrow corridors are preferable to a few wide ones.	Project-wide where treatment areas allow for skyline systems	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SR-8 If lop and scatter is applied, disperse material to reduce discernible material build-up in a manner that mimics the natural vegetation death and decay pattern, texture, form, and scale	Project-wide	Y	Y	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SR-9 Burn piles completely or scatter material that does not fully burn.	Project-wide during and post implementation	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N
SR-10 To the extent possible, reuse existing open areas or previous landing/piling locations. If not possible, then locate landings/piling locations more than 100 feet from key observation points, or fully remove all material within 100 feet of viewing platform as soon as possible	Project-wide. Key observ ation points to be identified prior to implementation	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N
SR-11 Disperse or remove masticated and/or chipped material to reduce discernible material build-up in a manner that mimics the: natural vegetation death and decay pattern, texture, form, and scale	Project-wide	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	Y	Y	N	N	N	N	N	N

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
Silviculture																												
SI-1 Minimize the spread of Annosus (*Heterobasidion Annosum*) Root & Butt Rot: Apply borate compound to freshly cut ponderosa pine stumps greater than 12 inches diameter (inside bark). Powder borate shall be applied within 24 hours and liquid borate shall be applied within 72 hours. Minimize damage to residual trees during harvest operations	Ponderosa pine stumps larger than 14" diameter within 24-72 hours of cutting	Y	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N
SI-2 Minimize the risk of pine engraver beetle (Ips pini) population increases. Consider limiting vegetation management activities in ponderosa pine and lodgepole pine from October through June. If this is not feasible, the following requirements would be applied: **Commercial Harvest**: • Landing or machine piling - Pile slash in large-sized pile to provide suitable host material in the center of the pile to lure Ips beetles deeper into the pile. Ideally, piles should be at least 10 x 10 x 20 feet in height, width, and length. Where feasible, fresh slash and logs would be located several yards away from living host trees **Non-commercial Harvest:** • Green slash exceeding 3 inches in diameter would be lopped into 4-6 foot lengths and scattered in areas with direct exposure to sunlight. Where feasible, fresh slash and logs would be located several yards away from living host trees. • Should small piles be constructed October through June, any infested material shall be burned, chipped, or otherwise destroyed prior to beetle emergence in early July.	Project-wide for slash creating activities October through June	Y	Y	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	Y	N	N	N	N	N	N	N	N

Design Features	Applicable Area/Timing	VM-03	VM-05	VM-06	VM-07	VM-08	VM-09	VM-10	VM-11	VM-12	VM-13	VM-14	FM-01	FM-02	FM-03	FM-04	FM-05	FM-06	FM-07	FM-08	FM-09	FM-10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
• Surveys of host material prior to July can indicate the risk of tree mortality or top-kill to residual stems within the treatment unit. In high-risk areas where Ips mitigation options are limited, mass trapping of Ips with pheromone lures and Lindgren funnel traps may also reduce Ips-related damage to residual stems																												
SI-3 Maintain old growth stand characteristics, as defined by Green et al. 1992, errata corrected 2011. Stand Diagnosis: Determine stand level old growth status in potential treatment units, during the implementation phase, through the collection of old growth stand characteristics via Stand Diagnosis, R1 Walk Through Survey, or R1 Common Stand Exam protocols. Silvicultural Prescription: A silvicultural prescription would be written to prescribe the vegetation treatment(s) appropriate for the site-specific stand conditions. Commercial harvest treatments may take place within old growth stands as long as the resulting treatment maintains the old growth characteristic specific for the site. No treatment would take an old growth stand out of old growth status.	Project-wide forall commercialharvesttreatments	Y	Y	Y	N	N	Y	Y	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N
SI-4 Seeds or seedlings to be planted will be grown from local, genetically appropriate seed sources	Project-wide	N	N	N	N	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SI-5 In the event of natural disturbance, if natural regeneration is insufficient, then the site would be planted with species determined by aspect and elevation.	Project-wide	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
Soils																												
SO-01 The standard dry-ground equipment operation period is June 15 to September 15, but it may occur outside of these dates. Dry conditions must exist on greater than 85 percent of the harvest unit (including the landings). Dry conditions can be determined by field observations. If the soil forms a ball from the upper 6 inches of mineral soil, below the duff, it is too wet to work. The soil moisture and texture matrix in Appendix B of this report is also an acceptable determination for soil moisture and operability. Soil moisture will be determined by sale administration staff or a soil specialist in the field prior to operations.	All heavy equipment operations in unit / Before and during operations	Y	Y	N	Y	N	Y	N	N	N	Y	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
SO-02 Skid trails will generally be designated 75 feet apart, unless converging into a landing, with consideration given to the unit and equipment/operator capabilities. Dispersed skidding may be used depending on the amount of material to be removed, the shape of the unit, and the equipment to be used. The sale administrator will designate skid trails where machine traffic would be high (for example, close to landings). The sale administrator will be given the flexibility to disperse or designate skid trails based on site-specific conditions with consultation by a soil scientist.	Operations in unit/ Before and during operations	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N

Design Features	Applicable Area/Timing	VM-03	VM-05	VM-06	VM-07	VM-08	VM-09	VM-10	VM-11	VM-12	VM-13	VM-14	FM-01	FM-02	FM-03	FM-04	FM-05	FM-06	FM-07	FM-08	FM-09	FM-10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
SO-03 Harvest and skidding equipment would be restricted from operating in areas with greater than 35 percent slope except for short pitches (35–40 percent and less than 100 feet in length) unless a soil scientist reviews the site. Directional felling, ground lead, or alternative methods of yarding may also be used to remove trees from steep slope inclusions. Skyline and potentially tethered logging may be included to provide flexibility for harvest on slopes at upper limits for operations. Tethered ground-based harvest may be considered on slopes over 40% with the approval of a soil scientist. Tethered harvest impacts on the soil surface must be mitigated by operating with machinery under constant tension, working on a slash mat, or a combination of both. Operators will avoid side-hill movements. Harvest operations for tethered machinery will not exceed 70% slope.	Operations in unit/During operations	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	Y	Y	N	N	N	N	N	N
SO-04 A soil scientist will identify harvest or activity units with the potential to exceed 15% detrimental soil disturbance not including permanent roads. Rehabilitation will be required if excessive disturbance is identified. Rehabilitation may include a combination of the following: decompaction, subsoiling, scarification, slash placement, erosion control, and revegetation techniques as prescribed by a soil scientist.	All operations in unit/During and after operations	Y	Y	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	Y	Y	Y	Y	Y	N	Y	N	Y	N	Y
SO-05 Where feasible, existing road prisms, skid trails, and landings, as well as other areas of high disturbance, will be favored over creating new areas of disturbance.	Project-wide/ Before and during operations	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	N	Y	N	N	N	N
SO-06 Stationary skid turns and side-slope movement of harvest and skidding equipment between designated trails will be minimized.	All operations in unit/During operations	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
SO-07 Winter operations could be utilized in ground-based treatments if the sale administrator or a soil scientist determines that winter conditions exist. The snow depth, distribution, and air temperatures must be such that ground-based operations maintain appropriate combinations of snow depth and frozen soil conditions. Examples of appropriate conditions include: Depth of compacted (by equipment) snow under wheels or track tread. Minimum thickness of solidly frozen soil needed below compacted snow layer **Depth of compacted (by equipment) snow under wheels or track tread** / **Minimum thickness of solidly frozen soil needed below compacted snow layer** 10 or more inches / 0 inches 7 to 10 inches / 1 inch 4 to 7 inches / 2 inches less than 4 inches / 4 inches In addition, the pre-trailing practices may be used to help attain winter logging conditions.	All heavy machine operations in unit/During operations	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	Y	Y	N	N	N	N	N	N
SO-08 The silvicultural prescriptions will be designed to account for future large CWD (larger than 15 inches diameter) recruitment that will meet acceptable levels in stands where the CWD is less than minimum levels before treatment. CWD will be left in these stands to the extent feasible to meet minimum requirements that do not pose a fuels hazard. High amounts of small CWD (3 to 6 inches diameter) may present wildfire risks. CWD will generally be evenly distributed on each acre,	Project-wide/Before operations	Y	Y	Y	N	Y	Y	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
unless otherwise agreed to by the contracting officer or their designee																												
SO-09 Landing design and location will be determined with consideration of soil disturbance, with input by a soil scientist, in ground-based commercial yarding units less than 15 acres to minimize excessive DSD within these activity areas.	All heavy machine operations in unit/Before and during operations	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	N	N	N	N	N	N	N	N
SO-10 Newly constructed temporary roads will be obliterated upon completion of mechanical operations. Obliterating temporary roads will consist of recontouring the road prism, including all cut and fill slopes. Logging slash, stumps, and woody debris will be placed on top of obliterated road corridors to effectively prevent illicit vehicle travel. For existing prisms used as temporary roads, landings and/or where recontouring is unnecessary, or where detrimental soil disturbance has occurred on skid trails, the Forest Service will scarify traveled surface to a depth sufficient to ameliorate the presence of detrimental soil compaction (usually between 2 and 6 inches).	Project-wide/After operations	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	N	N	N	Y	N	Y	Y	Y
SO-11 Rehabilitation activities of temporary roads, skid trails, and landings may include recontouring cut and fill areas, sub-soiling, slashing with readily available debris, and application of fertilizer and native plant seed. The Forest Service will use local seeding guidelines for detailed procedures and appropriate mixes. Forest Service Manual 2070.3 contains the Bitterroot National Forest seed mix and fertilizer specifications	Project-wide/ After operations	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y
SO-12 Skid trails will be water barred as needed. The timber sale administrator will designate the trail location and spacing. Preexisting skid trails and road prisms will be used as skid trails, to the extent feasible.	Skid trails in activity units/During and after operations	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
By purchaser agreement, in lieu of waterbars: To protect exposed soil, slash is to be placed on areas of bare mineral soil within the main skid trails. Duff, litter, soil, and woody material that is displaced from the trail will be placed back over the skid trail. Slash and CWD (both greater than and less than 3 inches in size) will be placed over the majority (e.g., 65–70) percent of the skid trail in contact with the soil surface																												
SO-13 Full bench construction will be required for sections of road on which the natural slope exceeds 60 percent. This applies to reconstruction of existing prisms as well as new construction. Side casting of material is prohibited.	Project-wide/Identify before operations	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	N
SO-14 Pile burning should occur during moist conditions to minimize duff consumption and high severity burn impacts on soils.	Project-wide/During and after operations	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N
SO-15 Hand pile sizes, not associated with landings, will be <10 feet in diameter, so localized areas of soil disturbance will be less than about 50 square feet.	Project-wide/During operations	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N
SO-16 Where feasible, the Forest Service will pile and burn slash where DSD already exists, such as on old log landings, skid trails, and roads associated with the past harvest units. By piling and burning thinning slash in areas where soil disturbance currently exists, no new areas of DSD will result from the proposed activities.	Project-wide/During operations	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N
SO-17 CWD larger than 15 inches in diameter will not be intentionally ignited during hand lighting. It is understood that once hand crews light the fire, fire may burn into and combust some CWD larger than 15 inches in diameter.	Project-wide/During operations	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
SO-18 When feasible, the Forest Service will allow time for nutrients to leach from slash prior to burning. The slash will be left through one winter after cutting to allow for drying, initial decomposition, nutrient leaching.	Project-wide/During and after operations	Y	Y	Y	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N
SO-19 Upon completion of prescribed fire or maintenance burning, at least 70 percent ground cover is necessary to prevent detrimental accelerated erosion and loss of soil productivity. In those cases where ground cover is less than 70 percent prior to burning, consumption and loss of ground cover should not exceed 15 percent of the unit area. Ground cover includes duff, organic soil horizons, tree basal area, fine woody debris, CWD, and surface coarse fragments. Fire prescriptions will be designed to meet these soil protection requirements.	Project-wide/During and after operations	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N
SO-20 The following design feature is only applicable where a high soil burn severity results in exposed forest soils in openings greater than 100 square feet: To mitigate the risk of soil erosion associated with exposed forest soils following burning, small-diameter slash can be used to cover forest floor openings greater than 100 square feet where a high soil burn severity may result in vulnerable soil conditions.	Project-wide/After operations	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N
SO-21 Shallow water bars (4-5") will be constructed across fire lines using the following spacing guidelines. Slope Gradient (%) Waterbar Spacing (ft.) < 20 370 21 – 30 270 31 – 40 200 41 – 50 150 51 – 60 110 > 61 100		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
Watersheds																												
WR-1 Calculate cumulative ECA for project area subwatersheds (HUC12) from finalized proposed treatments based on location in the watershed, treatment acres, and canopy cover removed.	Proposed treatment areas prior to implementation.	Y	Y	Y	N	N	Y	Y	N	N	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N
WR-2 Apply best management practices to all activities that involve ground disturbance	Project-wide, applies at all times.	Y	Y	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	Y	N	Y	Y	Y	Y	Y	N
WR-4 On streams with sediment total maximum daily loads (TMDLs) (McClain, Bass, Sweathouse, and Lick Crk), look for opportunities to reduce sediment from Forest roads and ensure no additional sediment contributing points are created.	Roads in the McClain, Bass, Sweathouse, and Lick drainages. Applies at all times	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	N
WR-5 On roads where existing water bars were bladed out during maintenance or reconditioning, install water bars when completing final maintenance or closing the road, following the Waterbar Spacing Guide on page II-27 of the Forest Plan: Gradient Percent Characteristic Waterbar Spacing (feet) Soil Loam Soils Sandy Loam Soils 1 to 6% 300 ft 400 ft 350 ft 7 to 9% 200 ft 300 ft 250 ft 10 to 14% 150 ft 200 ft 175 ft	Project-wide during final maintenance or when closing a road.	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	Y	N
WR-6 Block or otherwise eliminate access routes into mastication/chipping units following use. Smooth out any ruts and revegetate, as needed.	Equipment trails, immediately following use.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	N	N	N	N	N	N
WR-7 Where culverts would be removed from live streams, obtain necessary permits from the State and Conservation District. Permits may include Montana Stream Protection Act (SPA 124 Permit), Short-term Water Quality Standard for Turbidity (318 Authorization), Federal Clean Water Act (404 Permit).	Project-wide. Apply for permits 60 days prior to planned implementation.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	N
WR-8 Mulch or slash stream crossings or other soil disturbances within RHCA as soon as possible following	Project wide, post culvert removal and/or road storage or decommission.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	N

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
removal of culvert or other soil disturbing activities. Seed disturbed areas associated with road storage or decommission.																												
Wildlife																												
WL-1 Protect signed trees identified with "Wildlife Tree" signs from cutting or other damage. Exceptions include compliance with the silvicultural prescription and trees that pose a safety hazard	All management areas. No timing restrictions	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y	Y	Y	Y	Y	Y
WL-2 Provide CWD for wildlife habitat. Within each representative Fire Group, retain or recruit ranges of CWD as specified by soils requirements. Refer to the Fire Group/CWD table located below. Do not remove pre-existing non-merchantable down logs from cutting units. Fire Group Type Coarse Woody Debris 1,2,4: 5-10 Tons/Acre 5,6: 10-20 Tons/Acre 7,8,9,10: 8-24 Tons/Acre 11: 20-30 Tons/Acre	All management areas. No timing restrictions	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	Y	Y	Y	Y	N	N	Y	Y	Y	N	N	N	Y	N	N
WL-3 To maintain snags (standing dead trees) over the long-term for wildlife habitat and ecosystem processes, vegetation management projects should retain at least on average: - Across the Warm Dry snag analysis group, retain an average of at least 4-6 snags per acre greater than 15 inches dbh (warm dry snag analysis group= Fire group 1, 2, 4, 5) - Across the Warm Moist snag analysis group, retain an average of at least 4-6 snags per acre greater than 15 inches dbh (Warm/moist snag analysis group= Fire group 6, 11) - Across the remaining snag analysis groups, retain an average of at least 8-10 largest available snags per acre (Fire groups 7, 8, 9, 10) - Vegetation management activities should retain snags greater than 20 inches DBH and	All management areas. No timing restrictions	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
at least the minimum number of snags and live trees (for future snags) that are displayed above. Where snag numbers for trees greater than 20 inches dbh do not exist to meet the recommended ranges, the difference would be made up with live replacement trees for future recruitment. Exceptions occur for issues such as human safety and instances where the minimum numbers are not present prior to the management activities. Snags felled for operational safety in harvest units shall be left onsite. Where vegetation management activities occur and snags (or live trees for future snags) are retained, the following direction should be followed: - Group snags where possible, such that in some areas the density of snags greater than 20 inches dbh may reach 5-10 snags/acre. - Retain snags far enough away from roads or other areas open to public access to reduce the potential for removal (generally more than 150 feet); - Emphasize retention of the largest snags and live trees as well as those species that tend to be the most persistent, such as ponderosa pine, western larch, and Douglas-fir; - Favor snags or live trees with existing cavities or evidence of use by woodpeckers or other wildlife.																												
WL-4 Minimize the chance of bear habituation. Food and garbage associated with project activities must be stored in a vehicle or other bear-proof container	All management areas. Applicable from March 1-December 1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
WL-5 Vegetation management activities in old growth stands should only occur for one or both of the following purposes: Maintain or restore old growth habitat characteristics and ecosystem processes. Increase resistance and resilience to disturbances or stressors that may have negative impacts on old growth characteristics or abundance (such as drought, wildfire, and bark beetles). Exceptions to this guideline may be allowed, where needed, to mitigate hazards to: (1) public safety in campgrounds, other designated recreation sites, administrative sites, and permitted special use areas; or (2) infrastructure that is essential to community welfare (e.g., utilities and communications or wildland urban interface). To maintain habitat connectivity and minimize disturbance of old-growth associated wildlife, road construction (permanent or temporary), or other developments should be avoided in old growth unless access is needed to implement vegetation management activities and purposes as outlined above and there are no feasible alternative road locations. When identifying if proposed treatment areas include old growth, use a reasonable and accurate approach based on data collection or validation. Consider delineating old growth stands based on the FSH 2409.17 or other current direction.	All management areas. No timing restrictions	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	Y	Y
WL-6 To mitigate potential impacts to bald eagle and peregrine falcon nesting sites, a wildlife biologist will determine occupancy, and proposed treatments may be modified on a case-by-case basis	All management areas. Applicable from February 1-August 15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
WL -7 Minimize disturbance to wildlife. Newly constructed temporary roads must be decommissioned no later than 3 years after the date the project would be completed	All temporary roads within 3 years of project completion	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	N	N
WL-10 Provide Year-round Quality Elk Habitat Vegetation management project activities on known elk winter and spring foraging areas should contain vegetation management treatments to increase elk forage to help alleviate elk conflicts with adjacent landowners. Vegetation management project activities should be located and scheduled to minimize disturbance of elk on known winter range during the winter and in known calving areas during the reproductive season to avoid stressing elk when energy demands are high. Exceptions may occur when needed for protection of other resources as mandated by law, regulation, or policy. In such cases, concentrating management actions in time or space could be a method to minimize disturbance and reduce impacts to elk. To help maintain or restore habitat connectivity, vegetation management project activities decisions should not create movement barriers to elk in known migration corridors, except where necessary to provide for human health and safety. Elk forage, connectivity, winter range, and calving habitat conditions alleviate adjacent landowner conflicts and support State elk management objectives.	All management areas. Seasonal guidance provided	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	Y	N	Y	Y	Y	Y	Y	Y
WL-12 Avoid disturbance to wolverine denning habitat, by not doing work in wolverine modeled maternal/denning and/or primary habitat from January 1st to May 15th. In addition, a quarter-mile buffer would be implemented around	All management areas.	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Design Features	Applicable Area/Timing	VM -03	VM-05	VM-06	VM-07	VM-08	VM-09	VM -10	VM-11	VM-12	VM-13	VM-14	FM-01	FM -02	FM-03	FM-04	FM-05	FM-06	FM -07	FM-08	FM-09	FM -10	TRM-01	TRM-02	TRM-03	TRM-04	TRM-05	TRM-08
maternal habitat during the winter.																												