

Examples of Design Features, Draft

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Designator	RESOURCE
	Plants
1	Before implementing new vegetation treatments and ground-disturbing maintenance activities, the action area will be reviewed using existing data or if appropriate surveyed for listed and Proposed Threatened, Endangered, and Sensitive (PTES) plant species and plant species of local concern.
2	FS will identify activity restrictions and requirements in areas of known declining plant species (e.g. Timing, measures to provide connectivity/linkage of habitats, etc.) so that the activity would not increase the trend toward Federal listing or loss of population viability.
	Developed Recreation Sites, Trails, Trailheads, and Administrative Sites
3	Western would coordinate closure of trailheads, administrative sites, campgrounds, and travel corridors with local Ranger District to minimize impacts to the public and other permitted users.
	Historic Resources
4	A Cultural Resource Inventory will be completed in consultation with the State Historic Preservation Office (SHPO) prior to project activities, if no previous surveys of the activity areas have been conducted. The SHPO must have concurred with a determination that no eligible or potentially eligible historic properties would be affected or no eligible or potentially eligible historic properties would be adversely affected.
5	Activity will not occur in areas with identified eligible or potentially eligible historic resources until the appropriate avoidance or other measures that were concurred in by the SHPO are implemented.
6	A 50-foot buffer surrounding historic properties (cultural resources that are eligible for or are listed on the National Register of Historic Places) within the area of potential effect will be marked on the ground and the exclusion area included in contracts. No heavy equipment or mechanical vegetation removal will be allowed within these exclusion areas. If treatment is necessary, these sites and the 50-foot buffer will be hand-treated for hazard trees and accumulated fuel buildup. Slash pile burning would be allowed in areas reviewed by and approved by a qualified archaeologist prior to the implementation of the burn.
7	An archaeologist will review access Roads, temporary roads, skid trails and landing areas identified during project planning. If the actions are located in areas not covered by the original inventory and are in areas with a high

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	potential for historic properties, cultural resource inventories will be conducted on these areas. Activities will comply with appropriate Programmatic Agreement (PA) or Section 106 and other applicable requirements.
8	If previously unidentified prehistoric or historic materials are found during the course of the proposed activity, work in that area will cease. Work in the area of the cultural resource will not resume until the site has been evaluated for cultural materials and potential effects and Section 106 is complied with. The discovery must be protected until notified to proceed by the authorized officer.
9	If requested by the SHPO or an Indian tribe, the Forest Service or Western will consult to identify properties of traditional cultural and religious significance to Indian Tribes or other interested parties.
10	Prior to construction, supervisory construction personnel will be instructed on the protection of cultural and environmental resources and the locations of areas that are off-limits shall be clearly communicated to construction personnel.
11	Heavy trucks and other equipment would not cross eligible sites when unimproved access roads are wet. Upgrading or maintenance of access roads within the boundaries of eligible sites would be avoided wherever possible. Where avoidance is not possible, a mitigation plan would be prepared and implemented prior to any construction or roadwork. The plan would include mitigation of adverse effects. These guidelines apply not only to roads surveyed as project access roads, but also to roads beneath the transmission lines that were included in the transmission line survey.
	Noxious Weeds and Invasive Species
12	The Forest Service may conduct surveys to determine noxious weed occurrence and the risk of spread prior to treatment(s) in and around power line corridors. This may result in noxious weed eradication efforts prior to treatment. The surveys may also help identify areas in which disturbance or activity would be avoided or minimized, if feasible, due to expected abundance of noxious weed seed bank in the soil.
13	Off-road equipment shall not be moved into project area without having first taken reasonable measures to ensure it is free of soil, seeds, vegetative matter, or other debris that could contain noxious weed seeds. Equipment may also be inspected prior to moving it from areas infested with invasive species of concern to areas free of such invasive species. Reasonable measures include pressure-washing or steam cleaning in an offsite location where containment of oil, grease, soil and plant debris provides optimal protection of project areas. All equipment surfaces should be cleaned especially drive systems, tracks and “pinch points” to ensure removal of potentially invasive species).
14	Re-vegetation may be required on areas where ground cover is disturbed (e.g., landings, burned slash pile sites, skid trails, etc.). As a general guideline, ground cover should recover to its normal range of variability for the land type and geo - climatic area by the end of the first entire growing season after treatment. Native plant species should ultimately dominate the site, although use of non -persistent species may be used to ensure vegetation cover initially.
15	Re-vegetation will be conducted with approved certified weed-free seed mixes to prevent soil erosion or noxious weeds. The Forest Service will designate the seed mixture to be used, and approve appropriate substitutions based on availability of seed. Certification tags from the seed mixture would be provided to the Forest Service. If necessary, seeding would be accomplished as designated by the Forest Service

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	following completion of activity in an area.
	Public Safety
16	Maintenance Level 2 – 5 roads, county, state and federal highways shall be posted with warning signs and traffic control devices shall be employed in accordance with the “Manual on Uniform Traffic Control Devices.”
17	Maintenance Level 3 - 5 roads: a) Shall be maintained for through traffic during felling, slash treatment, or removal operations. Traffic delays may occur for a maximum of one-half (½) hour. b) Shall be left in a condition that will adequately accommodate traffic at the end of each work day. c) Shall be marked with barricades or proper signs placed at traffic hazards in or adjacent to the road at the end of each workday. All felled trees and slash shall be removed from the bladed, mowed, or brushed road corridor each day. d) No felling, slash treatment, and/or removal operations shall occur adjacent to level 3-4 roads on weekends, holidays, or one day prior to the opening of each of the four big game rifle seasons.
18	Maintenance Level 2 roads shall be temporarily closed to general public access during felling, slash treatment, and/or removal operations. Temporary closures may range from one day to two weeks.
19	Western will design and include mitigation to eliminate problems of induced currents and voltages onto conductive objects sharing a ROW, to the mutual satisfaction of the parties involved. Western will install fence grounds on all fences that cross or are parallel to the proposed line and in which induced currents are a problem.
	Riparian Areas, Aquatic Resources, and Water Quality
20	Equipment staging areas and refueling locations will be located at least 250 feet away from streams and wetlands.
21	Vehicles, including heavy equipment, trucks, and ATV’s will be allowed to cross perennial and intermittent streams, with defined beds and banks at open channel crossings (without bridges or culverts) only at locations designated by the Forest Service. If the Forest Service determines that it is needed, open channel crossing locations will be restored following use to restore the channel to appropriate dimensions, stabilize stream banks and prevent erosion, and allow for vegetation recovery.

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22	Stream crossing structures and other in-stream structures (e.g. culverts, bridges, etc.) will be designed to provide for passage of flow and sediment, withstand expected flood flows, and allow free movement of resident aquatic life. Stream crossing structures will be removed following completion of vegetation management, unless written approval is obtained from the Forest Service.
23	Equipment will not be permitted within 100 feet from the edge of streams, or the edge of riparian or wetlands/fens vegetation; except as noted below and authorized by the Forest Service. Hand felling of hazardous trees is permitted in the 100-foot buffer.
24	<p>For hazardous trees felled within riparian buffers:</p> <ul style="list-style-type: none"> a)) Trees should be directionally felled away from streams and wetlands in areas immediately adjacent to culverts (within 50 feet) or when trees are too small to be sufficiently anchored and would provide problems during high flows by being transported downstream and potentially block culverts. b) Trees that are large enough to be anchored and would provide instream aquatic habitat should be felled directly across the stream. This simulates natural conditions and provides a large woody component to the stream for aquatic organism and fisheries habitat. Which trees that will be felled across the stream and used for habitat versus being felled away from the stream will be determined by the Forest Service in perennial streams with fish. c) Trees should b e removed using at least one-end (partial) suspension. d) Trees should not be skidded across perennial or intermittent stream courses.
25	If appropriate and consistent with the need to reduce fuel loading and maintain access, felled trees would be left in place whenever possible. If appropriate, slash would be lopped and scattered to a depth of less than 24 inches. Where leaving felled trees may create unacceptable fuel loading, fail to meet visual objectives, interfere with transmission line maintenance or unacceptably limit wildlife access to streams and riparian areas, trees may be removed .
26	For isolated wetlands that occur within the power line corridors, trees within the wetland and wetland buffer should be left standing, if the trees will not violoate applicable electrical safety standards.
27	For some streams, terrain may limit the extent of riparian vegetation, and upland vegetation within the Water Influence Zone (WIZ). For these streams, conventional logging equipment may be used within the WIZ with Forest Service approval. Larger trees and woody debris should be kept in the riparian zone and be used for instream aquatic habitat when feasible and consistent with protectionof other resources.
28	Burn piles will be located away from perennial streams, lakes, ponds, wetlands and riparian areas. The minimum distances are 50 feet for handmade piles and at least 200 feet for machine-made pies. For intermittent or ephemeral streams, hand made burn piles would be located 50 feet from or outside of the inner gorge, whichever is less.

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29	Isolated wetlands that occur under tree canopy may not have been mapped and may not be visible on aerial photos. In these cases, power line corridors should be surveyed to identify wetlands and riparian areas prior to use of mechanical equipment so that the appropriate design criteria are planned and implemented.
30	Excavated material or other construction materials shall not be stockpiled or deposited near or on stream banks, lake shorelines, or other water course perimeters where they could be washed away by high water or storm runoff or can in any way encroach upon the actual water source itself. The contractor or Western shall comply with all NPDES requirements and obtain the appropriate permits.
31	Waste waters from construction-type operations shall not enter streams, water courses, or other surface waters without use of turbidity control methods such as settling ponds, gravel-filter entrapment dikes, filter fences, approved flocculating processes that are not harmful to fish, recirculation systems for washing of aggregates, or other approved methods. Waste waters discharged into surface waters shall be essentially free of suspended material. These actions shall comply with all applicable NPDES permitting requirements.
32	Minimize activities in riparian areas or span riparian areas. Avoid disturbance to riparian vegetation whenever practical.
33	Prior to the activity personnel will be instructed on the protection of environmental resources and the locations of areas that are off-limits shall be clearly communicated to all construction personnel.
34	If Aquatic Nuisance Species are likely to occur, their spread would be controlled by equipment cleanings before crossing streams and other water bodies.
	Scenic Byways, Special Interest Areas (SIAs), and Research Natural Areas (RNAs)
35	Trees cutting and clearing should be done by hand within power line corridors that are adjacent to scenic byways and SIAs. Boles would be left in place; slash will be lopped and scattered to a depth of less than 24 inches unless it would result in unacceptable fuel loading, interfere with wildlife travel, interfere with maintenance of the line, or impact other resources.
	Soils
38	Machinery will be used on slopes greater than 35% grade, except for slopes less than 100 feet in length.
39	The contractor and Western shall preserve the natural landscape. Activities shall be conducted to minimize scarring, or defacing of the natural surroundings in the vicinity of the work. Except where clearing is required for excavation operations, vegetation shall be preserved and shall be protected from damage.

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40	Heavy equipment will not be operated for land treatments when soils are “too wet”. Soils are too wet when soil can be molded into a ball that holds together under repeated tosses, or if the soil can be rolled into a 3mm thread without breaking or crumbling
41	On soils rated high for susceptibility to compaction and if skid trails are greater than or equal to 75 feet apart, then half of these skid trails will be rehabilitated to bring the compaction below 15%.
42	The organic ground cover of each land unit shall be maintained so that pedestals, rills, and surface runoff from the land unit are not increased. Maintain a ground cover of 65% or greater within the activity areas.
43	Chipped material depth may be limited based on further coordination with the FS. Areas exceeding depth and cover limits should be re-spread.
44	<p>If landings, roads or skid trails are constructed by removing topsoil:</p> <ul style="list-style-type: none"> a) Topsoil will be stockpiled for re-spreading. b) Inclusion of stumps and woody debris with topsoil will be minimized. c) Handling topsoil during wet conditions will be avoided. d) Topsoil piles will be protected from traffic and water erosion and will not be buried by slash. e) The consistency of the surface of the re-spread topsoil will be suitable for the subsequent seeding (if seeding is to be done). f) Slash will be scattered on the soil surface to provide some erosion control until vegetation is established. g) Where rehabilitation treatments will include both tillage and topsoil re-spreading, the sequence of operations will be planned to avoid re-compacting tilled areas. Tilling can take place after topsoil is re-spread with a minimum of mixing.
45	Sub-soiling and/or ripping shall occur when soil moisture is such that the soil is friable, which means dry enough to crumble (rather than smear) but not so dry to turn to powder.
46	Landing debris will be used to help provide soil amendments. Ash from burn piles will be spread along with topsoil and other debris to create a source of organic matter.
47	All scarification and other site prep work should be laid out with the terrain contour.
Transportation	
48	Slash and debris will be kept out of road ditches and drainage channels.

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49	Hauling that results in excessive road damage and may contribute to possible sediment discharges into stream channels will be suspended on native surface roads during periods of precipitation. Hauling will be suspended until the road sub-grade can adequately carry trucks and road damage will not occur.
50	On haul roads, ruts, holes and washboards shall be removed by scarifying or cutting the bottom of the defects. Fines accumulated while blading roads or from drainage ditches shall not be wasted over fill shoulders.
51	Temporary or unauthorized roads will be rehabilitated by depositing excavated soils and rock to fill in road cut, where feasible.
52	Water bars, out sloping the prism and cross drains will be installed as needed to remove surface water and stabilize road surfaces. Stumps, rocks, slash and logs will be placed on the ripped road surface to a density and depth to mimic the surrounding ground. Specific rehabilitative methods would be determined on a case by case basis.
53	Equipment and materials staging areas shall be located and arranged in a manner to preserve trees and vegetation to the maximum practicable extent. The area shall be regraded, as required, so that all surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate natural revegetation, provide for proper drainage, and prevent erosion.
	Visual
54	Clumps and/or islands of trees will be left within openings of hazard tree removal (where sagging lines and ground clearance are not a concern) to break sight distance and to maintain natural appearing landscape mosaic pattern.
	Wildlife
55	Western would design and ensure that repairs and replacements of transmission line structures maintain conformance with Suggested Practices for Protection of Raptors on Power lines (APLIC 1994) and Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 (APLIC 2006).
56	Activities that may occur in areas with sensitive species, sensitive live cycle needs (e.g. lambing areas, crucial winter ranges, sensitive nesting areas) would be modified to minimize or avoid adverse impacts based on additional coordination with the FS.
57	Avian nesting surveys would be conducted prior to activities to ensure ground-disturbing activities do not result in the “take” of an active nest or migratory bird protected under the MBTA. If activity occurs during the raptor nesting seasons, surveys would be conducted and buffers would be established to ensure noise and human disturbance do not result in nest abandonment.

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58	In areas with active osprey nests, Western would work outside of the osprey nesting season (May 1 through September 1).
59	Prior to activities, supervisory personnel will be instructed on the protection environmental resources and the locations of areas that are off-limits shall be clearly communicated to all personnel.
60	When treatments occur within or near known amphibian breeding sites, a decontamination protocol may be required to prevent the spread of chytrid fungus. This would be predicated on whether the equipment has been exposed to sites that are known to harbor or are highly suspected of harboring chytrid fungus.
61	For Proposed Endangered and Threatened Species or Species Of Local Concern with identified viability concerns, the Forest Service will identify activity restrictions (e.g., activity timing, vegetation management prescriptions, etc.) so the activity will not result in adverse effects, a trend toward Federal listing, or loss of population viability.
Winter Logging	
62	<p>In areas with soils with high susceptibility for compaction, activities will be limited when soils are “too wet” (as described under Soils). If harvesting during conditions when soil wetness cannot be determined (i.e. when soil is covered with snow), either a soil scientist will be consulted or the following guidelines will be used:</p> <ul style="list-style-type: none"> a) Frozen soil is 4 inches deep OR b) Compactable snow or a combination of compactable snow and frozen soil is 12 inches in thickness. Snow quality should compact and form a running surface for equipment by being moist and non-granular. c) Designated skidtrails are NOT REQUIRED except for other resource concerns. d) Conditions that would be monitored closely during operations are: soil being “too wet” (as described in Soils); bare soil in trails; and day time temperatures exceeding 35° F for an extended period.
63	For soils rated low or moderate for susceptibility to compaction, harvesting will not be done when soils are “too wet” (as described in Soils). These soil types may be harvested on year-round as long they are not wet. Snow or frozen soil is NOT required to protect soils.
Waste Management.	
64	Activities shall be performed by methods that prevent accidental spills of solid matter, liquids, contaminants, debris, and other pollutants and wastes into flowing streams or dry water courses, lakes, playas, and underground water sources. These pollutants and wastes include, but are not restricted to, refuse, garbage, cement, concrete, sanitary waste, industrial waste, oil and other petroleum products, aggregate processing tailings, mineral salts, and thermal pollution.

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65	Burning or burying of waste materials on the ROW or at the site is not allowed. The contractor shall remove all waste materials from the area. All materials resulting from the contractor's clearing operations shall be removed from the ROW and disposed of in accordance with applicable regulations.
	Air Quality
66	The contractor shall use such practicable methods and devices as are reasonably available to minimize emissions of air contaminants. This includes particulates from soil disturbance and activities, excessive exhaust from internal combustion engines, etc.
67	Equipment and vehicles that show excessive emissions of exhaust gases due to poor engine adjustments, or other inefficient operating conditions, shall not be operated until corrective repairs or adjustments are made.