

Preliminary Operational Standards and Guidelines

Introduction

This appendix lists the Forest Plan Standards and Guidelines, Minnesota Forest Resource Council Guidelines and Project Recommendations that are routinely employed during harvesting, road work, and prescribed burning operations. The direction in this appendix is applicable to all action alternatives and would be required during implementation of the proposed management activities. Specific measures applied to individual stands are shown on the project unit cards rather than in this Appendix.

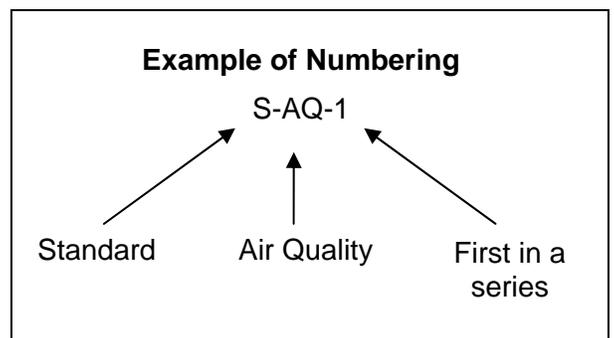
Forest Plan operational standards and guidelines are outlined in silvicultural prescriptions, marking plans, cruise plans, and burn plans. Personnel use these practices during on-the-ground work laying out treatment units, administering timber sales, prescribed burning, and reforestation activities. Standards (S) are required limits to activities. These limitations help the Forest to reach the desired conditions and objectives. Standards also ensure compliance with laws, regulations, executive orders, and policy direction. Guidelines (G) are preferable limits to management actions that may be followed to achieve desired conditions. Guidelines are generally expected to be carried out but provide for some operational flexibility in responding to variation over time. Some implementation practices (HLSP) have been developed specifically for the Ham Lake Salvage Project and are also listed below.

The Superior National Forest implements the Minnesota Forest Resources Council (MFRC) Voluntary Site-level Guidelines when managing forest resources. Forest Plan standards and guidelines are intended to provide equal or greater protection than MFRC guidelines. MFRC guidelines may be modified if the proposed change provides equal or greater benefits to forest resources.

The Standards (S), Guidelines (G), Minnesota Forest Resources Council guidelines (MFRC) and Ham Lake Salvage Project implementation practices (HLSP) listed in this Appendix would be applied to all treatment units proposed in the Ham Lake Salvage Categorical Exclusion. These practices are monitored through the administration of timber sale contracts and by Forest-wide monitoring.

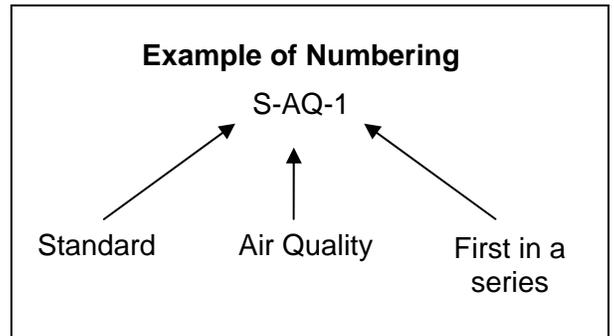
Key to Numbering

S	Standard
G	Guideline
MFRC	Minnesota Forest Resource Council guidelines
HLSP	Ham Lake Salvage Project
AQ	Air Quality
FW	Forest-wide
HR	Heritage Resources
ID	Insects, Diseases, and Disturbance Processes



Key to Numbering

S	Standard
G	Guideline
MFRC	Minnesota Forest Resource Council guidelines
HLSP	Ham Lake Salvage Project
PH	Public Health and Hazardous Materials
RTL	Trails
SC	Scenic Resources
TM	Timber Management
TS	Transportation Systems
VG	Vegetation Management
WL	Terrestrial and Aquatic Wildlife
WS	Watershed Health, Riparian Areas, and Soil Resources



Watershed Health, Riparian Areas, and Soil Resources (WS)

Watershed Health

- S-WS-2 Excavated soil material, construction debris, spoils or debris from dredging projects, and debris and soil moved from upland sites during timber management activity (such as timber harvest, shearing or brush raking) will be deposited or spread out in upland locations. Stabilize soil deposited in this manner with vegetation.
- S-WS-3 Salvage and reuse topsoil for site rehabilitation during construction projects or other land use activities. When topsoil is unsuitable for reuse, other methods or tools such as sodding, hydro-seeding, fertilization, or erosion-resistant matting may be used to help rehabilitate disturbed areas.
- S-WS-6 Management activities involving heavy equipment crossing (by road, trail, or skid trail) of any stream or drainage ditch, or operations on the immediate shoreline of any lake or open water wetland will be designed and conducted in a way that:
 - a. Limits the number of crossing locations to the absolute minimum needed to conduct the activity
 - b. Maintains or improves channel stability (dimension, pattern and profile) or shoreline stability in the affected or connected waters
 - c. Uses filter strips as directed by Forest Plan guideline G-WS-4 and MFRC site level guidelines.
- G-WS-1 Restore eroded sites, generally employing natural-appearing stabilization materials. Native species will be used in the restoration of vegetative cover. Non-native annuals may be used as nurse crops to obtain rapid stabilization while slower-growing native species are becoming established. For Riparian Areas as a Whole (Both the Aquatic and Non-aquatic Portions)

Non-Aquatic portion of Riparian Areas

- G-WS-4 On slopes averaging 18% or steeper, the width of filter strips adjacent to lakes or

streams will be either 150 ft. from the ordinary high water mark, 150 ft. from the bankfull elevation, or the width of the entire slope that is adjacent to the water's edge, which ever is greater.

Exceptions to filter strip guidelines are allowed for projects specifically designed for stream, lakeshore, or wetland restoration.

- G-WS-5 In project areas subject to soil or vegetation disturbance, where the landward limit of the functional riparian area has not been site-specifically identified as part of project planning, a default “near bank” and “remainder” riparian management zone width of 100 feet each will generally be used along lakes, open water wetlands and streams.

Near-Bank Riparian Management Zone

- S-WS-9 Within the near-bank zone, harvest trees only to maintain or restore riparian ecological function.
- S-WS-10 Within the near-bank zone, do not deposit debris or spoils from maintenance, construction, or dredging. However, depositing materials for habitat improvement or restoration is allowed.
- G-WS-6 Within the near-bank zone, minimize soil disturbance and avoid activities that may destabilize soils or add sediment to the water.
- G-WS-7 Within the near-bank zone, minimize mowing or any other activity involving intensive removal of understory vegetation.

Soils

- G-WS-8 Follow the limitations on management activities as specified in Table G WS-8.

Table G-WS-8. Limits on Management Activities Designed to Safeguard Soil Productivity on Superior National Forest. (Mitigations are shown as codes which are listed and explained in Table G-WS-8a. A brief description of each ELT, and principle threats to soil productivity associated with activities on each ELT, is shown in Table G-WS-8b).

Activity/Limitation	1	2	3	4	5**	6	7	8	9	10	11	12**	13	14	15	16	17	18**
Skidding	Ax, B	A	Ax, B	A	#, A	A	B, E	E	B, E	Ax	B, E	#, A, E	B	Ax, B,	Ax, B	Ax, B, E	#, A, x, B, E	#, A, E
Landings	A	A	A	A	#, A	A	+	+	--	Ax	+	--	+	Ax	Ax	#, Ax	#	--
Whole tree Logging	+	+	+	+	--	#	#, E, F	+, E, F	#, E, F	+	#, E, F	--	+	+	+	+, E, F	#, E, F,	#, E, F,
Tracked vehicles (feller buncher etc)	Ax	A	Ax	A	#, A	A	+	+	#	+	+	#	+	+	+	+	#	#, A
Temp roads, trails	#, Ax	#, A	#, Ax	#, A	#, A	#, A	+	+	+	Ax, B	+	--	+	Ax	Ax	+	--	--
Discing	Az, B	--	Az, B	--	--	--	B	B	--	Az, B	B	--	B	Az, B	Az	B	--	--
Reforestation	+	+	+	+	E	+	E, F	+	+	+	E, F	E, F	+	+	+	E, F	E, F	E, F
Machine Planting	Ax, B	--	Ax, B	--	--	--	Ax, B	Ax, B	#, B	Ax, B	B	--	B	Ax, B	Ax, B	B	--	--
Bracke scarification and	Az	--	Az	--	--	--	C, E	C,	#	Az	C,	--	C	Az	Az	C,	C,	--

Table G-WS-8. Limits on Management Activities Designed to Safeguard Soil Productivity on Superior National Forest. (Mitigations are shown as codes which are listed and explained in Table G-WS-8a. A brief description of each ELT, and principle threats to soil productivity associated with activities on each ELT, is shown in Table G-WS-8b).

Activity/Limitation	1	2	3	4	5**	6	7	8	9	10	11	12**	13	14	15	16	17	18**
Barrel scarification								E			E					E	E	
Blading, Shearing, Rockraking	Ax, B	A	Ax, B	A	#, A	A	D, E	D, E	D, E	Ax, D	D, E	#, D, E	D	Ax, D	Ax, D	Ax, D, E	--	--
Machine Piling/Bundler	Ax	A	Ax	A	#, E	E	E	E	--	+	E	#, E,	+	+	+	E	E	#, E
Prescribed Fire	+	+	+	+	#, E, F, G	+	E, F, G	E, F, G	#, E, F, G	+	E, F, G	#, E, F, G	+	+	+	E, F, G	E, F, G	#, E, F, G
Use of low psi tires or other equipment with similar integrity	H	H	H	H	H	H	+	+	+	+	+	--	+	+	+	+	H	H

Table G-WS-8a. Activity Limit Codes Used in Table G-WS-8

Code	Activity Limitation Designed to Protect Soil Productivity
**	No activities are permitted on these ELTs for purposes of timber production. Activities done for salvage, or to achieve other multiple use desired conditions or objectives are strongly discouraged on these ELTs and are subject to any applicable limitations shown elsewhere in this table.
+	Practice permitted on this ELT, subject to any applicable limitations specified elsewhere in this table.
--	Practice not permitted on this ELT.
#	Practice is strongly discouraged on this ELT. If undertaken, it is subject to any applicable limitations specified elsewhere in this table.
A	Limit activity to frozen soil (frozen to a depth that will support equipment that is being used).
Ax	Limit activity to frozen soil (frozen to a depth that will support equipment that is being used) or during normal dry period (generally July 1- Sept 15).
Az	Limit activity to normal dry period (generally July 1- Sept 15).
B	On slopes exceeding 18%, confine operations to the lower end of slopes and avoid creating long uninterrupted equipment "paths" that could channel water and erode soil. For slopes that exceed 35%, design for and favor activities that would provide for use of equipment and techniques that minimize operations on these slopes.
C	Bracke scarification not allowed when slopes exceed 18%.
D	Shearing not allowed on unfrozen ground when slopes exceed 18%, with the exception that it may be permitted during dry conditions if mineral soil is not exposed.
E	Retain/return distributed slash or woody debris and, where appropriate, retain stumps and bark on site.
F	Determine long term strategy on these ELTs for soil nutrient and tree nutrient efficiency. Favor maintaining or converting to pine/conifer type within LE vegetation composition by type objectives, and favor vegetation objectives for older growth stages. If existing stand is aspen/birch, favor partial cut & under plant to convert, or leaving more residual basal area when converting.
G	Follow G-WS-10.
H	Take precautionary measures to minimize soil disturbance when using this equipment on these sites.

- G-WS-9 During resource management activities, minimize adverse impacts to soil productivity by striving to have no more than 15 percent of a treatment area in a detrimentally compacted, eroded, rutted, displaced, or severely burned condition
- G-WS-11 On Ecological Land Types (ELTs) 7, 8, 9, 11, 12, 16, 17, and 18, management activities used for vegetation competition control will be designed and conducted in ways that minimize loss of the forest floor (surface O layer and duff layer).

Wetlands

- S-WS-11 Activity fuels will not be pushed into windrows that encircle wetlands.
- G-WS-12 Use of wetlands under frozen conditions for temporary roads and skid trails will generally be permitted as long as no fill is placed in the wetland. These roads or trails will be blocked to discourage vehicle use under unfrozen conditions.
- G-WS-13 Wetland impacts will be avoided whenever possible. Where impacts are unavoidable, minimize and compensate for loss when undertaking projects.
- G-WS-14 Avoid felling trees into non-forested wetlands, except where done for purposes of habitat restoration.
- G-WS-15 Wetlands will be managed to prevent the reduction of their water quality, fish and wildlife habitat, and aesthetic values. Management actions will not reduce water quality within a wetland, or upstream or downstream of a wetland, unless restoration of natural conditions is the primary goal of the activity.
- MFRC-WS-1 Seasonal ponds and other lowland inclusions provide important habitat for woodland insects, amphibians and other species. Seasonal ponds have an identifiable edge caused by annual flooding and may be identified during dry periods by the lack of forest litter in the depression.

In upland stands, seasonal (vernal) ponds and other small lowland inclusions identified during layout will be protected with a minimum 50 filter strip. This buffer can be used to help meet legacy patch and/or reserve tree needs. If this buffer is not being used to help with legacy patch needs then on sites with wind firm soils limited harvest can occur within this buffer, but a minimum of 80 basal area should be retained (MFRC, General guidelines, pg 24-28. Pg 73).

Care should be taken to keep equipment out of the pond itself.

Timber

- G-TM-4 Allow harvest of white cedar trees (in any forest type) only when re-growth of cedar is likely to be successful or for research purposes.
- G-TM-5 In stands 20 acres or larger that were regenerated with clearcuts, retain a minimum of 5% of the stand in legacy patches of live trees where no harvest occurs. Wherever possible these should be at least two acres in size. These legacy patches will protect soil organic matter and associated organisms and remaining vegetation will aid in the re-colonization of the adjacent managed area.

Terrestrial & Aquatic Wildlife (WL)

Lynx

G-WL-2 Provide for the protection of known active den sites during denning season.

Bald Eagle

S-WL-3 Management activities for the bald eagle will be governed by Northern Lakes States Bald Eagle Recovery Plan: 1983

*(from the Northern States Bald Eagle Recovery Plan 1983 –USFWS)
Disturbance Buffer Zones for Nest Trees.*

1. Primary Zone: 330 feet from the nest. All land use except actions necessary to protect or improve the nest site should be prohibited in this zone. Human entry and low-level aircraft operations should be prohibited during the most critical and moderately critical periods, unless performed in connection with eagle research or management by qualified individuals. Motorized access into this zone should be prohibited. Restrictions on human entry at other times should be addressed in the breeding area management plan, considering the types, extents, and durations of proposed or likely activities.
2. Secondary Zone: 660 feet from the nest. Land-use activities that result in significant changes in the landscape, such as clearcutting, land clearing, or major construction, should be prohibited. Actions such as thinning tree stands or maintenance of existing improvements can be permitted, but not during the most critical and moderately critical periods. Human entry and low-level aircraft operations should be prohibited during the most critical period unless performed in connection with necessary eagle research and management by qualified individuals. Roads and trails in this zone should be obliterated, or at least closed during the most and moderately critical periods. Restrictions on human entry at other times should be addressed in the breeding area management plan, considering the types, extents, and durations of proposed or likely activities.
3. Tertiary Zone: ¼ mile from the nest, but may extend up to ½ mile if topography and vegetation permit a direct line of sight from the nest to potential activities at that distance. The configuration of this zone, therefore, may be variable. Some activities are permissible in this zone except during the most critical period. Each breeding area management plan may identify specific hazards that require additional constraints.

Roosting and Potential Nest Trees

- a) Three or more super-canopy trees (preferably dead or with dead tops) should be identified and preserved within ¼ mile of each nest as roosting and perching sites.
- b) In areas identified as potential nesting habitat, there should be at least 4 - 6 over-mature trees of species favored bald eagles for every 320 acres within 1320 feet of a river or lake larger than 40 acres. These trees should be taller than surrounding trees or at the edge of the forest stand, and there should be clear flight paths to them.

Regional Forester Sensitive Species

All Sensitive Species

G-WL-11 Avoid or minimize negative impacts to known occurrences of sensitive species.

HLSP-WL-1 The Biologist or Botanist may identify other species of concern specific to the project area. A list of species of concern and important habitat components will be provided to the implementation crew prior to layout operations. If any threatened, endangered or sensitive plants and animals or their nests, dens or roost trees are found during planning layout or operations, activities would be temporarily halted in the area and the District Biologist or Forest Botanist would be notified. The District Biologist or Botanist would assess the risk to species and where appropriate; mitigation measures would be implemented prior to restarting operations. The Forest Plan, recovery plans and conservation strategies will be used when making mitigation recommendations.

HLSP-WL-3 If any tree with a large stick nest is discovered, this tree and a 150 foot buffer (to provide wind shelter and cover) should be retained (excluded from harvest). Look for opportunities to incorporate nest tree into reserve tree clumps or legacy patches. Nest tree and/or buffer may be removed if District Biologist visits site and determines that protection is not warranted

Gray Wolf

G-WL-10 Provide for the protection of known active gray wolf den sites during denning season.

Boreal owl

S-WL-6 Prohibit management activities within 300 feet of known nest sites.

G-WL-13 Minimize activities that may disturb nesting pairs during critical nesting season (March 1-June 1).

Great gray owl

G-WL-14 Allow, to the extent practical, only activities that protect, maintain, or enhance site conditions within 660 feet of a known nest site.

G-WL-15 Minimize activities that may disturb nesting pairs during critical nesting season (March 1 - June 1).

Three-toed woodpecker

G-WL-17 Protect known nest sites within a 200-foot radius surrounding nest sites until young have fledged.

G-WL-18 Where ecologically appropriate, retain 6-10 jack pine per acre in even-aged regeneration harvests in mixed conifer stands.

Sensitive Fish, Mollusks, Aquatic Insects

G-WL-19 Protect known sensitive mussel beds.

G-WL-20 Avoid management activities that may change microclimate or microhabitat conditions in steep ravines or on cliffs and talus slopes that are known or are highly

likely to harbor sensitive plants.

Sensitive Plants

HLSP-WL-5 Where possible, no roads would be placed in lowland cedar or black ash stands; in cases where this is unavoidable, a Sensitive (RFSS) plant survey would be conducted prior to road construction.

Management Indicator Species

Northern goshawk (also a sensitive species)

S-WL-10 At northern goshawk nest sites with an existing nest structure, prohibit or minimize, to the extent practical, activities that may disturb nesting pairs in an area of 50 acres minimum (860 ft. radius) during critical nesting season (March 1 – August 30).

At northern goshawk nest sites in an area of 50 acres minimum (860 ft. radius), to the extent practical, allow only those activities that protect, maintain, or enhance high quality habitat conditions: 100% mature forest (>50 yrs old) with continuous forest canopy (>90% canopy closure) and large trees with large branches capable of supporting nests.

G-WL-22 Within northern goshawk post-fledging areas, minimize activities, to the extent practical, that may disturb nesting pairs during critical nesting season (March 1 – August 30) and, to the extent practical, within a 500 acre area encompassing all known nest areas within the territory:

Maintain suitable habitat conditions on a minimum of 60% of the upland forested acres in post-fledging areas. Suitable habitat: jack pine and spruce/fir forest types >25 years and all other forest types >50 years with semi-closed to closed canopy (>70%). Aspen and birch forest types 25-50 years may be considered suitable if field review verifies that foraging habitat trees average 50 feet tall and canopy closure is 50-70% or greater.

Non-native Invasive Species

G-WL-23 During project implementation, reduce the spread of non-native invasive species.

HLSP-WL-6 For occurrences of tansy, bull thistle, Canada thistle, spotted knapweed, leafy spurge, St. John's Wort, plumeless thistle, and goutweed: either re-locate skid trails, temporary roads, or landings if infested with one of these species and use will be in summer, OR treat (e.g. mow or pull) before use if use would be in summer. Plants of these species located within 50 feet of treatment units would be mowed before mechanical site preparation occurs.

Other Species of Interest

Osprey

G-WL-24 Minimize activities that may disturb nesting pairs of osprey within 330 feet of the nest during critical nesting season (April 1 - August 15).

G-WL-25 From 330 to 660 feet from nest trees, allow only those management activities that maintain, protect, or enhance nesting area habitat.

Aquatic Communities

S-WL-12 Where management activity is causing or may cause active bank erosion that is expected to contribute to a reduction in water quality and degradation of aquatic habitats, construct stabilization structures, plant vegetation, or otherwise manipulate vegetation to eliminate or minimize soil erosion while protecting and improving lakeshore or streamside environments and riparian habitats.

Heritage Resources (HR)

S-HR-9 Historic properties to be protected include protected areas ("buffers") beyond known site limits, determined on a case-by-case basis considering landform, vegetative cover, access, and planned project activities.

Recreation (REC)

G-REC-2 Forest management activities will generally reflect recreation objectives while minimizing conflicts with recreation uses by:

- a. Avoiding use of system trails for skidding logs
- b. Minimizing crossing skid trails over system trails
- c. Placing safety signing to warn recreationists of activities in an area
- d. Piling slash and other logging debris out of view of recreation sites and system trails
- e. Scheduling activities during low recreation use periods.

Trails (RTL)

G-RTL-3 During timber sale activities, combined use of roads or trails by logging trucks and motorized or non-motorized recreationists will generally be avoided when other routes are available.

Scenic Resources (SC)

HLSP-SC-1 Within 100 feet of either side of Concern Level 1 and 2 travel routes, lakes and waterways, and use areas, slash or residue created by logging operations should be removed to the greatest practical extent. If not possible, then slash depth should be less than 12" deep. In the remainder of the unit, slash would be lopped and scattered and would not exceed a height of 3 feet. Suggested techniques include, but are not limited to, complete removal, chipping, lopping and scattering, and piling and burning.

HLSP-SC-2 In units bordering private land, no logging debris would be permitted on National

Forest System land within 25 feet of a boundary with private land.

- G-SC-4 Evidence of temporary activities (such as staking, paint, flagging, equipment maintenance, and staging areas) should be minimized, removed, or cleaned up immediately following project completion in High SIO areas.
- G-SC-5 In Moderate and High SIO areas, log landings should be screened if they can be viewed from travel ways, recreation sites, and bodies of water with access. After project completion, log landings should be reforested or rehabilitated to mimic natural openings.
- G-SC-6 In Moderate and High SIO areas, schedule mechanized activities during periods of low recreation use if the mechanized activities can be viewed from travel ways, recreation sites, and bodies of water with access.
- G-SC-7 Furrows, trenches, fuel breaks, plantations, etc., should be located to reduce linear appearance if they can be viewed from travel ways, recreation sites, and bodies of water with access. Natural appearing edges rather than straight edges will generally be used.

Transportation System (TS)

Road and Trail Construction, Reconstruction, and Maintenance

- S-TS-1 Newly constructed or reconstructed road and trail crossings of streams will be designed and built to minimize erosion. Surfacing (such as gravel, crushed rock, or asphalt) will be used at all crossings where vegetative cover is either inappropriate or expected to be inadequate for effective long term erosion control. Solid surfaces will be used in the construction or reconstruction of bridge decks on unpaved roads.
- S-TS-2 During non-frozen road surface conditions, close winter roads to all motor vehicle traffic.
- G-TS-1 Generally use minimum road and trail design standards to meet the appropriate purpose of the road or trail and to fit the land characteristics (form, line, texture, TEUI units, etc.).
- G-TS-3 New roads and trails constructed in High and Moderate SIO areas will generally blend in with the surrounding landscape as much as practical.
- G-TS-4 Roads and trails will generally be designed so that stream crossings are not located at the low point in the road grade (e.g. avoid bridge and culvert locations where sediment-laden runoff from the road approaches or ditches can collect and directly enter the stream).
- G-TS-5 Clearing widths for roads and trails at riparian area crossings will generally be kept to the minimum needed to provide a safe and functional crossing.
- G-TS-6 Where practical and beneficial, all stream crossing structures and associated road embankments in the flood-prone areas on OML 1 roads will generally be removed if the road will not be used again within five years.

- G-TS-8 Adjacent to roads and trails, generally manage erosion and sedimentation to maintain water flow to protect natural stream behavior and allow for natural aquatic species movement.
- G-TS-9 Where roads and trails cross streams, generally use structures that permit passage for fish and aquatic life and properly distribute flood flow, bankfull flow, and sediment transport capacity. Generally favor bridges and arches (including temporary bridges where appropriate) rather than culverts.
- G-TS-10 Where ditches are needed, generally use techniques to minimize subsurface flow interception and flow concentration.
- G-TS-12 On existing OML 1 roads, an effective barrier will generally be installed as needed to prevent use by highway-licensed vehicles and ORVs. ATV and OHM use may continue to be allowed on some existing OML 1 roads.

Temporary Roads

- S-TS-3 As soon as access use is completed, stabilize temporary roads and effectively close them to motorized traffic. Vegetation will be established within 10 years after the termination of the contract, lease, or permit.
- G TS-13 Locate temporary roads in areas where they minimize resource damage.
- G TS-14 Temporary roads are generally not intended for public use, but public use may be temporarily allowed if needed to meet management objectives.

Road Decommissioning

- G-TS-16 Roads and trails designated for decommissioning will generally be subject to the following:
 - a. The road or trail will be rendered unusable by motorized vehicles but may remain accessible to foot travel.
 - b. Stream crossing structures will be removed.
 - c. Road and trail fills will be removed from flood prone and wetland areas to restore stream and wetland crossings to original contours.
 - d. Removed fill will be reused or disposed of in a way that will not restrict flow or contaminate surface water.
 - e. Exposed soil will be revegetated.

Public Health and Hazardous Materials (PH)

- G-PH-2 Equipment refueling will generally not be done in wetlands (Ecological Landtypes 2, 4, 5, or 6), other areas with poorly drained soil, filter strips, or riparian management zones. In those rare instances where refueling operations in such areas are necessary, operators will have ready access to a fuel spill kit consisting of items such as a shovel, sorbent pads, kitty litter and plastic sheeting. Store fuels in compliance with State regulations for above-ground and temporary storage tanks.