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Introduction

Roads and access within the Chippewa and Superior National Forests have had a long history. Earliest access consisted of birch bark canoes and foot travel. Later, in the 1800's as timber was sought and minerals were discovered, the start of a constructed transportation system on each National Forest was begun. Both roads and light-gauge railroads were built, pushing ever farther north and west from Lake Superior, even into the present day Boundary Waters Canoe Area Wilderness.

On the Superior National Forest, roads and railroads built for mining tended to be built with more permanency to handle the heavy loads of iron ore hauled to Lake Superior, and they were concentrated on the Iron Range and the routes to Lake Superior. Roads and railroads constructed to harvest timber tended to reach out across the Forest over time as cutting worked its way north and west. These were modest facilities laying lightly on the land and relying heavily on winter routes on frozen ground and lakes. Most of these original routes were later abandoned, have been reclaimed by nature, and are barely discernible on the ground today.

On the Chippewa National Forest, roads and light-gauge railroads were built primarily for timber harvest, and pushed north and west across north central Minnesota. These facilities were also modest in design and lay lightly on the ground. Due to the better soil conditions, these routes have tended to remain on the ground even after being abandoned, and continued to be used for forest access, homesteading, and recreation.

Over the decades, cutting of second growth timber and less valuable tree species spurred another round of access needs, coinciding with a growing interest in forest recreation by the public and the establishment of the National Forests in Minnesota. For the last 60 years the Forest road system on each National Forest has expanded, and the road standards have increased some to accommodate the transport of timber and commodities, increased recreation demands, and an increasing number of non-federal access needs (both private and other governmental) within the National Forests. The road systems today facilitate management of the National Forests' resources, provide recreational opportunities, and even contribute to the rural transportation infrastructure, mostly due to the significant mixed ownership pattern on the Forests.

The effect of road building on the landscape has varied across the nation from forest to forest depending on the terrain, climate, construction standards, maintenance, and use. This holds true for the Chippewa and Superior NFs too. Over the years the Forest Service has studied the social and environmental effects of landscape alteration by individual roads across the nation. Recently, each national forest was required to analyze their main road system (the higher standard roads suitable for passenger cars) to determine the minimum road system that will support land management objectives, provide a safe road system for the public, be responsive to the public needs, and be environmentally sound, affordable, and efficient to manage.

This appendix summarizes the following:

- Agency direction and policy for roads
- Existing condition of roads on the Chippewa and Superior NFs
- Estimates of roads needed by alternative

Road Definitions

Forest Service Manual (FSM) 7700

- **Road:** A motor vehicle travelway over 50 inches wide, unless designated or managed as a trail. A road may be classified, unclassified, or temporary.
- **Classified Roads:** Roads wholly or partially within or adjacent to National Forest System lands that are determined to be needed for long-term motor vehicle access, including Forest system roads, state roads, county and township roads, and other roads authorized by the Forest Service. (“Other roads” would include special use roads to access non-federal lands.)
- **National Forest System roads:** Classified forest roads under Forest Service jurisdiction being wholly or partly, or adjacent to, and serving the National Forest System and necessary for the protection, administration, and use of the National Forest System and the use and development of its resources. (Jurisdiction is the legal right to control or regulate use of the transportation facility, with that right being authorized by fee title ownership, an easement, an agreement, or some similar method.)
- **Unclassified Roads:** Roads on National Forest System land that are not managed as part of the forest transportation system, such as unplanned roads, abandoned travelways, and off-road vehicle tracks that have not been designated and managed as a trail; and those roads that were once under permit or other authorization and were not decommissioned upon the termination of the authorization. See Figure A-1 for an example of a typical unclassified road on the Chippewa and Superior NFs.

Unclassified roads on each National Forest have evolved over the decades, and are mainly old Forest Service temporary roads that were never properly decommissioned or “legacy” roads built in the past for timber access and abandoned by the original owner. Roads analysis and environmental analysis must be performed at the project level to determine if an unclassified road should be added to the road system, converted to a trail, or decommissioned. All unclassified roads will be analyzed within the next planning period to determine their status.

- **Road Decommissioning:** Activities that result in the stabilization and restoration of unneeded roads to a more natural state.
- **Temporary Roads:** Roads authorized by contract, permit, lease, other written authorization, or emergency operation not intended to be part of the forest transportation system and not necessary for long-term resource management. These roads are not included in the National Forest System road inventory and are decommissioned after use.
- **Infrastructure (INFRA) Travel Routes:** INFRA Travel Routes is an agency road inventory database used by each national forest and designed to document all national forest classified roads on the transportation system, and those non-system unclassified roads still being driven and needing a determination of status (added to the transportation system and maintained, converted to a system trail, or decommissioned and closed to motorized travel).

Figure A-1. A typical unclassified road existing on the Chippewa and Superior NF



Road Functional Classification

Forest system roads are defined on the national forests by three functional classifications to describe their function within the transportation system.

- **Arterial:** Provides service to large land areas, and connects with others arterial routes or public highways. These are usually through-routes.
- **Collector:** Serves smaller land areas than arterials, and connects arterials to local roads or terminal facilities.
- **Local:** Serves as a single purpose road, and connects terminal facilities with collectors or arterials.

Objectives for Road Maintenance

Each Forest system road is to be maintained to a level commensurate with the planned function and use of the road. The intended level of maintenance to be received by each road is termed the Objective Maintenance Level (OML). OMLs are divided into five levels of maintenance intensity, with the levels numbered from 1 through 5. OML 1 designating the lowest level of maintenance, and OML 5 designating the highest level of maintenance.

The Objective Maintenance Levels are defined in Table F-1 below:

Table F-1. Objective Maintenance Level Definitions for Forest System Roads (FSM 7709-58)		
OML 1	Basic custodial care (closed)	Assigned to intermittent service roads when they are closed to street legal motorized vehicular traffic. The closure period must exceed one year. Roads receiving OML 1 maintenance would generally be managed at OML 2 during the time they are open for traffic. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns.
OML 2	High clearance vehicles	Assigned to roads operated for use by high clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted (such as log haul), dispersed recreation, or other specialized uses. Log haul may occur at this level.
OML 3	Suitable for passenger cars.	Assigned to roads open and maintained for travel by a prudent driver in a passenger car. User comfort and convenience are not considered priorities. Roads are typically low speed, single lane with turnouts and have only spot surfacing.
OML 4	Moderate degree of user comfort	Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced.
OML 5	High degree of user comfort	Assigned to roads that provide a high degree of user comfort and convenience. These roads are normally double lane, and may be aggregate surfaced or paved facilities.

Figure F-2. Example of an OML 1 road, Superior National Forest



Figure F-3. Example of an OML 2 road, Chippewa National Forest



Figure F-4. Example of an OML 3 road Superior National Forest.



Figure F-5. Example of an OML 4 road. Superior National Forest.



Figure F-6. Example of an OML 5 road. Superior National Forest.



Chippewa and Superior National Forest Road Definitions

Forest system roads are classified roads under Forest Service jurisdiction that the national forests plan to maintain for long-term use (permanent). These roads are given road management objectives, and have road maintenance commensurate with their intended use and function. They may be closed either seasonally or for longer periods of time when no land management activities are in progress.

The Chippewa and Superior NFs further define Forest system roads as follows:

- **All-Season roads** are constructed for year-round use and are normally aggregate surfaced, with use only restricted during normal spring load restrictions. These are typically Objective Maintenance Level 3, 4, and 5 roads, and are suitable for passenger car travel.
- **Summer Seasonal roads** are constructed for dry weather use, and are normally constructed of native or pit run borrow material. In addition to normal spring load restrictions, these roads are normally closed to use during unseasonably wet weather periods. These are typically Objective Maintenance Level 1 and 2 roads, and suitable for high-clearance vehicles.
- **Winter roads** are constructed to lie lightly on the land to reduce ground disturbance, typically without removal of the existing topsoil, and utilize snow and ice as part of the road surface. They are only used during frozen roadbed conditions, and are closed at other times of the year. These are typically Objective Maintenance Level 1 roads (closed) when not maintained for winter travel, and move up to an OML 2 when in winter use.

On the Chippewa National Forest about 30% of the Forest system roads are winter roads, and on the Superior National Forest about 20% of the system roads are winter roads.

Winter roads are a very important part of winter timber harvest, allowing needed access over very poor

Figure F-7. Winter road during non-use period.



soil types without damaging the ground.

- **Temporary Roads.** Each national forest also uses Temporary Roads for land access. These are temporary routes needed for short-term vehicular access to allow the accomplishment of individual land management activities. They are not included in the Forest system road inventory (INFRA Travel Routes). Most importantly, temporary roads will lie lightly on the ground, requiring minimal cuts and fills, have a minimum number of wetland/drainage crossings, and are decommissioned after their use is completed.

Most temporary roads are built for timber sale access and follow-up activities such as site preparation and reforestation. They are generally used for a one to five year period. These roads typically provide access from the landings to Forest system roads or other public roads, with skid roads providing access from the cutting units to the landings.

Figure F-8. Winter road during winter-use period.



**Figure F-9. Temporary road, Superior NF, Iron Pope Timber Sale
Fall 2000.**



**Figure F-10. Temporary road, Superior NF, Iron Pope Timber Sale
December 2000.**



Figure F-11. Temporary road, Superior NF, Iron Pope Timber Sale August 2002.



Current Roads Policy

Nationally, as on the Chippewa and Superior NFs, roads have been an issue with groups that want less road access to the National Forests, and with groups that want more road access. It is important that the national forests have a sound policy on road planning, management, and decommissioning to meet the national direction to maintain the minimum road system necessary to carry out land management activities. There is a great deal of direction to follow for road management on the Forests, including the recently published Transportation Rule and Policy in the Federal Register (36 CFR 212; January 12, 2001). In addition, the Forests have the traditional sources of agency direction, including the Forest Plan, Forest Service Manuals (revised), timber sale contract clauses, and Forest Service Handbooks.

1986 Forest Plans

The 1986 Forest Plans for the Chippewa and Superior NFs provided guidance in the development and maintenance of the road transportation system on the National Forests in Chapter 3, Standards and Guidelines – 7700 Transportation System, including:

- Area specific transportation planning would be conducted and documents before the construction of any new road or reconstruction of an existing road, with the road standard and location determined to satisfy

resource management objectives.

- Roads would be maintained to the degree necessary to serve intended management purpose.
- Roads would provide for user safety, economy, access and convenience while protecting adjacent natural resources and meeting applicable air and water quality standards.
- Roads not needed for resource management purposes after their initial use would be closed to public vehicular travel.
- Temporary roads would be planned (location and construction standard) prior to the start of the activity they were to serve, and they would be located with future activities in mind so that the same route could be reused during future entries whenever possible.

National Transportation Policy and Rule (36 CFR 212)

The current transportation policy and rules for the National Forests requires each Forest to:

- To maintain the minimum road transportation system necessary to provide access to the Forest for its management, for recreation and rural access, and to use a science-based roads analysis process to determine that minimum system. Permanent roads on the road transportation system are classified Forest system roads.
- To decommission unneeded unclassified roads.
- To secure a sustainable funding source to improve or restore the main roads to establish a “seamless” interface with the other neighboring public road agencies (Public Forest Service Roads Program).
- To maintain a sustainable flow of goods and services while not compromising the health of the land and water (especially integrating the roads analysis with the pending watershed analysis).

The policy and rules place an emphasis on maintaining and reconstructing existing passenger vehicle roads rather than building new ones, and make the existing Forest road system safe, responsive to the public needs, environmentally sound, affordable, and efficient to manage.

Roads Analysis Process

The Roads Analysis Process (RAP) is a science-based analysis required to determine the road system needs on each Forest. It was developed and published in August 1999 by the agency to provide guidance in determining the transportation needs (Roads Analysis: Informing Decisions About Managing the National Forest Transportation System, Miscellaneous Report FS-643, 1999). The RAP process is designed:

- To identify transportation issues on each Forest.
- To identify heavily used roads needing more intensive maintenance or upgrading.
- To identify roads that are no longer needed or are environmentally damaging and proceed to have them decommissioned.
- To include public contact, comment and input to help complete the roads analysis.
- To make recommendations on transportation needs during later environmental analysis (NEPA).
- To provide guidance in transportation system decisions to line officers.

A roads analysis is required for any land management decision if the Forest plans to construct a new road, reconstruct an existing road, add an unclassified road to the system, decommission an unclassified road, or remove a road from the system and decommission it. A roads analysis is not required when temporary roads are solely planned for access, but it may be performed to confirm that adequate access can be achieved by temporary roads without the need for additional or improvement of system roads.

The transportation rule and policy (36 CFR 212; January 12, 2001) further required all national forests to complete a forest-scale roads analysis on their main road system (OML 3, 4, and 5 roads) by January 13, 2003. Both the Chippewa and Superior NFs completed their forest-scale roads analysis during the fall of 2002, and are posted on each National Forest's internet site. Both National Forests recommended the following:

- The current level of OML 3, 4, and 5 road miles is appropriate for the National Forests, providing needed access for recreation opportunities, land management, and access to other land ownerships while not presenting an unacceptable risk to the area's ecosystem.
- The National Forests will coordinate our road improvements with the other road agencies (counties, townships, etc.) to develop a "seamless" regional transportation system, and will seek opportunities to transfer jurisdiction of our roads to the other road agencies when significant private develop occurs.
- The National Forests will utilize the new Public Forest Service Roads (PFSR) program to secure funding to improve the main National Forest roads to address public safety issues and to comply with national design standards.
- The National Forests will conduct field condition surveys of existing stream and wetland crossings and make needed improvements to protect watershed health and species travel.
- The National Forests will conduct on-going road condition surveys to assess and prioritize needed maintenance.
- The National Forests will explore additional cooperative road maintenance efforts with the other public road agencies on the National Forests.
- The National Forests will review the existing OML assignments for our main roads to determine if they meet the Forest-wide intent for driving comfort for passenger cars and for intended maintenance effort.

Forest Service Manuals and Handbooks

The Forest Service Manuals and Handbooks also emphasize the need for transportation planning. Some of the key points are:

- Thorough planning is required to determine access needs for any FS land management activities before completing NEPA analysis associated with those activities. This includes establishing road management objectives, road standards, maintenance levels, road closure procedures, etc.
- Determine when long-term, permanent roads (classified roads) and short-term, temporary roads are needed.
- National Forest roads will be of the minimum standards necessary to meet safety requirements, user needs and resource access needs.
- All system roads will be constructed in conformance with approved environmental safeguards to mitigate damage to adjacent resources. They will lie lightly on the land and minimize disturbance to the land.
- Roads shall be cost-effective, and the best value for the public, considering public safety, life-cycle costs, effects on the environment, etc.
- Each national forest is required to complete thorough transportation planning using the RAP process for each planning area or project area during the NEPA analysis process. The intensity of planning efforts shall be commensurate with the size and complexity of the area and existing road system being analyzed.

Public Forest Service Roads Program

The Forest Public Roads Program (PFSR) is a new aspect of the Forest road system. This program is intended to

allow the national forests to garner federal trust fund monies by declaring certain Forest system roads as public roads. This will provide an additional funding source to make improvements on the existing main roads. These roads would be maintained at a standard suitable for public travel and could not be closed to the public by a Forest Supervisor closure order. The national forests will not be required to plow winter snows, so these roads will likely be seasonally impassable due to snow cover. Also, the national forests would not be able to collect a usage fee from commercial haulers on these roads.

The roads being considered for this program are the higher standard roads (OML 3, 4, and 5) that carry the bulk of commercial, commuter, and through-traffic on the Forest. Based on preliminary guidelines, the Superior National Forest has nominated 85% of its OML 3, 4, and 5 roads as potential public roads on the, and the Chippewa National Forest has nominated 65% of their higher standard roads. The roads nominated encourage public travel by allowing cross-National Forest travel or access to recreation sites.

Special Use Roads

In addition to Forests system roads, special use permit roads (SUP) are allowed on each national forest to provide access to other land ownerships where no other reasonable access is possible on non-federal land. The permittee is allowed to have sole use of the road to access their lands if applicable, while the national forests maintain the right to use the road for administrative purposes.

SUP roads also require transportation planning (RAP) and environmental analysis (NEPA) to ensure that the minimum road standards are implemented (length and standard), that the road will benefit multiple landowners (if applicable) and that the road will have the minimum environmental impacts. In each case it must be first determined if an alternate route off Federal lands can be used or developed to access other ownerships before allowing access across Federal lands.

If access to other land ownerships is needed permanently and the road also provides access to Federal lands, then it is appropriate to include the road as a Forest system road and included in the road inventory. The appropriate NEPA documentation must be done depending on whether it is an existing road or new construction (includes reconstruction).

The estimated mileage of permanent SUP roads providing access to private landowners is 31 miles (123 permits) on the Chippewa National Forest, and 66 miles (262 permits) on the Superior National Forest. These roads are typically private driveways to individual residences or seasonal cabins, or low volume roads serving a number of landowners in a local area.

Road Decommissioning

Decommissioning Definitions

Road decommissioning is defined as activities that result in the stabilization and restoration of unneeded roads to a more natural state.

All roads that are not needed for long-term use shall be decommissioned when the opportunity arises. This includes existing and future temporary roads, some existing unclassified roads, and any current Forest system roads. Decommissioning temporary roads (both past and present) is a high priority on the National Forests to allow consistency with the Forest Plans and the roads policy. A temporary road is not intended to be a Forest system road, and will not be left open for motorized traffic after its use is done. This includes Forest Service

administrative use of temporary roads.

Timber Sale Temporary Roads

Federal timber sale temporary roads shall be decommissioned after their use is completed, either through the timber sale, through Knutsen-Vanderbelt (KV) funding, or through other appropriate funding. Timber sale contracts require the purchaser to perform temporary road closure activities to make sure the road is closed to motorized travel when the road is not needed between harvest activities. The standard provisions of timber sale contracts state the minimum decommissioning requirements to be implemented for temporary roads after their use is completed. Special contract provisions offer additional methods of blocking and decommissioning temporary roads. If timber stand improvement (TSI) or reforestation efforts need to use these temporary roads after the roads are no longer needed for harvest activities, then KV funding should be set up in the sale to handle future permanent road decommissioning. In some cases regular road maintenance or other resource funding can be used after all road use is done.

The national forests intent is not to allow general public use to become established on temporary roads. When the road is not being used, proper informational signing and temporary road blockages will be employed to discourage public use. Planning when to decommission and when to only install a temporary block on a temporary road is very important. It is necessary to plan the time schedule upfront for each temporary road as to when it will be used over the years and for what purposes (harvest, TSI, reforestation, prescribed fire, etc.). During the time periods in between use, these roads must be temporarily blocked. After final use of the road is complete, the temporary road will be fully decommissioned.

Forest System Roads and Unclassified Roads

Forest system roads and unclassified roads can also be decommissioned at any time if they are not needed for land management activities. Decommissioning would include notifying and receiving feedback from the affected local governments, removing the road from the Forest road inventory (in the case of Forest system roads), blocking the road, and rendering the road un-usable to motorized vehicles. Foot travel will generally be allowed on decommissioned roads.

Special Use Temporary Roads

Equally important, special use temporary roads developed on federal lands by other entities (State, Counties, corporate, etc.) must be closed and decommissioned by those entities. This requirement must be included in the agreement or special use permit with them.

Road Decommissioning Techniques

Road decommissioning includes both the road closure (blocking) methods used to eliminate motorized access on to the road, and the methods used to meet environmental considerations for the future, such as restoring cross-drainages and wetlands, scarifying the compacted road surface, seeding and mulching, flattening steep fill/cut slopes, outsloping, etc.

Road closure techniques and methods will consider visual quality, especially in the “seen area” from the main road (The distance “seen” along the road to be blocked from the main road). They will look natural and blend into the land over time. The Scenic Integrity Objectives for the National Forests can be referenced for appropriate visual concerns regarding road closures. More discussion follows on techniques.

Road Decommissioning in the “Seen Area” at the beginning of road

Road decommissioning will be performed to make the road “disappear” to a casual viewer and to render it not drivable from the beginning of a road to the furthest point seen from a Forest system road or other public road. Any combination of the decommissioning techniques discussed below can be used. Each site will be different and creativity will be used to determine how to decommission and block a road in this “seen” area. Experience has shown that a backhoe/excavator is the best piece of equipment to pull debris, rocks, berms, soil materials, etc. into the roadbed. It can also be used to transplant small trees and brush clumps from the adjacent forest into the roadbed.

Minimum Federal Timber Sale Road Closure/Decommissioning Requirements

The following road decommissioning techniques are standard timber sale contract requirements for the closure/decommissioning of temporary roads, and will be used as the minimum actions required for all temporary roads being decommissioned on the Forest. They are also baseline techniques that will be used to decommission all roads.

Remove drainage structures and temporary bridges, and leave drainages in their natural state. Seed and mulch the approaches to stabilize them and reduce erosion. It is important to re-establish the same character and slope of the existing streambed to maintain the same flow characteristics of the natural stream. Study the natural stream above and below the crossing and try to duplicate it at the crossing.

Construct cross ditches and waterbars as needed to allow for natural cross-drainage. It is better to cut into the roadbed only 6-8 inches and to “build-up” a water bar berm across the slope of a hill to intercept surface waters and safely move water away from the road. Ditches deeply dug across the roadbed could alter the natural sub-surface water flow. It is very important that water bars be properly located and placed across the road at the appropriate intervals and angles, depending on the steepness and length of the grade. Be sure the outlets of the water bars are “open-ended” to ensure the collected water can safely drain away into the forest.

Outslope the roadbed where feasible to promote natural cross-drainage.

Eliminate ditches that interfere with cross-drainage or will promote erosion over time along the road.

Remove ruts and roadside berms in the roadbed to minimize erosion along the road over time.

Effectively block the road to normal vehicular traffic. This could include pulling boulders, berms, debris, timber slash, etc. in the roadbed. Timber sale slash or a combination of slash, logs and soil is particularly effective in road blockage, especially when placed over the road width for the first 200-300 feet of the road. There may be some consideration to allow space for a “hunter parking area” before the blockage and maintaining the established side entrance on road, whether a Forest system road or another public agency road.

Consideration will be given to spread timber sale slash on the temporary road within a sale area boundary, especially within the first “seen area” segment from the main road. This will spread out nutrients, visually blend the road into the cutting units, and make them quite impassable.

Additional Road Decommissioning Techniques

Scarify the roadbed when needed to loosen compacted soils to allow re-vegetation.

Flatten steep cut and fill slopes to remove overhangs and otherwise minimize erosion.

Vegetate the road and put the land back into production. This can include seeding and mulching the roadway, and the planting of seedlings. This needs to be done in a prudent amount of time after road use is terminated. This is particularly important to consider at the beginning of the road or on hills.

Figure F-12. Examples of road decommissioning



Current Condition

Forest Roads Atlas

The Road Atlas for each Forest is composed of a tabular database of the classified and unclassified road system, and the spatial inventory of the road system, as follows:

Infrastructure (INFRA) Travel Routes is the electronic tabular database for each national forest. INFRA Travel Routes is a computer software program established by the agency to document the road system, and it contains the pertinent data for each road on the system. Data includes such linear events as functional use, intended maintenance levels, jurisdiction, location, length, number of travel lanes, surface type, etc. It also contains the maintenance needs for each road as determined by periodic condition surveys.

The GIS Roads Layer is the electronic spatial inventory or map showing the location of all classified roads across each national forest.

The GIS roads layer is linked to INFRA Travel Routes so pertinent data can be attached to each road on the roads layer. This is useful in performing analysis of land areas when different road data queries are required, such as road density, number of stream crossings, number of miles by OML levels, etc.

Road data is frequently updated in the Road Atlas, such as during and after project level planning or other inventory and analyses processes.

Current Forest System Roads

The Forest road system on the Chippewa NF has a higher road density than on the Superior NF. Most roads on the Chippewa NF are relatively short, low-standard local roads maintained at the OML 2 level. The Superior NF has a high number of low-standard local roads maintained at both the OML 1 and 2 levels, with a high percentage of the OML 1 roads being winter roads. The two National Forests have similar proportions of OML 3, 4, and 5 roads.

	Units	OML 1	OML 2	OML 3	OML 4	OML 5	Total
Chippewa NF	miles	324	1,753	281	246	42	2,646
	percent	12%	66%	11%	9%	2%	100%
Superior NF	miles	883	867	248	322	86	2,406
	percent	37%	36%	10%	13%	4%	100%

Source: 10/2002 INFRA database

Road System Needs by Alternative

Forest system road and temporary road needs vary for each National Forest by Alternative and by the decade in the future, depending on the amount of vegetative management and recreational emphasis identified for each Alternative. Estimates of road needs were developed for each National Forest to show the comparative differences between the Alternatives over Decades 1, 2 & 3, and by the end of the Tenth Decade. These estimates were based on historical road needs over the past few years, and on expected road needs to access planned vegetative treatment areas.

Chippewa National Forest

For the Chippewa National Forest, the following assumptions were made and analysis performed based past knowledge of road needs:

- The OML 3, 4, and 5 road network (the main roads) is in place on the National Forest and sufficient to serve the access needs for recreation and land management.
- It is assumed that the need for additional system roads will continue at the historic (1997-2002) rate of 1.0 mile per 4,000 acres treated, all of which would be OML 1 roads.
- It is assumed that the need for temporary roads will continue at the historic (1997-2002) rate of 5.0 mile per 1,000 acres treated.
- The maximum Forest road system needed after 10 decades was estimated by taking all possible treatment acres more than 0.5 miles from a current system roadway, and determining the remaining miles of road required to treat the timber stands. The maximum number of road miles needed to treat all timber stands was determined to be 30 miles after 10 decades.

Road Type	Current	Alt. A No Action	Alt. B	Alt. C	Alt. D	Mod. Alt. E	Alt. F	Alt. G
		(miles)	(miles)	(miles)	(miles)	(miles)	(miles)	(miles)
OML 1	324	346	338	354	333	343	336	339
OML 2	1,753	1,753	1,753	1,753	1,753	1,753	1,753	1,753
OML 3	281	281	281	281	281	281	281	281
OML 4	246	246	246	246	246	246	246	246
OML 5	42	42	42	42	42	42	42	42
*Decommission		200	200	200	200	200	200	200
Total	2,646	2,468	2,460	2,476	2,455	2,465	2,458	2,461

Source: 10/2002 INFRA database, Project file.
Notes: *This is an estimate of existing system OML 1 roads that are planned for decommissioning.

Road Type	Current	Alt. A No Action	Alt. B	Alt. C	Alt. D	Mod. Alt. E	Alt. F	Alt. G
		(miles)	(miles)	(miles)	(miles)	(miles)	(miles)	(miles)
OML 1	324	155	152	156	140	155	151	154
OML 2	1,753	1,753	1,753	1,753	1,753	1,753	1,753	1,753
OML 3	281	281	281	281	281	281	281	281
OML 4	246	246	246	246	246	246	246	246
OML 5	42	42	42	42	42	42	42	42
*Decommission					800			
Total	2,646	2,477	2,474	2,478	1,662	2,477	2,473	2,476

Source: 10/2002 INFRA database, Project file.
Note: *This is an estimate of existing system OML 2 roads that are planned for decommissioning.

Road Type	Current	Alt. A No Action	Alt. B	Alt. C	Alt. D	Mod. Alt. E	Alt. F	Alt. G
		(miles)	(miles)	(miles)	(miles)	(miles)	(miles)	(miles)
OML 1	324	155	155	156	140	155	155	155
OML 2	1,753	1,753	1,753	1,753	953	1,753	1,753	1,753
OML 3	281	281	281	281	281	281	281	281
OML 4	246	246	246	246	246	246	246	246
OML 5	42	42	42	42	42	42	42	42
Total	2,646	2,477	2,477	2,478	1,662	2,477	2,477	2,477

Source: 10/2002 INFRA database, Project file.

Road Type	Current	Alt. A No Action	Alt. B	Alt. C	Alt. D	Mod. Alt. E	Alt. F	Alt. G
		(miles)	(miles)	(miles)	(miles)	(miles)	(miles)	(miles)
OML 1	324	155	155	156	140	155	159	155
OML 2	1,753	1,753	1,753	1,753	953	1,753	1,753	1,753
OML 3	281	281	281	281	281	281	281	281
OML 4	246	246	246	246	246	246	246	246
OML 5	42	42	42	42	42	42	42	42
Total	2,646	2,477	2,477	2,478	1,662	2,477	2,481	2,477

Source: 10/2002 INFRA database, Project file.

Road Type	Alt. A No Action	Alt. B	Alt. C	Alt. D	Mod. Alt. E	Alt. F	Alt. G
	(miles)	(miles)	(miles)	(miles)	(miles)	(miles)	(miles)
Decade 1	473	262	653	183	386	237	304
Decade 2	481	259	517	147	412	287	342
Decade 3	418	335	547	145	367	297	351
Decade 10	496	465	564	57	484	503	400

Superior National Forest

For the Superior National Forest, the following assumptions were made and analysis performed based past knowledge of road needs:

- OML 3, 4, and 5 road miles are expected to remain constant over time, though minor amounts of new construction may occur for land management and recreation access, or to upgrade OML 2 roads to a higher standard to accommodate safe road travel in the future. (Forest-wide Roads Analysis for Objective Maintenance Level 3, 4, and 5 Roads; Superior National Forest; June 2002).
- For all Alternatives except Alternative D, the number of OML 1 roads will increase over time to meet the access needs of vegetative management.
- For decade one, additional road needs will continue at the same rate as over the last six years (1997-2002) per 1,000 acres of vegetative treatment. All new low standard roads will be managed as OML 1 roads (closed to all motorized traffic), except during those time periods when they are being actively used and temporarily managed as OML 2 roads. From an analysis of the historical road data, additional new low standard roads will be constructed at the rate of 1.85 miles per 1,000 acres treated, of which 33% will be OML 1 winter roads and 67% will be OML 1 summer seasonal roads. Also, it is anticipated that 5.59 miles per 1,000 acres of temporary road will be needed.
- For decade two, some of the OML 1 roads built in the first decade will be re-used, so the new road needs can be reduced by an estimated 20% reduction. Therefore new OML 1 roads will be constructed at the rate of 1.48 miles per 1,000 acres treated. Temporary road needs will remain at 5.59 miles per 1,000 acres.
- For decade three, some of the OML 1 roads built in the first two decades will be re-used, so the new road needs can be further reduced by 40% to 1.11 miles per 1,000 acres as compared to decade one. Temporary road needs will remain the same at 5.59 miles per 1,000 acres. These reductions in OML 1 road needs are also based on experience mapping the maximum road needs after 10 decades on 50 random one square-mile sections across the Superior NF.
- The maximum road system required was determined by analyzing the maximum road needs in 50 random one square-mile-sections located across the National Forest after 10 decades. From this analysis it was determined that 3.75 miles of OML 1 roads per 1,000 acres treated will be needed, and 0.62 miles per 1,000 acres will be decommissioned.
- The mix of OML 1 roads is expected to change over time, with 32% of the new roads being OML 1 summer seasonal roads and 68% of the roads being OML 1 winter roads after 10 decades.
- OML 1 winter roads will be closed to all motorized traffic during non-frozen ground conditions, and during most winter seasons when land management access is not required.

- In the next planning period, newly constructed OML 2 roads would generally not be added to the road system. However, unclassified roads would be analyzed and either decommissioned or added to the designated trail or classified road system. Some unclassified roads that are added to the road system may be OML 2 roads to achieve resource management objectives.

Road Type	Current	Alt. A No Action	Alt. B	Alt. C	Alt. D	Mod. Alt. E	Alt. F	Alt. G
		(miles)	(miles)	(miles)	(miles)	(miles)	(miles)	(miles)
OML 1 Winter	485	580	539	620	531	567	551	556
OML 1 Summer	398	592	507	672	493	565	531	543
OML 2	867	867	867	867	867	867	867	867
OML 3	248	248	248	248	248	248	248	248
OML 4	322	322	322	322	322	322	322	322
OML 5	86	86	86	86	86	86	86	86
Total	2,406	2,695	2,569	2,815	2,547	2655	2,605	2,622

Source: 10/2002 INFRA database, Project file.
Note: About 50% of the new OML 1 roads will involve reconstructing old historic road routes and current unclassified roads.

Road Type	Current	Alt. A No Action	Alt. B	Alt. C	Alt. D	Mod. Alt. E	Alt. F	Alt. G
		(miles)	(miles)	(miles)	(miles)	(miles)	(miles)	(miles)
OML 1 Winter	485	664	587	726	556	634	609	618
OML 1 Summer	398	761	604	886	542	700	647	671
OML 2	867	867	867	867	867	867	867	867
OML 3	248	248	248	248	248	248	248	248
OML 4	322	322	322	322	322	322	322	322
OML 5	86	86	86	86	86	86	86	86
Total	2,406	2,948	2,714	3,135	2,621	2,857	2,779	2,812

Source: 10/2002 INFRA database, Project file.
Note: About 50% of the new OML 1 roads will involve reconstructing old historic road routes.

Road Type	Current	Alt. A No Action	Alt. B	Alt. C	Alt. D	Mod. Alt. E	Alt. F	Alt. G
		(miles)	(miles)	(miles)	(miles)	(miles)	(miles)	(miles)
OML 1 Winter	485	732	624	790	565	684	654	668
OML 1 Summer	398	899	680	1,015	562	801	740	772
OML 2	867	867	867	867	867	867	867	867
OML 3	248	248	248	248	248	248	248	248
OML 4	322	322	322	322	322	322	322	322
OML 5	86	86	86	86	86	86	86	86
Total	2,406	3,154	2,827	3,328	2,650	3,008	2,917	2,963

Source: 10/2002 INFRA database, Project file.
Note: About 50% of the new OML 1 roads will involve reconstructing old historic road routes.

Road Type	Current	Alt. A No Action	Alt. B	Alt. C	Alt. D	Mod. Alt. E	Alt. F	Alt. G
		(miles)	(miles)	(miles)	(miles)	(miles)	(miles)	(miles)
OML 1 Winter	485	1,266	1,096	1,291	398	1,260	1,219	1,229
OML 1 Summer	398	766	685	777	188	762	743	748
OML 2	867	867	867	867	0	867	867	867
OML 3	248	248	248	248	248	248	248	248
OML 4	322	322	322	322	322	322	322	322
OML 5	86	86	86	86	86	86	86	86
Total	2,406	3,555	3,304	3,591	1,242	3,545	3,485	3,500

Source: 10/2002 INFRA database, Project file.
Note: About 50% of the new OML 1 roads will involve reconstructing old historic road routes. Alternative D will decommission most OML 1 & 2 roads.

Road Type	Alt. A No Action	Alt. B	Alt. C	Alt. D	Mod. Alt. E	Alt. F	Alt. G
	(miles)	(miles)	(miles)	(miles)	(miles)	(miles)	(miles)
Decade 1	873	494	1,236	425	754	600	653
Decade 2	957	548	1,210	281	764	659	716
Decade 3	1,038	572	972	145	761	695	761
Decade 10	956	538	1,139	145	764	651	710

Source: Project file.
Note: Decade 10 is an average of the estimated temporary road needs, except for Alternative D which assumes an average beginning in Decade 3.

Road Decommissioning

Both Forests expect to be decommissioning unneeded roads during the next planning period, and over the decades to follow.

The Chippewa National Forest has an extensive Forest road system, with some unclassified roads remaining on the Forest. Roads to be decommissioned were estimated from current Forest system road needs. Road decommissioning will focus on the remaining unclassified roads, as well as a majority of the OML 1 roads (closed). The Forest expects to complete all decommissioning within decade one, with the exception of Alternative D. Alternative D will complete decommissioning of roads in decade two.

For the Superior National Forest, with a less extensive Forest road system in place (lower density in miles per square-mile), emphasis in decade one will be on decommissioning identified unclassified roads not converted to a system trail or designated as a Forest system road. The INFRA Travel Routes database currently lists 86 miles of unclassified roads that are designated for decommissioning, and 82 miles of unclassified roads which still need a decision whether to decommission, convert to a trail, or add to the road system. For Table F-13, based on the “maximum road system” analysis, it was determined that 0.62 miles of road per 1,000 acres of vegetative will require decommissioning in decade one (both system and unclassified roads).

Table F-13 Minnesota National Forest Road Decommissioning Estimates								
Forest	Decade	Alt. A No Action (miles)	Alt. B (miles)	Alt. C (miles)	Alt. D (miles)	Mod. Alt. E (miles)	Alt. F (miles)	Alt. G (miles)
SNF	Decade 1*	97	55	137	47	84	66	72
CNF	Decade 1**	200	200	200	200	200	200	200

Source: 10/2002 INFRA database, Project file.
 * Decade 1: These are not system roads. They are an estimate of existing unclassified roads that need further work to decommission.
 ** Decade 1: Unneeded system roads and unclassified roads on the Chippewa National Forest.