

ITEM 7-1
Open Road Density

ACTIVITY, PRACTICE OR EFFECT TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Assure open road densities are in accordance with Forest Plan direction.	2 years	Greater than 20% annually or 10% on a five year average.

Introduction: Forest-wide Standard 52(c) (page II-8 in the Forest Plan) sets an open road density maximum of 1.1 miles of road per square mile in highly productive big game summer range. A comprehensive assessment of this open road density on the Lolo was initiated in August 1990, and completed in October 1991. Results of this study were given in the FY 91 Forest Plan Monitoring and Evaluation Report.

As reported in FY 91, open road density exceeded Forest Plan standards on 4 of 16 herd unit summer ranges. Herd units are equivalent to Montana Department Fish, Wildlife and Parks (MDFWP) hunting units. On two of those units, the density was more than 20% over the maximum of 1.1 miles per square mile.

A plan to bring those areas into compliance with the Forest Plan standard was formulated and put into action in FY 92. Specifically, the Ninemile and Plains/ Thompson Falls Ranger Districts closed many roads in their problem areas. The Missoula District prepared a Travel Plan Restriction Environmental Assessment and issued decisions, which addressed actions to bring Hunting Unit 204 into Forest Plan compliance. Implementation of decisions made in conjunction with that document began in FY 93.

The Seeley and Superior Ranger Districts did not have herd units that exceeded the Forest Plan standard. Nevertheless, some open roads in highly productive big game summer range on those districts have been closed in recent years. This has resulted in minor reductions in the open road density for Herd Units 201, 283, and 285. These reductions were reflected in the FY 96 report.

Methods: Road densities are calculated by measuring the area of high value elk summer range in square miles and dividing by the total miles of system road within each MDFWP hunting district. High value range is designated in the Forest Plan database. Forest personnel calculated road densities using 2.64 inch/ mile maps and electronic planimeters or manual map wheels.

Results: Open road density exceeds Forest Plan standards in Herd Units 203 and 210 (by 4% and 11%, respectively). Table 7-1A lists the open road densities on highly productive summer ranges per herd unit. Open road densities dropped from 48% over standard in FY 1997 in Herd Unit 210 following road closures in FY 1998 (see the FY 1998 Forest Plan Monitoring Report). Although open road densities are below the +20% threshold that would require initiation of further evaluation, further opportunities for improving the open road density situation in these herd units will be investigated during landscape analysis processes, such as the planned landscape analyses in the Rock Creek drainage, and through cooperative partnerships with the Montana Department of Fish, Wildlife and Parks. Although good progress has been made toward reaching Forest Plan standards in Unit 210, further progress will be difficult and the standard may not be reachable due to public attitudes in this area.

Table 7-1A. Open Road Density on Highly Productive Big Game Summer Range.

Herd Unit	System Road Density	Non-System Road Density	Total Density	% difference from standard
120	0.44	0.0	0.44	-60
121	0.18	0.0	0.18	-84
122	0.54	0.11	0.65	-41
123	0.63	0.02	0.65	-41
200	0.81	0.10	0.91	-17
201	0.84	0.21	1.05	-5
202	0.62	0.04	0.66	-40
203	0.91	0.23	1.14	+4
204	0.82	0.20	1.02	-7
210	1.09	0.13	1.22	+11
216	0.04	0.0	0.04	-96
240	0.59	0.04	0.63	-43
280	0.0	0.0	0.0	0
281	0.21	0.02	0.23	-79
283	0.19	0.05	0.24	-78
285	0.50	0.01	0.51	-54

ITEM 7-2
Road Construction

ACTIVITY, PRACTICE OR EFFECT TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Review of road construction	Annual	Road construction resulted in unacceptable resource damage or beyond construction tolerances.

Methods: Total miles of road construction, reconstruction, and decommissioning are calculated by forest engineers from force account work performed and contracts awarded during the fiscal year. Instances of unanticipated resource damage or construction beyond tolerances are typically discovered during field observations related to contract administration and annual Forest Plan monitoring trips.

Results: In FY 1999, 1.56 miles of road were constructed and 52.16 miles were reconstructed, for a total of 53.72 miles or 20% of that projected in the Forest Plan. The Forest Plan estimate of annual average road construction and reconstruction is 263 miles.

No instances of road construction that resulted in unanticipated short-term impacts or were beyond construction tolerances were reported or observed. Also, 32.8 miles of Non-system roads and 36.6 miles of System (Forest Development) roads were decommissioned in FY 1999. Decommissioning refers to eliminating vehicular traffic, restoring natural drainage ways, and re-establishing vegetation so that the former road prism is self-maintaining and environmentally benign. Candidate roads are those that are not needed for National Forest management for a period of at least approximately 20 years. A total of 69.4 miles of road were decommissioned. This includes entrance obliteration (48.3 miles closed), partial recontouring (5.9 miles closed), total recontouring (10.1 miles), and barriers/ripped/seeded (5.1 miles closed).

Evaluation: The trend in the last decade is the miles of road construction and reconstruction has been substantially below Forest Plan estimates. Miles of road decommissioning, which was not estimated in the Forest Plan, is the highest since reporting on this action began. Further increases are expected in coming years as emphasis is added to decreasing the miles of unneeded roads on National Forest lands.

Recommendations: Last year, it was noted that better methods of sizing culverts for stream crossings may be needed and that engineers and hydrologists on the forest were currently evaluating software and procedures for doing this task better. In FY 1999 and early FY 2000, two state-of-the-art culvert analysis software tools were obtained. In FY 2000 (May), a stream-crossing workshop will be held. Together, these will provide a better understanding for biologists, engineers, and hydrologists of the requirements and proper techniques for providing fish passage at stream crossings and for protection of the stream environment. Follow-up recommendations on how to better meet Best Management Practices may be in order.

**ITEM 7-3
Road Standards**

ACTIVITY, PRACTICE OR EFFECT TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Review of road design and construction standards of all applicable MAs.	Annual	Designs beyond the limits of the standards

Methods: Designs beyond the limits of standards are documented or uncovered through the design variance process, project reviews, construction administration, and annual Forest Plan monitoring trips. For this reporting period, all instances were documented by forest engineering personnel through the design variance process.

Results: A design variance was approved for using lower standards for curve radii, switchback grades, sustained road grades, and roadway width on the Ellis Mountain timber sale to allow use of existing Road 380. Reconstruction of the road to meet standards would have required obtaining additional rights-of-way to allow for re-location of portions of the road and widening of other portions. Minimal reconstruction within the existing rights-of-way was done to provide for logging truck access and to meet Best Management Practices.

Evaluation: Designs were successfully varied from the standard in order to eliminate the need for additional rights-of-way.

Recommendations: Lowering design standards for such parameters as curve widths, switchback grades, road grades, and road widths must continue to be carefully considered on a case-by-case basis. Factors that are considered include economics of construction, yarding, log haul, environmental impacts, and right-of-way needs.

ITEM 7-4
Road Density Projections

ACTIVITY, PRACTICE OR EFFECT TO BE MEASURED	REPORTING PERIOD	VARIABILITY (+/-) WHICH WOULD INITIATE FURTHER EVALUATION
Monitor road density deviations from those projected in the Forest Plan direction.	Annual	Departure from management direction

Methods: Road densities are reported for transportation plans completed in the fiscal year. Densities are calculated by measuring the length of road and the area in each Management Area, and dividing the road mileage by the square miles to get density in miles per square mile. Measurements are from paper maps and map wheels and planimeters or from digital maps in a Geographic Information System.

Results: One transportation plan, Gilbert Fire salvage and Restoration, was completed in FY 1999. Road densities are shown in Table 7-4A. Overall road density before project implementation was 4.8 miles/ sq. mile; after project implementation, overall road density will be 1.9 miles/ sq. mile.

Two transportation plans were completed in prior years, but were not reported. These are reported this year in Tables 7-4B and 7-4C. The road density in MA 22 in the Salmon road project is above the estimated Forest Plan density because roads in this management area were located to avoid slopes over 40% and because of the switchback road system.

Evaluation: FY 1999 results reflect the trend in the last decade of lower road densities. Not only are fewer long-term roads being planned, but existing roads are being reclaimed.

Table 7-4A. Planned Road Density by Management Area 16 in the Gilbert Fire Salvage and Restoration Project, FY 1999.

MA	Slope	Miles of Road	Square Miles	Average Density	Forest Plan Est. Density	Percent Difference
16	0-40%	0.1	0.57	0.2	5.6	-97%
16	>40%	4.6	1.92	2.4	6.7	-64%
Total		4.7	2.49	1.9	N/A	N/A

Table 7-4B. Road Density by Management Area for Sawmill-Cyr, FY 1997.

MA	Slope	Project Density (mi/sq mi)	Forest Plan Est. Density (mi/sq mi)	Percent Difference
16	0 - 40%	2.7	5.6	-52
18	0 - 40%	2.7	5.6	-52
18	> 40%	1.8	6.7	-73
22	0 - 40%	0.8	4.6	-83
23	0 - 40%	2.8	5.6	-50
25	0 - 40%	5.6	5.6	0

Table 7-4C. Road Density by Management Area for Salmon, FY 1997.

MA	Slope	Project Density (mi/sq mi)	Forest Plan Est. Density (mi/sq mi)	Percent Difference
18	0 – 40%	3.1	5.6	-45
22	0 – 40%	5.3	4.6	+15
23	0 – 40%	5.3	5.6	-5
24	0 – 40%	1.2	4.6	-74