Introduction - Current Road System Benefits, Problems and Risks

In this step publication FS-643 asks a series of questions intended to focus the roads analysis on benefits, problems and risks associated with the Forest road system. The ID Team developed answers to the questions in Chapter 4 at the Forest scale to provide a Forest-wide perspective and viewpoint. This approach will provide context and a reference source for subforest scale roads analysis.

Ecosystem Functions and Processes

EF1: What ecological attributes, particularly those unique to the region, would be affected by roading of currently unroaded areas?

There are approximately 972,000 acres in inventoried roadless areas across the Forest. These areas range from relatively dry, Forest types at low elevations to high elevation sites with subalpine Forests. Most of the unroaded portions of the Forest are mid to high elevational locations fairly characteristic of the region. However, 10 research natural areas (RNAs) and 12 special interest areas (SIAs) have been designated across the Forest due to their unique vegetation communities and features. Two additional RNAs have been identified in the Clearwater Forest Plan. In addition, coastal disjunct plant communities, characteristic of areas west of the Cascades, are found in several of the unroaded areas. Roading in, or near, these unique areas could reduce the ecological diversity by providing avenues for noxious weeds invasion, thereby replacing native plant communities.

Many streams within unroaded watersheds provide habitat for steelhead, chinook salmon, bull trout, and west slope cutthroat trout. Sediment delivery from road construction, maintenance, and potential road failures could impacts populations and habitat of these species.

EF 2: To what degree do the presence, type, and location of roads increase the introduction and spread of exotic plant and animal species, insects, diseases, and parasites? What are the potential effects of such introductions to plant and animal species and ecosystem functions in the area?

Roads are one of the primary facilities on the Forest that facilitate the introduction and spread of exotic species, particularly, noxious weeds. The roaded portions of the Palouse Ranger District, the Clearwater subbasin and the Lower North Fork of the Clearwater subbasin contain the most acres affected by exotics and a higher diversity of exotic species.

The spread of weeds can primarily be attributed to human activities associated with vehicles, roads, and trails. The potential affects to plant and animal species include

altering ecosystem processes (Quigley and Arbelbide 1997). Weed species of concern include spotted knapweed, meadow hawkweed, orange hawkweed, and (likely) star thistle.

EF3: To what degree does the presence, type, and location of roads contribute to the control of insects, diseases, and parasites?

In general, the presence of roads can facilitate the control of insects, diseases, and parasites across the Forest. Little direct control of these pests is typically conducted on the Forest, rather indirect measures, such as altering stand conditions through silvicultural activities is usually done. Roads provide access that is needed to manage stands. The primary natural disturbances across most of the Forest are lethal and mixed severity wildfires.

The need to control insects, diseases, and other pathogens is assessed based on changes that have occurred to the Forests compared to their historic conditions. . Many Forest stands have changed to different cover types, structural stages, or both, during the last 60 years. It was during this time that white pine blister rust became epidemic in western white pine Forests and fire suppression policies were implemented.

The most significant cause of Forest change was the introduction of white pine blister rust, an introduced fungus disease, which has resulted in a dramatic reduction in the western white pine cover type across the Forest. In addition, since western white pine has been largely eliminated due to blister rust, native root diseases and bark beetles are causing changes in Forest cover types and structural classes. These agents are increasingly affecting Douglas-fir and grand fir, which have both increased in abundance with the decline of western white pine.

Roads facilitate management actions to be undertaken to address these concerns. Silvicultural treatment of affected or susceptible tree stands can reduce or suppress insects and disease occurrences. An important characteristic indication of Forest health, is the diversity and distribution of age classes and corresponding species composition. The greater the diversity and distribution of stand ages and species, the more resistant the entire Forest is to damage from any single insect agent.

To assess the condition of Forest stands, ongoing monitoring must be conducted across the Forest. Roads contribute to access for the detection, prevention, and management activities associated with responding to insect, disease, and parasite attacks. Without road access, these actions would be more expensive in many cases (although aerial insect and disease surveys can be very cost-effective) and management actions can often be readily implemented from well-designed transportation system.

EF4: How does the road system affect ecological disturbance in the area?

The road system has direct and indirect effects on ecological disturbances across the Forest. The primary large-scale disturbance process across most of the Clearwater

National Forest is fire. The fire regimes range from mixed, lethal/nonlethal burns to lethal fire disturbances at scales that have affected the entire hydrologic unit watershed. Roads provide the access needed to control both wildfires and prescribed control burning. Roads also have an indirect affect by acting as firebreaks limiting the severity and extent of wildfires by breaking up fuel continuity. Human-caused fires may increase due to the presence of a road system as access allows more use by people.

Other ecological disturbance factors impacted by roads on the Clearwater National Forest are erosional processes, riparian conditions, and insect/disease activities. The impacts of roads on erosional disturbance processes are discussed in more detail in items AQ2 and AQ3, but generally the roads within the project area increase the risk of both surface erosion and mass wasting events. Mitigation measures such as surfacing and alternate design methods can reduce this risk.

Roads in streamside or valley bottom locations disrupt the riparian areas through constriction, removal of woody debris and shade, introduction of sediment, reduction in leafy primary production, and through increased hazard of introduction of toxic pollutants to the stream.

EF 5: What are the adverse effects of noise caused by developing, using, and maintaining roads?

This is not an issue at the Forest scale. It will be addressed, if it is an issue, at the subforest scale.

Aquatic, Riparian Zone and Water Quality (AQ)

The answers to the Aquatic questions resulted from analysis of the risks and benefits of 4,254 miles of classified roads on the Forest. GIS based data queries and analysis was used and is presented for all 5th code (HUCs) watersheds on the Forest. This classsified roads total is different from the 4,079 miles presented in Chapter 1. The difference is due to use of different data queries from the corporate base.

AQ 1: How and where does the road system modify the surface and subsurface hydrology of the area?

Roads can affect the routing of water through a watershed by intercepting, concentrating, and diverting flows from their natural flowpaths. These changes in routing can result in increases in peak flows by both a volumetric increase in quick flow and changes in the timing of storm runoff to streams (Wemple et al. 1996).

Although roads have not been inventoried in relation to their proximity to wetland features, we can estimate where the road system modifies the surface and subsurface hydrology by measuring the road/stream proximity. Of the 4,254 miles of classified arterial, collector, important local, and local roads on the Clearwater National Forest, 1,756 miles are located within 300 feet of stream channels, or roughly 43 %. This

analysis does not include "unclassified roads," such as jammer roads. Watersheds that had early logging, such as Fishing Creek and Legendary Bear, will have much higher actual road densities because of the Idaho jammer roads that exist. It is likely that these roads have modified the surface and subsurface hydrology in the watershed. The miles of road in each of the watersheds are shown in Table 1. Pete King Creek (2.3 Mi/Mi^2), Canyon Creek (2.1 Mi/Mi^2), Orofino Creek (2.1 Mi/Mi^2), and Lolo Creek above Musselshell Creek (2.1 Mi/Mi^2) have high densities of roads within 300 feet of the streams. These watersheds have the greatest potential for modification of surface and subsurface hydrology by roads within the Clearwater National Forest.

Table 1. Miles of Roads Within 300 Feet of Streams on the Clearwater National Forest.

Watershed	HUC Number	Watershed Area Miles^2	Miles of Road Within 300 Feet of Streams	Miles of Road Within 300 Feet of Streams / Watershed Area – Mi/Mi^2
Palouse River (Abv Laird Park)	1706010850	69.3	109.0[1]	1.6
Palouse River (Blw Laird Park)	17060108	383.3	67.4[1]	0.2
Lower Lochsa River (Mouth to Boulder)	1706030300	89.5	12.1	0.1
Pete King Creek	1706030303	27.6	63.8	2.3
Canyon Creek	1706030306	19.8	41.3	2.1
Deadman Creek	1706030309	19.8	10.4	0.5
Fish Creek	1706030312	88.0	9.2	0.1
Middle Lochsa River	1706030315	79.9	2.7	0.0
Bald Mountain Creek	1706030318	11.8	0.0	0.0
Indian Grave Creek	1706030321	11.4	6.5	0.6
Weir Creek	1706030324	12.2	0.1	0.0
Post Office Creek	1706030327	19.1	4.4	0.2
Upper Lochsa River	1706030330	65.3	23.2	0.4
Fishing Creek	1706030333	26.9	13.2	0.5
Legendary Bear Creek	1706030336	20.7	11.2	0.5
Lower Crooked Fork Creek	170603033900	14.6	12.2	0.8
Upper Crooked Fork Creek	170603033910	73.9	25.4	0.3
Brushy Fork Creek	170603032920	81.2	32.4	0.4
Lower White Sand Creek	170603034200	50.0	12.7	0.3
Storm Creek	170603034230	51.0	0.0	0.0
Big Sand Creek	170603034250	81.7	5.8	0.1
Colt Creek	170603034260	26.1	3.8	0.2
Walton Creek	1706030345	11.0	2.4	0.2
Warm Springs Creek	1706030348	71.5	0.2	0.0
Boulder Creek	1706030357	46.9	0.4	0.0
Middle Fork of the Clearwater River	17060304	82.1	31.0[1]	0.4
Potlatch River (Blw Hog Meadow Creek)	170603060500	468.8	61.4[1]	0.1
Potlatch River (Abv Hog Meadow Creek)	170603060535	126.2	41.1[1]	0.3
Orofino Creek (Abv	1706030615	27.2	55.7	2.1

Watershed	HUC Number	Watershed Area Miles^2	Miles of Road Within 300 Feet of Streams	Miles of Road Within 300 Feet of Streams / Watershed Area – Mi/Mi^2
FS Boundary)				
Lolo Creek (Blw Musselshell Creek)	170603062500	158.1	97.5[1]	0.6
Lolo Creek (Abv Musselshell Creek)	170603062510	42.0	88.2	2.1
Musselshell Creek	17060306251010	55.2	61.2[1]	1.1
Eldorado Creek	170603062520	42.4	75.3	1.8
Middle NF Clearwater River (Beaver to Kelly)	1706030700	183.9	158.4	0.9
Skull Creek	1706030710	87.3	24.7	0.3
Quartz Creek	1706030720	43.6	40.7	0.9
Upper NF Clearwater River (Kelly to Long)	1706030730	183.9	43.8	0.2
Upper NF Clearwater River (Long to Term)	170603073020	78.7	8.4	0.1
Meadow Creek	170603073025	40.1	22.9	0.6
Long Creek	170603073045	28.1	11.1	0.4
Lake Creek	170603073050	34.4	24.4	0.7
Lower Kelly Creek (Mouth to Cayuse)	170603074000	47.6	12.6	0.3
Moose Creek	170603074005	72.8	53.2	0.7
Upper Kelly Creek (Cayuse to Term)	170603074010	88.9	0.0	0.0
Cayuse Creek	170603074040	115.9	8.0	0.1
Toboggan Creek	17060307404010	21.5	3.1	0.1
Gravey Creek	17060307404065	31.1	19.3	0.6
Weitas Creek	1706030760	218.4	31.8	0.2
Orogrande Creek	1706030770	91.9	66.7	0.7
Washington Creek	1706030780	47.2	51.6[1]	1.1
Lower NF Clearwater River (Blw Beaver Creek)	1706030800	289.9	16.4[1]	0.1
Elk Creek/Long Meadow Creek	1706030810 1706030815	155.9	96.9[1]	0.6
Little North Fork Clearwater River	1706030830	11.5[2]	10.5	0.9
Isabella Creek	1706030835	30.9	18.6	0.6
Beaver Creek	1706030840	62.2	51.7[1]	0.8

[1] Numerous roads outside the Forest boundary are unaccounted for and private roads increase totals.

[2] Minnesaka and Bear creeks.

Road-stream intersections.

The greatest potential for the road system to modify the surface and sub-surface hydrology is at the road-stream intersection. There are 6,666 road-stream intersections in the Clearwater National Forest's watersheds. This calculation does not include non-system roads on the Forest. Overall road-stream intersection density is 1.4 per mile. Pete King Creek (10.9/mi^2), Orofino Creek (9.3/mi^2), Canyon Creek (8.5/mi^2), Lolo Creek above Musselshell (7.9/mi^2), Palouse River above Laird Park (5.8/mi^2), Eldorado Creek

(5.2/mi^2), and Quartz Creek (5.0/mi^2) have the greatest density of stream crossings and therefore the greatest potential to alter the surface and sub-surface hydrology in their watersheds (Table 2).

Table 2. Number of Road-Stream Intersections on the Clearwater National Forest.

Watershed	HUC Number	Watershed Area Miles^2	# of Road-Stream Intersections	Road-Stream Intersections / Watershed Area – Mi^2
Palouse River (Abv Laird Park)	1706010850	69.3	399[1]	5.8
Palouse River (Blw Laird Park)	17060108	384.3	178[1]	2.2
Lower Lochsa River (Mouth to Boulder)	1706030300	89.5	45	0.5
Pete King Creek	1706030303	27.6	301	10.9
Canyon Creek	1706030306	19.8	168	8.5
Deadman Creek	1706030309	19.8	25	1.3
Fish Creek	1706030312	88.0	44	0.5
Middle Lochsa River	1706030315	79.9	9	0.1
Bald Mountain Creek	1706030318	11.8	1	0.1
Indian Grave Creek	1706030321	11.4	25	2.2
Weir Creek	1706030324	12.2	1	0.1
Post Office Creek	1706030327	19.1	9	0.5
Upper Lochsa River	1706030330	65.3	70	1.1
Fishing Creek	1706030333	26.9	37	1.4
Legendary Bear Creek	1706030336	20.7	25	1.2
Lower Crooked Fork Creek	170603033900	14.6	48	3.3
Upper Crooked Fork Creek	170603033910	73.9	92	1.2
Brushy Fork Creek	170603032920	81.2	99	1.2
Lower White Sand Creek	170603034200	50.0	60	1.2
Storm Creek	170603034230	51.0	0	0.0
Big Sand Creek	170603034250	81.7	10	0.1
Colt Creek	170603034260	26.1	9	0.3
Walton Creek	1706030345	11.0	15	1.4
Warm Springs Creek	1706030348	71.5	0	0.0
Boulder Creek	1706030357	46.9	1	0.0
Middle Fork of the Clearwater River	17060304	82.1	178[1]	2.2
Potlatch River (Blw Hog Meadow Creek)	170603060500	468.8	244[1]	0.5
Potlatch River (Abv Hog Meadow Creek)	170603060535	126.2	146[1]	1.2
Orofino Creek (Abv FS Boundary)	1706030615	27.2	252	9.3
Lolo Creek (Blw Musselshell Creek)	170603062500	158.1	325[1]	2.1
Lolo Creek (Abv Musselshell Creek)	170603062510	42.0	332	7.9
Musselshell Creek	17060306251010	55.2	157[1]	2.8
Eldorado Creek	170603062520	42.4	222	5.2
Middle NF Clearwater River (Beaver to	1706030700	183.9	757	4.1

Watershed	HUC Number	Watershed Area Miles^2	# of Road-Stream Intersections	Road-Stream Intersections / Watershed Area – Mi^2
Kelly)				
Skull Creek	1706030710	87.3	141	1.6
Quartz Creek	1706030720	43.6	216	5.0
Upper NF Clearwater River (Kelly to Long)	1706030730	183.9	169	0.9
Upper NF Clearwater River (Long to Term)	170603073020	78.7	24	0.3
Meadow Creek	170603073025	40.1	63	1.6
Long Creek	170603073045	28.1	27	1.0
Lake Creek	170603073050	34.4	108	3.1
Lower Kelly Creek (Mouth to Cayuse)	170603074000	47.6	34	0.7
Moose Creek	170603074005	72.8	206	2.8
Upper Kelly Creek (Cayuse to Term)	170603074010	88.9	0	0.0
Cayuse Creek	170603074040	115.9	25	0.2
Toboggan Creek	17060307404010	21.5	11	0.5
Gravey Creek	17060307404065	31.1	62	2.0
Weitas Creek	1706030760	218.4	129	0.6
Orogrande Creek	1706030770	91.9	185[1]	2.0
Washington Creek	1706030780	47.2	160[1]	3.4
Lower NF Clearwater River (Blw Beaver Creek)	1706030800	289.9	66[1]	0.2
Elk Creek/Long Meadow Creek	1706030810 1706030815	155.9	424[1]	2.7
Little North Fork Clearwater River	1706030830	11.5[2]	52	4.5
Isabella Creek	1706030835	30.9	74	2.4
Beaver Creek	1706030840	62.2	206[1]	3.3

[1] Numerous stream crossings outside the Forest boundary are unaccounted for.
[2] Minnesaka and Bear creeks.

Road density

Another factor to indirectly measure the alteration of surface and sub-surface hydrology on the Clearwater National Forest is road density. Where road densities are greatest, we expect that modification of surface and sub-surface hydrology will be greatest. There are 4,254 miles of arterial, collector, and important local, and local roads on the Clearwater National Forest. This calculation does not include non-system roads. The road densities in each of the watersheds are shown in Table 3. These road densities are calculated using only Forest System roads but include acres from all ownerships. Therefore, in some watersheds the road density number for just National Forest System lands could be higher. Canyon Creek (4.9 Mi/Mi^2), Lolo Creek above Musselshell Creek (4.5 Mi/Mi^2), Pete King Creek (4.1 Mi/Mi^2), and Eldorado Creek (4.1 Mi/Mi^2) have the greatest road densities and therefore the greatest potential for modification of surface and subsurface hydrology by roads within the Clearwater National Forest.

Table 3. Road Density of Watersheds on the Clearwater National Forest.

Watershed	HUC Number	Watershed Area Miles^2	Miles of Roads in Watershed	Roads/Mi^2
Palouse River (Abv Laird Park)	1706010850	69.3	234.3[1]	3.4
Palouse River (Blw Laird Park)	17060108	384.3	134.6[1]	0.4
Lower Lochsa River (Mouth to Boulder)	1706030300	89.5	41.6	0.5
Pete King Creek	1706030303	27.6	112.6	4.1
Canyon Creek	1706030306	19.8	98.0	4.9
Deadman Creek	1706030309	19.8	32.4	1.6
Fish Creek	1706030312	88.0	33.1	0.4
Middle Lochsa River	1706030315	79.9	14.3	0.2
Bald Mountain Creek	1706030318	11.8	3.3	0.3
Indian Grave Creek	1706030321	11.4	23.3	2.0
Weir Creek	1706030324	12.2	1.8	0.1
Post Office Creek	1706030327	19.1	18.1	0.9
Upper Lochsa River	1706030330	65.3	99.9	1.5
Fishing Creek	1706030333	26.9	56.2	2.1
Legendary Bear Creek	1706030336	20.7	61.7	3.0
Lower Crooked Fork Creek	170603033900	14.6	46.2	3.2
Upper Crooked Fork Creek	170603033910	73.9	121.4	1.6
Brushy Fork Creek	170603032920	81.2	151.6	1.9
Lower White Sand Creek	170603034200	50.0	63.5	1.3
Storm Creek	170603034230	51.0	3.1	0.1
Big Sand Creek	170603034250	81.7	9.4	0.1
Colt Creek	170603034260	26.1	9.6	0.4
Walton Creek	1706030345	11.0	9.0	0.8
Warm Springs Creek	1706030348	71.5	0.2	0.0
Boulder Creek	1706030357	46.9	0.8	0.0
Middle Fork of the Clearwater River	17060304	82.1	65.9	1.2
Potlatch River (Blw Hog Meadow Creek)	170603060500	468.8	93.5[1]	0.2
Potlatch River (Abv Hog Meadow Creek)	170603060535	126.2	84.1[1]	0.7
Orofino Creek (Abv FS Boundary)	1706030615	27.2	98.3	3.6
Lolo Creek (Blw Musselshell Creek)	170603062500	158.1	158.1[1]	1.3
Lolo Creek (Abv Musselshell Creek)	170603062510	42.0	189.5	4.5
Musselshell Creek	17060306251010	55.2	109.9[1]	2.0
Eldorado Creek	170603062520	42.4	175.7	4.1
Middle NF Clearwater River (Beaver to Kelly)	1706030700	183.9	279.8	1.5
Skull Creek	1706030710	87.3	55.0	0.6
Quartz Creek	1706030720	43.6	93.4	2.1
Upper NF Clearwater River (Kelly to Long)	1706030730	183.9	97.8	1.6
Upper NF Clearwater	170603073020	78.7	78.7	0.4

Watershed	HUC Number	Watershed Area Miles^2	Miles of Roads in Watershed	Roads/Mi^2
River (Long to Term)				
Meadow Creek	170603073025	40.1	65.9	1.6
Long Creek	170603073045	28.1	23.3	0.8
Lake Creek	170603073050	34.4	47.5	1.4
Lower Kelly Creek (Mouth to Cayuse)	170603074000	47.6	18.4	0.4
Moose Creek	170603074005	72.8	106.4	1.5
Upper Kelly Creek (Cayuse to Term)	170603074010	88.9	2.2	0.0
Cayuse Creek	170603074040	115.9	30.6	0.3
Toboggan Creek	17060307404010	21.5	11.2	0.5
Gravey Creek	17060307404065	31.1	74.3	2.4
Weitas Creek	1706030760	218.4	136.5	0.6
Orogrande Creek	1706030770	91.9	209.0[1]	2.3
Washington Creek	1706030780	47.2	84.3[1]	1.8
Lower NF Clearwater River (Blw Beaver Creek)	1706030800	289.9	44.5[1]	0.1
Elk Creek/Long Meadow Creek	1706030810 1706030815	155.9	174.3[1]	1.1
Little North Fork Clearwater River	1706030830	11.5[2]	21.9	0.1
Isabella Creek	1706030835	30.9	21.4	0.7
Beaver Creek	1706030840	62.2	98.4[1]	1.6

[1] Numerous roads are outside the Forest boundary and unaccounted for.
[2] Minnesaka and Bear creeks.

Based upon this analysis, the watersheds with the greatest modification of surface and subsurface hydrology from the road system, in order of severity, are Pete King Creek, Canyon Creek, Lolo Creek above Musselshell Creek, Orofino Creek, Eldorado Creek, the Palouse River above Laird Park, and Quartz Creek. Road maintenance and obliteration activities would most likely improve the hydrology in these watersheds the greatest.

AQ 2: How and where does the road system generate surface erosion?

Surface erosion occurs on most wildland roads because their surfaces, cutslopes, fillslopes and associated drainage structures are usually composed of erodible material and are exposed to rainfall and concentrated surface runoff. Surface erosion differs greatly depending on many factors, the most influential of which are usually: the erodibility of the exposed surface; the slope of the exposed surface; and the area of exposed surface that generates and concentrates runoff. Surface erosion and associated sedimentation are highly sensitive to road maintenance practices. Small changes in road drainage configuration can result in large changes in erosion and the routing of eroded sediments.

For this question, the Forest or province scales and the ranger district or watershed scales are the most appropriate. Fine sediments tend to stay in suspension in streamflow until encountering slow water, such as a lake or estuary, or when streamflow drops to low levels. Thus, fine sediments are readily transported long distances from the site of generation, and the effects of fine sediment can appear many miles from the point of

origin, necessitating an assessment of the potential effects on receiving waters, regardless of how far downstream they might be.

Drainage density.

Drainage density influences the amount of contact between the road system and the stream and also is an important factor in the erodibility of the watershed. Road systems in watersheds with higher drainage densities will usually generate greater levels of surface erosion. Pete King Creek (6.1 mi/mi^2), Deadman Creek (6.0 mi/mi^2), and the Lower Lochsa River (5.6 mi/mi^2) watersheds have the highest drainage densities on the Forest, and therefore will tend to be the most sensitive to surface erosion from the road system (Table 4).

Table 4. Stream Density on the Clearwater National Forest.

Watershed	HUC Number	Watershed Area Miles^2	Miles of Streams	Miles of Stream / Watershed Area – Mi/Mi^2
Palouse River (Abv Laird Park)	1706010850	69.3	277.2	4.0
Palouse River (Blw Laird Park)	17060108	383.3	859.1	2.2
Lower Lochsa River (Mouth to Boulder)	1706030300	89.5	496.9	5.6
Pete King Creek	1706030303	27.6	167.1	6.1
Canyon Creek	1706030306	19.8	86.7	4.4
Deadman Creek	1706030309	19.8	118.5	6.0
Fish Creek	1706030312	88.0	420.2	4.8
Middle Lochsa River	1706030315	79.9	279.2	3.5
Bald Mountain Creek	1706030318	11.8	45.5	3.9
Indian Grave Creek	1706030321	11.4	32.1	2.8
Weir Creek	1706030324	12.2	38.2	3.1
Post Office Creek	1706030327	19.1	38.4	2.0
Upper Lochsa River	1706030330	65.3	160.1	2.5
Fishing Creek	1706030333	26.9	64.4	2.4
Legendary Bear Creek	1706030336	20.7	44.9	2.2
Lower Crooked Fork Creek	170603033900	14.6	36.8	2.5
Upper Crooked Fork Creek	170603033910	73.9	153.7	2.1
Brushy Fork Creek	170603032920	81.2	107.4	1.3
Lower White Sand Creek	170603034200	50.0	56.8	1.1
Storm Creek	170603034230	51.0	74.8	1.5
Big Sand Creek	170603034250	81.7	133.1	1.6
Colt Creek	170603034260	26.1	43.7	1.7
Walton Creek	1706030345	11.0	24.1	2.2
Warm Springs Creek	1706030348	71.5	117.2	1.6
Boulder Creek	1706030357	46.9	149.0	3.2
Middle Fork of the Clearwater River	17060304	82.1	279.0	3.4
Potlatch River (Blw Hog Meadow Creek)	170603060500	468.8	126.7	0.3
Potlatch River (Abv	170603060535	126.2	536.6	4.3

Watershed	HUC Number	Watershed Area Miles^2	Miles of Streams	Miles of Stream / Watershed Area – Mi/Mi^2
Hog Meadow Creek)				
Orofino Creek (Abv FS Boundary)	1706030615	27.2	105.0	3.9
Lolo Creek (Blw Musselshell Creek)	170603062500	158.1	157.1	1.0
Lolo Creek (Abv Musselshell Creek)	170603062510	42.0	148.7	3.5
Musselshell Creek	17060306251010	55.2	195.4	3.5
Eldorado Creek	170603062520	42.4	158.5	3.7
Middle NF Clearwater River (Beaver to Kelly)	1706030700	183.9	816.1	4.4
Skull Creek	1706030710	87.3	367.2	4.2
Quartz Creek	1706030720	43.6	184.0	4.2
Upper NF Clearwater River (Kelly to Long)	1706030730	183.9	666.6	3.6
Upper NF Clearwater River (Long to Term)	170603073020	78.7	71.8	0.9
Meadow Creek	170603073025	40.1	88.3	2.2
Long Creek	170603073045	28.1	67.8	2.4
Lake Creek	170603073050	34.4	84.5	2.5
Lower Kelly Creek (Mouth to Cayuse)	170603074000	47.6	71.0	1.5
Moose Creek	170603074005	72.8	287.6	4.0
Upper Kelly Creek (Cayuse to Term)	170603074010	88.9	48.9	0.6
Cayuse Creek	170603074040	115.9	495.5	4.3
Toboggan Creek	17060307404010	21.5	70.7	3.3
Gravey Creek	17060307404065	31.1	89.4	2.9
Weitas Creek	1706030760	218.4	824.2	3.8
Orogrande Creek	1706030770	91.9	254.4	2.8
Washington Creek	1706030780	47.2	150.3	3.2
Lower NF Clearwater River (Blw Beaver Creek)	1706030800	289.9	711.4	2.5
Elk Creek/Long Meadow Creek	1706030810 1706030815	155.9	599.9	3.8
Little North Fork Clearwater River	1706030830	11.5[1]	28.3	2.5
Isabella Creek	1706030835	30.9	121.6	3.9
Beaver Creek	1706030840	62.2	185.3	3.0

[1] Minnesaka and Bear creeks.

Road-stream proximity

One method of indirectly estimating the amount of anthropogenic surface erosion and sediment delivery to streams in a watershed is to determine the road/stream proximity. Of the 4,254 miles of arterial, collector, important local, and local roads on the Clearwater National Forest, 1,756 miles are located within 300 feet of stream channels, or roughly 43 %. Watersheds with higher levels of contact between the road and stream will most likely have greater surface erosion that reaches the stream. Pete King Creek (2.3 Mi/Mi^2), Canyon Creek (2.1 Mi/Mi^2), Orofino Creek (2.1 Mi/Mi^2), and Lolo Creek above Musselshell Creek (2.1 Mi/Mi^2) have high densities of roads within 300 feet of the

streams (Table 1). These watersheds have the greatest potential for surface erosion and sediment delivery to streams within the Clearwater National Forest.

Road-stream intersections.

The greatest potential for the road system to deliver surface erosion to streams is at the road-stream intersection. There are 6,666 road-stream intersections in the Clearwater National Forest. Overall, road-stream intersection density is 1.4 per mile^2. Pete King Creek (10.9/mi^2), Orofino Creek (9.3/mi^2), Canyon Creek (8.5/mi^2), Lolo Creek above Musselshell (7.9/mi^2), Palouse River above Laird Park (5.8/mi^2), Eldorado Creek (5.2/mi^2), and Quartz Creek (5.0/mi^2) have the greatest density of stream crossings and therefore the greatest potential to deliver surface erosion from roads within their watersheds (Table 2).

Road density

Another factor to indirectly estimate the surface erosion on the Clearwater National Forest is road density. Where road densities are greatest, we expect that surface erosion will also be the greatest. There are 4,254 miles of arterial, collector, important local, and local roads on the Clearwater National Forest's watersheds. The road densities in each of the watersheds are shown in Table 4. Canyon Creek (4.9 Mi/Mi^2), Lolo Creek above Musselshell Creek (4.5 Mi/Mi^2), Pete King Creek (4.1 Mi/Mi^2), and Eldorado Creek (4.1 Mi/Mi^2) have the greatest road densities and therefore the greatest potential for surface erosion by roads within the Clearwater National Forest.

Based upon this analysis, the watersheds with the greatest potential for surface erosion and sediment delivery to streams, in order of severity, are Pete King Creek, Canyon Creek, Lolo Creek above Musselshell Creek, Orofino Creek, Eldorado Creek, Deadman Creek, the Lower Lochsa River, the Palouse River above Laird Park, and Quartz Creek. Road maintenance and obliteration activities would most likely reduce surface erosion and anthropogenic sediment delivery the greatest within these watersheds.

AQ3: How and where does the road system affect mass wasting?

Many Forest roads, especially those on steep slopes are subject to failure through mass wasting processes. Roads intercept subsurface water flow, redirect hillslope drainage, alter soil-loading patterns in cut and fill slopes, and can initiate debris flows at failed stream crossings. Roads constructed in the early years more likely have log culverts, slash in the fill, undersized culverts, uncompacted fill which could contribute to fill failures and debris torrents. Some of these roads have become overgrown and are not easily surveyed for correction of the problems.

Erosion hazards for mass wasting, debris avalanche potential, and sediment delivery efficiency have been developed for all landtypes across the Clearwater NF (Wilson et al. 1983). A table developed from queries intersecting roads (includes arterials, collectors, important locals, locals, and other digitized roads including private unknowns in the Clearwater NF database) and landtypes with high to very high hazards for these erosion

types are shown in Table 5.

Table 5. Miles and % of Roads with High Mass Wasting Hazards in Each 5th Code Watershed.

Watershed and Hydrologic Unit Code (HUC)	Miles of Road in Watershed	% of Road length with high mass wasting hazards (excludes obliterated roads as of 2000)	Miles of road with high mass wasting hazards (excludes obliterated roads as of 2000)
Palouse River (above Laird Park) (HUC 1706010850)	486	50.0%	242.8
Palouse River (below Laird Park) (HUC 17060108)*	746	7.4%	54.9
Lower Lochsa River (Mouth to Boulder) (HUC 1706030300)	73.6	54.2	39.9
Pete King Creek (HUC 1706030303)	146.0	30.5	44.6
Canyon Creek (HUC 1706030306)	109.9	25.3	27.8
Deadman Creek (HUC 1706030309)	34.8	17.2	6.0
Fish Creek (HUC 1706030312)	32.6	10.1	3.3
Middle Lochsa River (HUC 1706030315)	36.8	76.6	28.2
Bald Mountain Creek (HUC 1706030318)	3.3	12.1	0.4
Indian Grave Creek (HUC 1706030321)	25.0	52.4	13.1
Weir Creek (HUC 1706030324)	1.8	66.7	1.2
Post Office Creek (HUC 1706030327)	20.7	63.8	13.2
Upper Lochsa River (HUC 1706030330)	159.4	71.3	113.7
Fishing Creek (HUC 1706030333)	80.2	39.3	31.5
Legendary Bear Creek (HUC 1706030336)	86.9	61.0	53.0
Lower Crooked Fork Creek (HUC 170603033900)	99.8	50.1	50.0
Upper Crooked Fork Creek (HUC 170603033910)	170.2	35.0	59.5
Brushy Fork Creek (HUC 170603032920)	308.5	18.6	57.4
Lower White Sand Creek (HUC 170603034200)	87.0	19.3	16.8
Storm Creek (HUC 170603034230)	3.1	0.0	0.0
Big Sand Creek (HUC170603034250)	10.9	0.0	0.0
Colt Creek	9.6	28.1	2.7

Watershed and Hydrologic Unit Code (HUC)	Miles of Road in Watershed	% of Road length with high mass wasting hazards (excludes obliterated roads as of 2000)	Miles of road with high mass wasting hazards (excludes obliterated roads as of 2000)
(HUC 170603034260)			
Walton Creek (HUC 1706030345)	19.9	52.3	10.4
Warm Springs Creek (HUC 1706030348)	0.2	0.0	0.0
Boulder Creek (HUC 1706030357)	1.0	10.0	0.1
Potlatch River (below Hog Meadow Creek) (HUC 170603060500)*	716.0	7.8	55.9
Potlatch River (above Hog Meadow Creek) (HUC 170603060535)	482.7	34.7	167.7
Orofino Creek (above FS Boundary) (HUC 1706030615)*	803.5	4.5	36.2
Lolo Creek (below Musselshell Creek) (HUC 170603062500)*	660.2	3.1	20.7
Lolo Creek (above Musselshell Creek) (HUC 170603062510)	196.7	12.7	25.0
Eldorado Creek (HUC 170603062520)	199.3	16.1	32.0
Middle NF Clearwater River (Beaver to Kelly) (HUC 1706030700)	306.0	67.5	206.5
Skull Creek (HUC 1706030710)	58.5	75.0	43.9
Quartz Creek (HUC 1706030720)	92.6	74.0	68.5
Upper NF Clearwater River (Kelly to Long) (HUC 1706030730)	217.9	60.1	130.9
Upper NF Clearwater River (Long to terminus) (HUC 170603073020)	34.4	19.8	6.8
Meadow Creek (HUC 170603073025)	191.4	39.5	75.6
Long Creek (HUC 170603073045)	26.4	45.8	12.1
Lake Creek (Upper NF Clearwatr) (HUC 170603073050)	61.7	52.0	32.1
Lower Kelly Creek (mouth to Cayuse) (HUC 170603074000)	18.3	95.6	17.5
Moose Creek (HUC 170603074005)	157.9	34.6	54.7
Upper Kelly Creek (Cayuse	2.1	0.0	0.0

Watershed and Hydrologic Unit Code (HUC)	Miles of Road in Watershed	% of Road length with high mass wasting hazards (excludes obliterated roads as of 2000)	Miles of road with high mass wasting hazards (excludes obliterated roads as of 2000)
to terminus) (HUC 170603074010)			
Cayuse Creek (HUC 170603074040)	31.4	34.7	10.9
Toboggan Creek (HUC 17060307404010)	11.3	53.1	6.0
Gravey Creek (HUC 17060307404065)	89.5	15.3	13.7
Weitas Creek (HUC 1706030760)	150.2	33.7	50.6
Orogrande Creek (HUC 1706030770)	497.0	30.5	151.6
Washington Creek (HUC 1706030780)	254.2	15.9	40.4
Lower NF Clearwater River (below Beaver Creek) (HUC 1706030800)*	1654.9	15.0	248.4
Elk Creek/Long Meadow Creek (HUC 1706030810 & 1706030815)*	734.0	28.2	207.1
Little North Fork Clearwater River (HUC 1706030830)*	962.3	15.1	145.3
Isabella Creek (HUC 1706030835)	21.1	82.0	17.3
Beaver Creek* (HUC 1706030840)	373.5	17.3	64.6

*These watershed have considerable areas outside of National Forest lands with no landtypes mapped. Consequently, the road % and miles of road with high mass wasting hazards is unknown, but is likely higher than presented in the table.

The five watersheds with the greatest percentage of the roads (length-wise) on high landslide hazard landtypes are:

1. Lower Kelly Creek (mouth to Cayuse) 95.6% of the roads are on high mass wasting hazard landtypes
2. Isabella Creek 82.0% of the roads are on high mass wasting hazard landtypes
3. Middle Lochsa River 76.6% of the roads are on high mass wasting hazard landtypes
4. Skull Creek 75.0% of the roads are on high mass wasting hazard landtypes
5. Quartz Creek 74.0% of the roads are on high mass wasting hazard landtypes.

The five watersheds with the greatest total distance of the roads on high landslide hazard landtypes are:

1. Lower North Fork Clearwater River (below Beaver Creek) 248.4 miles of the roads are on high mass wasting hazard landtypes

2. Palouse River (above Laird Park) 242.8 miles of the roads are on high mass wasting hazard landtypes
3. Elk Creek/Long Meadow Creek 207.1 miles of the roads are on high mass wasting hazard landtypes
4. Middle North Fork Clearwater River 206.5 miles of the roads are on high mass wasting hazard landtypes
5. Potlatch River (above Hog Meadow Creek) 167.7

AQ 4: How and where do road-stream crossings influence local stream channels and water quality?

Background

Road-stream crossings with culverts can cause large inputs of sediment to streams when culvert hydraulic capacity is exceeded, or the culvert inlet is plugged and streamflow overtops the road fill. The result is often erosion of the crossing fill, diversion of streamflow onto the road surface or inboard ditch, or both. An inventory of all the road-stream crossings (and cross-drains, if needed) in a watershed allows assessing the distribution and severity of risks to beneficial uses from this important potential source area; screening of crossings to determine the most crucial and cost-effective ones to upgrade; and allows estimating the cost of road upgrading or decommissioning, because these costs are very sensitive to the configuration of road-stream crossings. A complete inventory of all crossings in a watershed for these purposes need not gather detailed and highly accurate data, as might be required for a contract, but can be accomplished quickly and inexpensively if methods are adjusted to the desired analytical objectives.

The watershed scale is ideal for defining the cumulative risk of road-stream crossings, for summarizing the 'hotspots' (those crossing with the greatest potential and likelihood to cause damage), and for setting priorities to reduce risks most efficiently.

The majority of road-stream crossings have undersized culverts that constrict stream flows, speed up water velocities through the pipe, and cause scour and down cutting of the channel below the culvert. The end result is an outlet that is perched above the stream channel. During spring flow or flood events, the increase in velocities can destabilize stream banks through additional scouring. The pipe constriction also causes sediment to accumulate above the pipe. The overall effect is an artificial stream gradient that is high below the pipe and low above it. Perched pipes cause upstream passage barriers to aquatic organisms (See Question AQ-10).

The undersized pipes can, and have led to culvert plugging and failure as seen during the 1995/96 flood events. Failures can increase instream sediment levels. Sediment levels can also be affected by road runoff that is often directed into stream channels by drainage ditches.

An analysis of drainage density and road stream intersection data was used to answer this question. Drainage density influences the amount of contact between the road system

and the stream. Road systems in watersheds with higher drainage densities will generally require more stream crossings and have a greater potential to influence stream channels and water quality. Pete King Creek (6.1 mi/mi^2), Deadman Creek (6.0 mi/mi^2), and the Lower Lochsa River (5.6 mi/mi^2) watersheds have the highest drainage densities on the Forest, and therefore the greatest potential for road systems to influence stream channels and water quality (Table 4).

Road-stream intersections.

The greatest potential for the road system to influence stream channels and water quality is at the road-stream intersection. There are 6,666 road-stream intersections in the Clearwater National Forest. Overall road-stream intersection density is 1.4 per mile^2. Pete King Creek (10.9/mi^2), Orofino Creek (9.3/mi^2), Canyon Creek (8.5/mi^2), Lolo Creek above Musselshell (7.9/mi^2), Palouse River above Laird Park (5.8/mi^2), Eldorado Creek (5.2/mi^2), and Quartz Creek (5.0/mi^2) have the greatest density of stream crossings and therefore the greatest potential to influence stream channels and water quality (Table 2).

Based upon this analysis, the watersheds with the greatest potential to influence stream channels and water quality, in order of severity, are Pete King Creek, Orofino Creek, Canyon Creek, Lolo Creek above Musselshell Creek, Deadman Creek, the Palouse River above Laird Park, Lower Lochsa River, Eldorado Creek, and Quartz Creek. Road maintenance and obliteration activities would most likely reduce the number of stream crossings and thus the influence to stream channels and water quality the greatest within these watersheds.

AQ 5: How and where does the road system create potential for pollutants, such as chemical spills, oils, de-icing salts, or herbicides, to enter surface waters?

Roads may create potential pollutants in several ways. Chemicals such as surfacing oils and fertilizers may be applied to roads for maintenance, safety, or other improvement. Roads may also become contaminated by material from vehicles, including accumulation of small spills, such as crankcase oil and hydraulic fluid or from accidental spills of hazardous or harmful materials being transported over roads. Applied or spilled materials may have access to water bodies, depending on road drainage systems and runoff patterns. The severity of damage depends on what organisms might be exposed, their susceptibility to the material, and the degree, duration, and timing of their exposure.

On the Clearwater National Forest, magnesium or calcium chloride is often used during the hauling of timber products to reduce dust. Spreading of the salt on roads has proven harmless to aquatic organisms in the streams; however, spills with direct discharge of magnesium chloride can cause fish kills. Minor amounts of fuel and oils are hauled through and stored within the Forest's watershed during timber sale operations; therefore there is always a slight risk that a small amount of discharge could occur to stream. All fuel storage and fueling of equipment takes place outside of PACFISH and INFISH riparian buffers (150 to 300 feet).

Road-stream proximity and road-stream intersection parameters will be used to determine watersheds with the greatest potential for pollutants, such as chemical spills, oils, de-icing salts, or herbicides, to enter surface waters.

Road-stream proximity.

The greatest potential for pollutants to enter streams is at crossings or where roads encroach upon the stream channel. Of the 4,254 miles of arterial, collector, important local, and local roads on the Clearwater National Forest, 1,756 miles are located within 300 feet of stream channels, or roughly 43 %. Watersheds with higher levels of contact between the road and stream will have the greatest potential for pollutant entry. Pete King Creek (2.3 Mi/Mi^2), Canyon Creek (2.1 Mi/Mi^2), Orofino Creek (2.1 Mi/Mi^2) and Lolo Creek above Musselshell Creek (2.1 Mi/Mi^2) have high densities of roads within 300 feet of the streams (Table 1).

Road-stream intersections.

The greatest potential for pollutants, such as chemical spills, oils, de-icing salts, or herbicides, to enter surface waters is at the road-stream intersection. There are 6,666 road-stream intersections in the Clearwater National Forest. Overall road-stream intersection density is 1.4 per mile^2. Pete King Creek (10.9/mi^2), Orofino Creek (9.3/mi^2), Canyon Creek (8.5/mi^2), Lolo Creek above Musselshell (7.9/mi^2), Palouse River above Laird Park (5.8/mi^2), Eldorado Creek (5.2/mi^2), and Quartz Creek (5.0/mi^2) have the greatest density of stream crossings and therefore the greatest potential for pollutants to enter streams (Table 2).

Based upon this analysis, the watersheds with the greatest potential for pollutants, such as chemical spills, oils, de-icing salts, or herbicides, to enter streams are Pete King Creek, Orofino Creek, Canyon Creek, Lolo Creek above Musselshell Creek, the Palouse River above Laird Park, Eldorado Creek, and Quartz Creek. Road maintenance and obliteration activities would most likely reduce the potential for pollutants within these watersheds.

AQ 6: How and where is the road system "hydrologically connected" to the stream system? How do the connections affect water quality and quantity (such as, the delivery of sediments and chemicals, thermal increases, elevated peak flows)?

The Clearwater National Forest does not have an inventory of the hydrologic connectivity of the Forest roads. Therefore, road-stream proximity (roads located within 300 feet of a stream) and road-stream intersections have been used as surrogates. Generally, most insloped and many outsloped roads located within 300 feet of a stream will be hydrologically connected. Almost all road-stream intersections and their approaches for 300 feet on each side of the stream will also be hydrologically connected.

Road-stream proximity.

One method of indirectly estimating the amount of hydrologic connectivity of roads to the stream channels in a watershed is to determine the road/stream proximity. Of the 4,254 miles of arterial, collector, important local, and local roads on the Clearwater

National Forest, 1,756 miles are located within 300 feet of stream channels, or roughly 43 %. Watersheds with higher levels of contact between the road and stream will most likely have greater hydrologic connectivity. Pete King Creek (2.3 Mi/Mi^2), Canyon Creek (2.1 Mi/Mi^2), Orofino Creek (2.1 Mi/Mi^2), and Lolo Creek above Musselshell Creek (2.1 Mi/Mi^2) have high densities of roads within 300 feet of the streams (Table 1). These watersheds have the greatest hydrologic connectivity and therefore the greatest potential for water quality and peak flow problems within the Clearwater National Forest.

Road-stream intersections.

The greatest hydrologic connectivity from the road system is at the road-stream intersection. There are 6,666 road-stream intersections in the Clearwater National Forest's watersheds. Overall, road-stream intersection density is 1.4 per mile^2. Pete King Creek (10.9/mi^2), Orofino Creek (9.3/mi^2), Canyon Creek (8.5/mi^2), Lolo Creek above Musselshell (7.9/mi^2), Palouse River above Laird Park (5.8/mi^2), Eldorado Creek (5.2/mi^2), and Quartz Creek (5.0/mi^2) have the greatest density of stream crossings and therefore hydrologic connectivity and therefore the greatest potential for water quality problems and peak flow increases on the Forest (Table 2).

Based upon this analysis, the watersheds with the greatest hydrologic connectivity from roads and potential for water quality problems and peak flow increases, in order of severity, are Pete King Creek, Orofino Creek, Canyon Creek, Lolo Creek above Musselshell Creek, the Palouse River above Laird Park, Eldorado Creek, and Quartz Creek. Road maintenance and obliteration activities would most likely reduce hydrologic connectivity and its associated problems within these watersheds.

AQ 7: What downstream beneficial uses of water exist in the area? What changes in uses and demand are expected over time? How are they affected or put at risk by road-derived pollutants?

Beneficial uses of water on the Clearwater national Forest are found in the State of Idaho Water Quality Standards and Wastewater Treatment Requirements (IDAPA 58.01.02) and in the Forest Plan. The State Water Quality Standards list cold water communities, salmonid spawning, primary contact recreation, domestic water supply, and special resource water as beneficial uses existing in rivers and streams on the Clearwater National Forest. The Forest Plan beneficial uses are limited to fish species, such as steelhead trout, rainbow trout, cutthroat, chinook salmon, and brook trout. Known beneficial uses for each watershed are listed in Appendix D.

Fish species are found in most perennial streams on the Clearwater National Forest. Anadromous species, such as steelhead trout and chinook salmon, are found in the Clearwater River drainage, including the Lochsa River, the Potlatch River, and Lolo Creek. They are not found in most of the Orofino Creek drainage, the North Fork of the Clearwater River, or in the Palouse River. Kokanee salmon are found in the North Fork of the Clearwater River watershed. Cutthroat trout and bull trout are found in cold streams throughout the Forest except in the Palouse, Potlatch, Orofino, and Elk Creek

drainages. Eastern brook trout are primarily located in the Palouse, Orofino, Lolo, and Elk Creek drainages.

Domestic water supplies are located along or downstream from the main rivers. The town of Elk River is currently developing Elk Creek for a municipal water supply. This is the only municipal water supply on the Forest. There are no significant irrigation water supplies on streams or rivers in the Clearwater National Forest. The State of Idaho has designated the Palouse, Potlatch, North Fork of the Clearwater, Middlefork of the Clearwater, Lochsa Rivers, Elk Creek, and Orofino Creek as recreational use.

The Nez Perce Tribe spring chinook rearing facility is located in the Upper Lolo Creek watershed, along Yoosa and Camp Creeks. Another spring Chinook adult trapping and rearing and Idaho Department of Fish & Game on Walton Creek operates juvenile rearing facility.

Numerous roads within the Clearwater National Forest are located adjacent to streams (See AQ1, 2, 4, and 6). Some roads have eroding cutslopes and ditch lines that deliver sediment to the streams because of their close proximity to water. Increased connectivity of the road ditches and bare cutslopes and driving surfaces has also increased runoff, especially where roads are close to streams (See AQ6). Roads can and have degraded the Forests beneficial uses, primarily by adding sediment to streams.

Very few roads are currently being constructed and none within 300 feet of streams, except for the occasional stream crossing, however, numerous roads are being obliterated or placed in intermittent storage, thus the Forest's total road mileage is decreasing each year. The Forest has also made it a priority to maintain and improve those roads that are contributing to the decline in water quality. Given these conditions, water quality on the Clearwater National Forest is on an upward trend and beneficial uses are less impacted than in the past.

AQ8: How and where does the road system affect wetlands?

A comprehensive wetland inventory has not been conducted across the Clearwater NF, however, it is recognized that wetlands occur throughout the area and are important ecological landscape features. The majority of wetlands on the Clearwater NF are associated with riparian areas adjacent to streams. Roads can restrict or divert water flow in wetlands by direct encroachment or through changes in hydrology. Both surface and subsurface flows can be altered resulting in changes in water tables affecting the wetland moisture regimes.

Areas of wide valley bottoms (two to three times the stream width) would have been floodplains, receiving annual inundations and deposition of fine sediments. These areas have historically contained wetlands. Roads and their ditchlines concentrate flows that historically were dispersed across valley bottoms and associated wetlands. Roads also may drain areas so they no longer retain water for gradual, sustained release into wetland areas throughout the growing season. Today many valley bottoms across the Clearwater

NF have roads. Where roads impact wetland areas, the effect on wetland processes should be assessed and appropriate mitigation measures prescribed.

AQ 9: How does the road system alter physical channel dynamics, including isolation of floodplains; constraints on channel migration; and the movement of large wood, fine organic matter, and sediment?

Roads can alter physical channel dynamics, including isolating floodplains, constraining channel migration, and movement of large wood, fine organic matter, and sediment. This happens most at road-stream intersections and where roads are within close proximity to streams. Of the 4,254 miles of arterial, collector, important local, and local roads on the Clearwater National Forest, 1,756 miles are located within 300 feet of stream channels, or roughly 43 %. Pete King Creek (2.3 Mi/Mi^2), Canyon Creek (2.1 Mi/Mi^2), Orofino Creek (2.1 Mi/Mi^2), and Lolo Creek above Musselshell Creek (2.1 Mi/Mi^2) have the highest densities of roads within 300 feet of the streams (Table 1). Channel dynamics has, most likely, been altered the most within these watersheds on the Clearwater National Forest.

Road-stream intersections

The greatest potential to alter physical channel dynamics is at the road-stream intersection. There are 6,666 road-stream intersections in the Clearwater National Forest's watersheds. Overall road-stream intersection density is 1.4 per mile^2. Pete King Creek (10.9/mi^2), Orofino Creek (9.3/mi^2), Canyon Creek (8.5/mi^2), Lolo Creek above Musselshell (7.9/mi^2), the Palouse River above Laird Park (5.8/mi^2), Eldorado Creek (5.2/mi^2), and Quartz Creek (5.0/mi^2) have the greatest densities of stream crossings and therefore the greatest alteration of physical channel dynamics on the Forest (Table 2).

Based upon this analysis, the watersheds with the greatest alteration of physical channel dynamics, in order of severity, are Pete King Creek, Orofino Creek, Canyon Creek, Lolo Creek above Musselshell Creek, the Palouse River above Laird Park, Eldorado Creek, and Quartz Creek. Road maintenance and obliteration activities would most likely reduce the alteration of physical channel dynamics, including isolating floodplains, constraining channel migration, and movement of large wood, fine organic matter, and sediment within these watersheds.

AQ 10: How and where does the road system restrict the migration and movement of aquatic organisms? What aquatic species are affected and to what extent?

Improper culverts are the primary elements of the road system that restrict migration and movement of aquatic organisms. The native salmonid species affected by the culvert migration barriers are the two anadromous fish species, spring chinook salmon and steelhead trout, and three resident salmonids, bull trout, westslope cutthroat trout and rainbow trout. Removal of the culverts identified as fish migration barriers would provide additional habitat for spawning and rearing; the cooler water temperatures and better habitat conditions within these headwater streams are expected to improve survival

of smaller fish. The removal or correction of the migration barriers will benefit amphibian populations in all the streams. In addition, the correction of culverts that are undersized, with poor alignment or high failure potential would minimize risks of erosion and subsequent sedimentation in downstream fish bearing streams; thereby providing benefits to all aquatic species.

The majority of the culverts across the Forest provide passage related problems for fish, amphibians and other smaller aquatic organisms. Of the approximately 1,100 culverts identified on perennial streams, an estimated 80 % (880) would most likely need replacement due to undersized and passage problems. Of these 880 culverts, approximately 50 % (440) would be slated for replacement or removal to provide fish passage. Effects of the culvert barriers to spring chinook salmon spawning and rearing are considered minimal. Most of the culverts are located on smaller stream not used by spring chinook for spawning. Some juvenile spring chinook salmon may migrate into some these smaller streams for summer rearing if access was available, but production potential would be considered minimal. Passage restoration at these culverts would have varying effects on steelhead trout production, dependent upon the size of the drainage. The majority of the culverts are located on small streams, which limits steelhead trout spawning. However, steelhead trout juvenile rearing would show some increases in the larger tributaries. Passage restoration would have the greatest benefit to westslope cutthroat trout production as the improved access would reopen spawning and rearing habitats to fluvial populations and provide connectivity to other resident population. While bull trout production within these smaller tributaries is most likely limited, passage restoration would provide access for bull trout individuals for rearing, foraging or eventual re-colonization of a population.

AQ 11: How does the road system affect shading, litterfall, and riparian plant communities?

The overall road system throughout the Forest creates minor negative effects to shading, litterfall, and riparian plant communities with the majority of roads located well outside of riparian areas. Exceptions to this are along segments of arterial roads along larger fish-bearing streams (i.e. Lolo Creek, Orogrande Creek, North Fork Clearwater River, Lochsa River, Crooked Fork Creek etc.) and smaller tributaries (i.e. Pete King Creek, Fishing Creek, Moose Creek, etc.) where floodplain and riparian trees have been harvested and roads placed adjacent to streams. The roads are mainline access roads and will continue to be used in the future. While the vegetated areas between the road and streams will eventually grow back, the road bed will continue to keep shade to a minimum, will limit litterfall, and will not re-establish riparian plant communities due to the presence of the road surface. For the majority of roads, decreases in shading, litterfall, and impacts to riparian plant communities are only seen along short stream reaches and where roads intersect streams. The effects are not as notable due to the relatively small amount of riparian area affected.

AQ 12: How and where does the road system contribute to fishing, poaching or direct habitat loss for at-risk aquatic species?

Fishing intensity varies across the Forest dependent upon accessibility, fish stocking and regulations. Salmonid species legal to take in most drainages are westslope cutthroat trout, rainbow trout, brook trout and whitefish. Within the accessible watersheds along the western portion of the Forest (Palouse River, Potlatch River, Orofino Creek, Elk River and Lolo Creek), fishing pressure is moderate to high due to accessibility and ability to harvest fish. The road system provides access for most anglers fishing these drainages. Within the Lochsa River and North Fork Clearwater River drainages, most tributaries that have roads adjacent or very close to them contain populations of westslope cutthroat trout. Fishing pressure on westslope cutthroat trout is considered low to moderate on most streams with road access.

All roads increase the probability or risk of poaching fish in varying degrees. However, roads providing access along streams with late summer or fall spawning fish most likely contribute to higher poaching opportunities. Spring chinook salmon spawn in the late summer during low stream flows and are susceptible to poaching. Within the Forest, spring chinook salmon spawn in the Lolo Creek and Lochsa River drainages. Specifically the majority of the spawning occurs in Pete King Creek, Fishing Creek, Legendary Bear Creek, Storm Creek, Big Flat Creek, and the mainstems of Crooked Fork Creek, Brushy Fork Creek and Colt Killed Creek (White Sand Creek). With the exception of the streams in the Colt Killed Creek drainage (Storm Creek, Big Flat Creek), the chinook salmon spawning areas are relatively easily accessible and are susceptible to poaching. However, poaching is considered minimal within the Lolo Creek drainage due to the enforcement and monitoring activities conducted by the Nez Perce Tribe and Forest Service during the spawning season. In reality, most people travel to Lolo Creek to view these spawning fish, as opposed to poaching them. Their physical condition is also on a decline at this time, which makes them less favorable as a food fish. Steelhead trout spawn in the spring and are often gone before the snow has melted off the roads enough to allow access. This minimizes fishing or poaching pressure on adults. Fishing pressure on juvenile steelhead trout is considered low to moderate on most streams with road access.

Road locations are such that they typically do not cross or directly effect prime spawning or rearing habitat. Instead the impact to aquatic species is most noticeable through the restriction of access to historic habitats (culvert barriers) and through the impacts associated with riparian plant community disturbance (see AQ-10 and AQ-11). Spring chinook salmon and steelhead trout are the least affected species due to their use of the larger streams, while westslope cutthroat trout and bull trout are the most affected with habitat occurring well up into the smaller drainages.

AQ 13: How and where does the road system facilitate the introduction of non-native aquatic species?

The road system has facilitated the introduction of non-native aquatic species. Non-native brook trout have been introduced into several watersheds throughout the Forest (i.e. Potlatch River, Orofino Creek, Lolo Creek, and several drainages in the North Fork Clearwater River and Lochsa River drainages). These introductions were a combination of incidental and management related actions (lower elevation streams within the Potlatch River, Orofino Creek, Lolo Creek, Beaver Creek, Orogrande Creek, and Washington Creek drainages) and the result of high mountain lake stockings in several streams in the North Fork Clearwater River and Lochsa River drainages. Populations appear to have remained stable in the affected drainages and have not expanded to adjacent drainages. The Idaho Department of Fish and Game's fish supplementation program indicates that only native salmonids are stocked into the Forest's lakes and streams; westslope cutthroat trout are presently stocked in a few high mountain lakes on a three year rotation and both spring chinook salmon and steelhead trout (juveniles and adults) are released in selected rivers and streams annually.

The existing road system maintains the opportunity for individuals to release additional non-native fish species throughout the Forest. However, any introductions of non-native species (other than salmonids) from adjacent off-Forest aquatic environments and out-of state streams and lakes will most likely not result in viable populations due to the unfavorable habitat conditions within the Forest for these species (lack of lower elevation lakes and the presence of mostly high gradient, cold, sterile streams).

Within the Clearwater National Forest, the redistribution of one introduced fish species, brook trout, is of concern. Within the North Fork Clearwater River watershed, the road network within four brook trout drainages (Beaver Creek, Orogrande Creek, Washington Creek and Meadow Creek) provides access for fishing and opportunities to move these fish to other drainages. With the exception of road access in the upper Bimerick Creek drainage and upper Big Sand Creek drainage (Hoodoo Creek), brook trout populations within the Lochsa River watershed are located in roadless or wilderness settings. The lack of access to these populations within the Lake Creek, Stanley Creek, Boulder Creek and Old Man Creek drainages limit opportunities to redistribute fish to other drainages.

AQ 14: To what extent does the road system overlap with areas of exceptionally high aquatic diversity or productivity, or areas containing rare or unique aquatic species or species of interest?

The majority of the roads across the Forest are located within the drainages with smaller non-fish bearing perennial streams. Roads parallel or cross these streams but the majority of their locations are far enough away from the channel to maintain riparian communities and habitat development processes. Undersized and poorly designed and/or installed culverts are the main problems associated with these roads since they limit access to miles of habitat and pose a substantial sedimentation risk to streams if they fail during high stream flow events.

Several main roads parallel or bisect streams adjacent to major spawning areas for spring chinook salmon and steelhead trout. For example, USFS roads #100 and 103 lies

adjacent to prime spring chinook salmon and steelhead trout spawning habitat in Lolo Creek, and the presence of these roads limits riparian vegetation re-establishment in several locations (but *not* along its entire length). Other main roads parallel segments of spawning areas within the Fishing Creek, Legendary Bear Creek, and Pete King Creek, but impacts to the spawning areas from these roads are minimal. However, impacts from other roads within these drainages (especially the mid-slope roads) have caused substantial impacts to stream conditions due to landslides resulting from road failures.

Very few road systems overlap areas of critical spawning habitat for bull trout. Road systems within the Fishing Creek, Vanderbilt Creek, Long Creek, and Lake Creek drainages are the main examples, although roads paralleling or crossing streams adjacent to spawning areas is minimal. One exception is in the Fishing Creek drainage where the road network crisscrosses tributaries that flow into critical bull trout spawning habitat. One of the highest concentrations of bull trout spawning on the Forest (the highest observed in the Lochsa River subbasin) occurs in the Fishing Creek drainage. As such, the Forest has prioritized this drainage for watershed restoration projects since 1995; approximately 90 miles of road decommissioning has been completed during 1997-2000.

Terrestrial Wildlife

This discussion is limited to Clearwater National Forest Plan Management Indicator Species (MIS) and Threatened, Endangered or Sensitive (TES) wildlife species. MIS species found in the analysis area include elk, white-tailed deer, moose, pileated woodpecker, belted kingfisher and pine marten. TES species known or suspected to reside in the analysis area include wolf, black-backed woodpecker, boreal toad, goshawk, fisher and wolverine.

No T&E plant species are known or expected to occur on the Forest. Sensitive plants known in or near the analysis area, which occur in riparian habitats within older Forest, include: green bug-on-a-stick; mingan moonwart; and naked mnium. Bristle-stalked sedge has been documented in wet meadow habitats in or near the Forest. Sensitive plant species occurring in drier habitats include: broad-fruit mariposa, Dasynotus, green bug-on-a-stick, Henderson's sedge, lance-leaved moonwort and light hookeria. Though ICDC records do not indicate presence, based on habitat descriptions, it is possible clustered lady's slipper, deer fern, Idaho strawberry, mingan moonwart, naked mnium, short-styled triantha, spacious monkeyflower and sweet scented coltsfoot also occurs in the Forest.

TW1: What are the direct effects of the road system on terrestrial species habitat?

Generally, the roads open to motorized travel, represent habitat. Most MIS and TES mammals routinely travel across Forest roads open to motorized vehicles between preferred habitats. Wildlife do use roads, particularly non-motorized roads. Roads, however, are not needed by wildlife. Goshawks are known to hunt snowshoe hares, Forest grouse and other prey species, along open habitat created by Forest roads. Some roads in the analysis area allow motorized access to bisect breeding/rearing, foraging, hiding or security habitats.

Roads open to motorized traffic reduce elk habitat effectiveness and security. Analysis of elk summer habitat effectiveness indicated that in some portions of the Forest we are at or near minimum Forest plan standards for open road densities. For elk summer/fall habitat to qualify as a security area, areas must be at least 250 contiguous acres that are more than 1/2 mile from an open road and contain at least 60% hiding cover.

Wolverines are the most sensitive MIS species to motorized access. They typically inhabit remote mountainous areas where human disturbance is lower. Wolverines typically avoid human disturbance and roaded landscapes.

TW2: How does the road system facilitate human activities that affect habitat?

Human activities (hunting, firewood removal, trapping, vegetation management, etc.) are the most significant factors affecting wildlife habitats and populations within the analysis area. Elk calving habitats, security areas and heavily used seasonal habitats (both winter and summer) can be adversely affected by human activities, particularly motorized access. Standing and down dead wood is important to pileated woodpecker and marten habitat. Roads facilitate the removal of these habitat components for firewood. A major implication is that some MIS habitats are likely underused.

TW3: How does the road system affect legal and illegal human activities (including trapping, hunting, poaching, harassment, road kill, or illegal kill levels)? What are the effects on wildlife species?

A high-density open road system generally encourages both legal and illegal harvest of elk, white-tailed deer and moose. Unrestricted motorized access during hunting season limits elk security habitat and increases elk vulnerability to hunters. An open road system minimizes the time and energy that hunters, trappers and poachers need to expend in accessing the area. Large areas can be covered quickly and with minimum effort. A high-density open road system also decreases the likelihood that poachers will be caught due to the amount of area that must be patrolled and alternate routes of travel that poachers can utilize to avoid detection.

Moose are particularly vulnerable to poaching since they are less secretive in their behavior than either elk or deer. Moose often utilize open areas that deer and elk avoid, making them easy targets for poaching activities. Unrestricted motorized access increases moose vulnerability to illegal hunting harvest.

TW 4: How does the road system directly affect unique communities or special feature in the area?

Riparian areas, elk calving and security habitats and large (contiguous) patches of older forest are the special habitat features on the Forest. Impacts to these special features have negative implications for elk, moose, and wolves that rely on them for prey. Road effects in riparian habitats also likely impact boreal toad and fisher. The current density of roads

open to motorized vehicles during the big game hunting season precludes conditions that qualify as elk security areas for much of the heavily roaded parts of the Forest.

A large percentage of the pregnant elk cows bear young on the spring range, particularly on broad gentle ridges. Calving and fawning areas are important to wolves because they often prey upon newborn ungulates. Seclusion from human disturbance, most typically disturbance related to motorized activity, is important. The best of these habitats are located on relatively gentle, dry terrain with lush grass forage.

Economics

EC 1: How does the road system affect the agency's direct costs and revenues? What, if any, changes in the road system will increase net revenue to the agency by reducing cost, increasing revenue, or both?

A detailed cost/benefit analysis is not feasible at the Forest-scale. The appropriate scale according to "Roads Analysis, FS-643 Miscellaneous Report" is that where costs and revenues affected the roads in question is measurable and relevant to address the issues concerned with financial efficiency of the agency. At the Forest-scale certain roads remain open and are maintained to provide access to other ownership, facilities, and to provide primary access to the national Forest. Other roads that are primarily for local access, are best addressed at the project level when alternative levels of management are being considered, and there are measurable costs and returns.

EC 2: How does the road system affect the priced and non-priced consequences included in economic efficiency analysis used to assess net benefit to society?

This is a project scale question, not a Forest-scale question.

EC 3: How does the road system affect the distribution of benefits and costs among affected people?

This is a watershed-scale question, not a Forest-scale question.

Commodity Production

TM1: How does road spacing and location affect logging system feasibility?

This question was answered by Donald Maxwell Matthews in "Cost Control in the Logging Industry", McGraw-Hill Book Company 1942. He essentially documented a break-even point concept where the costs of building and maintaining a road are balanced against the logging cost for the distance machines log between roads. Since in most cases the longer the distance logs are yarded (by tractor, cable, or helicopter) the greater the yarding cost.

The Clearwater National Forest has a variety of topography from flat slopes, to short steep slopes, to very long and steep slopes. In many cases, road location is set by the topography. Since the best location for the road is where the sideslope is gentle enough that expensive endhaul of waste material is not needed, where the topography is stable, where stream crossings are reduced, and other resource considerations are met; thus, roads are located where they lie best on the land and logging systems are chosen to match the road location. This in contrast to the philosophy of the 1960's and 1970's, where roads were built at fixed spacing, since the relative cost of construction was low.

TM 2 and 3: How does the road system affect managing the suitable timber base and other lands? How does the road system affect access to timber stands needing silvicultural treatment?

The arterial and collector roads are the portions of the road system that can be addressed at the Forest-wide scale while local roads are best dealt with at the watershed or project level. Arterial and collector roads are constructed and maintained at a higher standard than local roads. Traffic speeds are greater, curves are broader, and surfacing is pavement or gravel in most cases. This allows efficient transportation of people and commodities out of and into the Forest. The greater volume of traffic creates more maintenance and sometimes there are revenues or user maintenance fees that offset the cost of this maintenance. These roads are the main avenues of access to the Clearwater National Forest once one leaves the county or state highway. They are the only efficient means of transporting timber from the woods to the sawmills and pulp mills. Water, rail, and air transport of Forest products in not feasible due to high impact to the environment or high cost.

In many areas of the Clearwater National Forest, the suitable timber base has arterial or collector road access to the general area. Local roads are then needed to provide access to the immediate area needing silvicultural or other treatment.

Minerals Management

MM1: How does the road system affect access to locatable, leasable, and salable minerals?

The quantity and weight of material in a mineral operation is such that the movement of gold ore, gravel, etc. needs to be by heavy truck. This requires a road system to provide access to the source of the mineral at a mine or quarry. Locatable minerals, like gold and silver, fall under the General Mining Law of 1872 (as amended) and the claimant may mine mineral deposits on valid claims. The Forest Service manages the surface resources, thus regulations are in place to protect the surface resources and to reclaim disturbed area.

Leasable and salable minerals have more discretion on the part of the agency on whether they will be extracted.

Location of locatable, leasable (coal or oil and gas), and salable (gravel) minerals on the Clearwater National Forest is limited to a number of fairly small areas. Thus new roads needed to access mineral deposits would be limited.

Range Management

RM 1: How does the road system affect access to range allotments?

Most of the grazing that occurs on the Forest is associated with transitory habitat that is created along roads. Livestock operators benefit from a road system. All allotments can be accessed with the existing open road system.

Water Production

WP 1: How does the road system affect access, constructing, maintaining, monitoring, and operating water diversions, impoundments, and distribution canals or pipes?

Roads provide access to water diversions and pipes at campgrounds and administrative sites at various locations throughout the Forest. There are no known water quality problems associated with this access.

WP 2: How does road development and use affect water quality in municipal watersheds?

There is a proposal to make Elk Creek (Town of Elk River) a municipal watershed. There are no other municipal watersheds on the Forest. In the entire Elk Creek watershed (including Long Meadow Creek), there are 174 miles of Forest roads and 97 miles of these roads are within 300 feet of streams. There are also 424 stream crossings and 600 miles of streams. The extent of the impact of the Forest road system on the Elk River watershed is unknown at this time. A watershed analysis will be conducted to answer this question.

WP3: How does the road system affect access to hydroelectric power generation?

There are no hydroelectric power generation facilities accessed by the Forest road system.

Special-Use Permits

SP1: How does the road system affect access for collecting special Forest products?

People gather firewood, berries, mushrooms, Christmas trees, moss, decorative foliage and other special Forest products in the Clearwater National Forest. Due to the weight and bulk, firewood is transported in pickup trucks. Without a road system, firewood

could not be collected for personal use. Most of the other products are gathered within several hundred feet of existing roads. Thus roads are necessary to provide access to many special Forest products.

SU 1: How does the road system affect managing special-use permit sites (Concessionaires, communication sites, utility corridors, etc.)?

The existing road system is sufficient to deal with almost all recreation special uses. Safe and efficient access to areas under Special Use Authorization has a direct effect on the economics of an operation, either through volume of customers, or operation and maintenance costs. Outfitters and guides under special use may or may not use Forest roads to access trailheads that they use to provide a back-country experience to their clients. Several trailheads are along State Highway 12, but the remaining access for outfitters and guides is from Forest roads.

Communication sites and utility corridors are normally constructed and maintained from existing roads, or low standard access is developed to establish the facility.

General Public Transportation

Background

Access to the Clearwater National Forest is from a network of U.S. Highways, state highways and county roads. The main routes are U.S. Highway 12, which provides east-west connections in the southern portion of the forest, and U.S. Highway 95, which provides north-south connections in the northwestern portion of the forest.

Communities located within or near the forest include: Potlatch, Princeton, Harvard, , Deary, Helmer, Bovill, Elk River, Dent, Ahsahka, Orofino, Grangemont, Pierce, Weippe, Greer, Kamiah, Kooskia, Syringa, and Lowell. These communities are located on the main public access routes to the forest so it can be theorized that they played a role in the historic transportation system development on and around the forest. In the past they have been centers of activities for timber and/or timber support activities.

Forest Highways

Seven roads on the Forest have been designated as Forest Highways. These roads provide important access to National Forest System lands and connect to main public roads. A portion of the Forest highway may be located on public roads also designated as an U.S. Highway, state highway or county road. The dual designation represents the fact that a major component of the traffic on the road originates or results from the need to access national forest land activities that include: recreation, hunting, fishing, management of resources, and other related activities. Forest highways also serve communities within and adjacent to the National Forest. These roads are major connections of the Forest roads with the county and state highway road systems.

Table 6 - Forest Highways

Forest Highway	Forest Highway Name
Forest Highway 15	State Highway 6
Forest Highway 16	U.S. Highway 12
Forest Highway 54	State Highway 6
Forest Highway 55	Kamiah-Pierce Road 100
Forest Highway 58	State Highway 9
Forest Highway 67	Grangemont Road
Forest Highway 68	State Highway 8
Forest Highway 71	State Highway 3

Public Forest Service Roads (PFSR)

Public Forest Service Road is a new designation that will to be given to important National Forest System arterial and collector roads that meet specified criteria. These are the service roads that serve as principal public access routes to the Forest. The intent of the PFSR program is to provide funding for reconstruction/restoration projects needed to adequately provide safe and environmentally sound access for public use. Funding for the program is proposed to come from the Highway Trust Fund. Although project proposals have been developed, funding for the program has not been approved.

The Clearwater National Forest has nominated five roads for PFSR designation. The program was limited to those roads with an objective maintenance level of 3-5. This correlated to the need for public access by passenger car so the minimum maintenance level would be a level 3, suitable for passenger car.

The criteria for PFSR designation are those roads that:

a. Are under Forest Service jurisdiction.
b. Provide unrestricted access (other than seasonal snow closures, emergency closures, or scheduled closures for wildlife).
c. Serve a compelling public need.
d. Primarily serve Forest Service resource needs such as access to lakes, wilderness areas, or developed campgrounds, etc.
e. Roads that typically *do not* provide local community needs such as school bus, access to summer homes, etc. (These would be are Forest Highways)

The Forest compiled a list of proposed PFSRs in January 2000. Project proposals were subsequently developed for the five highest priority projects.

TABLE 7 – Proposed Public Forest Service Roads

Road Number	Road Name	Year Planned
PFSR 100	Kamiah-Pierce Road	FY 2004
PFSR 250	Pierce-Superior Road	FY 2005
PFSR 3347	Vassar Connection Road	FY 2006
PFSR 370	Big Creek Road	FY 2007
PFSR 247	Beaver-North Fork Road	FY 2008
PFSR 447	Palouse River Road	FY 2009

National Forest System Roads (NFSR)

There are three functional classes of National Forest System Roads on the forest. They are arterial, collector and local roads. There is also a subset of local roads kept on the Clearwater National Forest. This subset category includes both "important local" and "local" roads. NFSRs are maintained to varying standards depending on the level of use and the individual road management objectives. There are five maintenance levels used by the Forest Service to determine the work needed to meet management objectives and preserve the investment in the road. These maintenance levels are described in FSH 7709.58 – Transportation System Maintenance Handbook.

The arterial, collector and important local roads being maintained to maintenance levels 3, 4 and 5 are the Forest system roads being managed for public use. These roads receive the highest traffic and are the most costly to maintain to standard. Table 8 displays the maintenance level for all 1,349 milse of road reviewed in detail.

Table 8 - Arterial, Collector, and Important Local Road Mileage

Maintenance Level	Arterial	Collector	Major Local	Totals
1	-	19	13	32
2	-	265	122	387
3	59	548	56	663
4	154	46	2	202
5	63	-	2	65
Totals	**277**	**878**	**194**	**1349**

See Appendix C for a listing of the individual roads/road segments in each maintenance level.

In order to discuss the individual roads involved in this analysis, the Forest was split into five analysis areas. These areas consist of the 5 main watersheds on the forest. Sections that follow will discuss the *main* roads in each watershed. Individual roads are dscussed

in the watershed in which a major portion of the road exists. U.S. Highways, State Highways, and arterial roads are listed first followed by collector roads and important local roads.

Table 9– Arterial, Collector, and Important Local Roads by Analysis Area (miles)

Maint Level	Palouse River/ Hangman Drainage	Lochsa River/ Middlefork Clearwater River	Main Stem Clearwater River	Upper North Fork Clearwater River	Lower North Fork Clearwater River	Roads outside areas	Totals
1	12	12	1	6	1	-	32
2	51	121	38	165	8	4	387
3	95	158	94	222	69	24	663
4	4	46	40	106	-	6	202
5	1	2	29	10	16	8	65
Totals	**163**	**339**	**203**	**508**	**94**	**42**	**1,349**

GT1: How does the road system connect to public roads and provide primary access to communities.

Palouse River/Hangman Drainage

U.S. Highway 95 provides the interstate connection for this area with other locations in Idaho and the Western United States.

State Highway 6 provides the main public access into and through the drainage. It extends from U.S. Highway 95 near the city of Potlatch northerly to the Forest boundary near the Palouse Divide Nordic Ski Area and continues on the junction with State Highway 3. This route is also designated as Forest Highway 15. Several arterial roads connect with Highway 6 to provide access to National Forest lands along the route. The small towns of Hampton, Princeton and Harvard are also located on the highway. Highway 6 is also designated the White Pine Drive Scenic Byway. It is an important road to visitors and local residents. The road also connects with State Highway 9 near the community of Harvard.

State Highway 9 is a high standard paved road that crosses a portion of the drainage. It connects State Highway 6 at Harvard with State Highway 8 at Deary.

Palouse River Road 447 is the primary arterial road used to access the interior of the analysis area. The road extends from State Highway 6 on the Clearwater National Forest to on the State Highway 3 on the Idaho Panhandle National Forest. The first 1.5 miles of the route is a double-lane paved road under county jurisdiction. The next 12.3 miles is gravel surfaced and is under Forest Service jurisdiction. The road is cost shared with Potlatch Corporation. The road segment east of Palouse Divide is located on the Idaho Panhandle National Forest. The route ties into State Highway 3 so there is some through

traffic by local residents and forest visitors. Road 447 has the highest average daily traffic (ADT) on the Clearwater National Forest. The July traffic estimate is 540 ADT. On average, 20 MMBF of timber is hauled over this road each year from the intermingled ownership in the area. Laird Park Campground, located near milepost 1, is a popular destination with visitors from the nearby towns of Moscow, Idaho and Pullman, Washington. Road 447 also provides access for many use including:

- ?? Private land owners
- ?? Land management activities by the forest service and corporate land owners
- ?? Mining activities and range management
- ?? Developed recreation, dispersed camping, ATV riding
- ?? Fishing, bird hunting, small/big game hunting
- ?? Recreational driving
- ?? Snowmobile riding
- ?? A large boy scout camp

North Fork Palouse River Road 767 provides access to the northern interior portion of the drainage. This collector road connects Road 447 to Road 1423 and Road 377. Road 767 is cost shared with Potlatch Corporation. The lower 3.8 mile portion of the road is gravel surfaced and in good condition. There is an old rock source located in Section 14 at approximately milepost 1 on the west side of this road. Crushed aggregate found on the local roads in the area came from this site. There is also a gravel pit on private land adjacent to this Forest Service site. The road has been relocated from the west side of the valley and now actually lies on the old tailing piles left by mining dredge operations. The area is a very popular dispersed camping area. It is also very popular as an ATV riding area. ATV riders camp/park in this area and ride nearby trails and closed roads.

Little Sand Creek Road 292 is a minor collector road that provides access to the south west corner of the analysis area. The road is surfaced with gravel and in good condition. The road is cost shared with Potlatch Corporation. The road serves as logging access route to National Forest and private timberlands in the area. It does not tie through to any other major routes or provide access to any forest recreation sites.

Strychnine Creek Road 768 is a collector road that provides access to the northwest corner of this analysis area. The road is cost shared with Potlatch Corporation. It has an aggregate surface and is in good condition. This collector road connects Road 447 to Road 1427. Forest visitors use the lower segment of the route for pleasure driving. The upper segment of Road 768 connects to Road 1423 and is used primarily as a haul route for timber resources.

Excavation Gulch Road 1427 is a collector road that provides access to the north west corner of this wateshed. The road is cost shared with Potlatch Corporation. It connects Road 447 to Road 1423. The road is gravel surfaced and in good condition. Forest visitors use the lower segment of the route for pleasure driving.

White Pine Gulch Road 1423 is a collector road. The first segment of the road ties Road 1427 and 767 together in the northern portion of the analysis area. The second segment connects Road 768 and Road 377. Road 1423 is gravel surfaced and in good condition. It is cost shared with Potlatch Corporation. Forest visitors use the first road segment for pleasure driving.

Moose Creek Road 381 is a collector road that ties Road 447 to the State Highway 8 near Bovill. The road is cost shared with Potlatch Corporation. The road segment within the analysis area gravel surfaced. The Forest Service recently acquired several isolated land parcels in the area by land exchange; this blocked up their ownership in the upper area of the Big Sand Creek drainage. A number of formerly private roads in these parcels are tributary to Road 381. Forest visitors use the lower segment of the route for pleasure driving during dry portions of the year.

Palouse Divide Road 377 is a main local route in the analysis area. Road 377 provides the connection between the State Highway 6 and Road 770. The west end is designated as a collector road under county jurisdiction. The road provides access to residential properties and farms and is gravel surfaced for two miles beyond the intersection with Road 770. The road then becomes very primitive and has a native surface material. It is currently closed by two slides near Crane Point.

The next segment of Road 377 lies on the north and east edge of the Palouse District and extends approximately 21 miles. The road is inventoried and managed as a Clearwater National Forest road even though portions of the road lie on the Idaho Panhandle Forest side of the ridge. This road segment is cost shared with Potlatch Corporation. It is a single lane road native surfaced route designated as the Palouse Divide Adventure Road. The Clearwater and Idaho Panhandle National Forests along with the Potlatch Corporation have hauled timber across this road in the past. The road also hosts a smaller number of the same users found on Road 447. Forest visitors use the lower segment of the route for pleasure driving during dry portions of the year.

There is a need to carefully examine the future management need for this road. While it appears that there is no need for a segment on the west end, there may be a need for improvements on the north and east segments of the road for future resource and recreation use management. There is significant volume National Forest timber tributary to this road. Continued use as a primitive native surfaced road (adventure road) may be difficult to manage.

The east end of the road is designated as a major local road but it is also a county road. This segment accesses a block of private land as well as the forest. The road provides the connection between the State Highway 3 and Forest Road 447. There is a large block of Forest Service timber tributary to this road that is being planned for management in the near future. A segment of the road in the drainage is also planned for relocation and reconstruction. The work will raise the standard of the forest segment. The segment from State Highway 3 to Road 447 should be considered for change to a collector road in

the future. Designation as a collector road will enable the route to be safety managed for the combined traffic.

Gold Hill Road 770 is the main collector road accessing national forest land from the Potlatch area. Road 770 has a crushed aggregate surface. The first mile of road provides access to private land and farms and is under county jurisdiction. The road segment under Forest Service jurisdiction provides access to private timberlands as well as National Forest land. Although timber access is the main use, the route provides connections to Road 370 and State Highway 6 and is used by forest visitors for pleasure driving. The road is also used for mining, grazing, dispersed recreation, hunting, fishing, and other activities.

Big Creek Road 370 is the main surfaced collector road accessing the east side of the Gold Hill area. The road has a crushed aggregate surface. The first 3 miles of the road accesses private land and farms and is under county jurisdiction. The remainder of the road is under Forest Service jurisdiction; 5.6 miles of this segment is cost shared with Potlatch Corporation. The Idaho Department of Lands also owns property that it accesses and manages from this road. Forest visitors and local residents use the route for access and pleasure driving. Some dispersed recreation also occurs in the area.

Jerome Creek Road 788 is a minor collector road that provides access to the area east of Gold Hill. The lower portion of the road is used for access to private land and farms and is under county jurisdiction. The road also provides access to several mining claims on and adjacent to National Forest land. There is very little to see or do along the road so recreation driving is not very popular along this route. The future standard of this road may be more appropriate as a local road.

Bedsprings Gulch Road 4712 is gravel surfaced collector road. It begins from Road 447 and provides access to private and National Forest lands. Road 4712 is cost shared with Potlatch Corporation and the major use is related to timber management activities. The route has very little to attract the forest visitors looking for recreation. The standard of this road should be reviewed to determine if designation as a collector is correct.

Skyline Drive Road 4716 is a collector road which accesses several small parcels of National Forest land at the extreme western edge of the forest. The main attraction in this area is the McCrosky Memorial State Park. A recent land exchange has left the forest with only scattered land holdings in the area. There is no future need to maintain this road as a collector route. The State of Idaho has the biggest use in the area and a private timber company has land holdings along the road. The future status of this road should be changed from a collector road to a local road. Consideration should also be given to transferring jurisdiction to another agency or private party.

Meadow Creek Road 328 is a low standard collector road. It extends from State Highway 6 to Road 377 and provides access to both private timberlands and national forest lands in the area. There is private land and dwellings near the beginning of the road. Jurisdiction is mixed: The first 2.1 miles is under county jurisdiction; the Forest

Service has jurisdiction for the next 1.8 miles; the final 1.6 miles is under private/other jurisdiction. The Forest Service has a "prescriptive right" rather than a right-of-way easement on this road. National Forest timber can probably continue to be managed with the existing prescriptive rights. The road should be shown and managed as a local route.

The arterial and collector road system in the Palouse River/Hangman analysis area are 100 percent in place. The existing condition of these roads is not totally up to Forest Service standards for the anticipated uses. Due to the lack of maintenance and the aging of the facilities many roads have a significant deferred maintenance backlog. Condition surveys are being performed to identify maintenance and improvement needs for national forest system roads in the area.

Main Stem Clearwater River Drainage

State Highway 3, State Highway 8, and State Highway 9 provide connections between the U.S. Highway system and large blocks of the national forest land in the northwestern portion of the drainage. State Highway 7 and State Highway 11 provide connections in the remainder of the drainage. These connections enable efficient public resource management of the forest and surrounding private lands.

State Highway 8 provides the main public access into and through the drainage. This highway is also designated as Forest Highway 68. It connects the city of Moscow with a number of roads that provide access to the forest. The small towns of Troy, Deary, Helmer, Bovill and Elk River are located along the route. This highway is important to both visitors and local residents. It connects with U.S. Highway 95, State Highway 3 and State Highway 9. It is also designated as Forest Highway 71. The segment of State Highway 8 from Deary to Bovill is dual-designated as State Highway 3.

State Highway 3 is provides public access into and through the drainage. It extends from Highway 12 near the Clearwater River to Clarkia on the Idaho Panhandle National Forest. It is also designated as Forest Highway 71. The highway connects Lewiston with a number of the arterial roads in the drainage. The small towns of Deary, Helmer, Bovill and Clarkia are located along the route. This is an important route to both forest visitors and local residents. The segment of State Highway 3 from Deary to Bovill is dual-designated as State Highway 8.

State Highway 9 provides an important connection from Highway 8 at Deary to Highway 6 near Harvard. Half of the route is in the Palouse River/Hangman Creek drainage.

State Highway 7 provides an important connection from U.S. Highway 12 at Orofino to State Highway 11 at Hollywood junction. This road provides access to residential areas on the west end and large blocks of state and private timberland along the remainder of the road. There is a small manufacturing plant in the old town of Grangemont.

State Highway 11 provides connections from U.S. Highway 12 at Greer to the old development of Headquarters. The towns of Greer, Weippe, Pierce, Cardiff Spur, and

Headquarters are located along the route. The western half of the road passes through rural residential and farming areas. The eastern half accesses large blocks of state and private timberlands. This road is one of the main access roads to the forest in the North Fork Clearwater River drainage. A large part of the history of the area can be viewed when driving along this highway. Timber management activities had a major role in the development of this highway. There was a major timber processing plant located at Jaype intersection with State Highway 7. The Jaype plant was recently closed and dismantled. The area is now used as a log collection/transfer site. There is also a railhead at Jaype, but its viability has become questionable since the plant closed. Timber from locations as distant as Kelly Forks has been hauled through this location. It remains as one of the main transportation hubs located adjacent to the forest.

Kamiah-Pierce Road 100 is an arterial route that extends from U.S. Highway 12 at Kamiah to Road 250 near Pierce. Road 100 is the main access road to a large area of national forest land in the Lolo Creek drainage. It is also designated as Forest Highway 55. Jurisdiction is mixed: The segment from Kamiah to Yakus Creek is under Idaho County jurisdiction; the Forest Service has jurisdiction from Yakus Creek to Peterson's Corner; and Cleawater County has jurisdiction from Peterson's Corner to Road 250. Road 100 provides access to the western portal of the historic Lolo Motorway.

Lolo Trail Road 500 is a main road that extends from Road 100 east to U.S. Highway 12. The segment from Road 100 to Canyon Junction is a gravel surfaced arterial road. This segment is used as a timber haul route and as a forest visitor access road. Beyond Canyon Junction, Road 500 becomes a primitive native surfaced road collector route known as the Lolo Motorway within the Lolo Trail National Historic Landmark. The road parallels the route of the Lewis & Clark expedition and is not suited for passenger car use. It is the primary road that will be used by forest visitors celebrating the bicentennial of the Lewis & Clark expedition. A permit system is expected to be implemented on the route in 2003 with the number of users permitted limited and the direction of travel limited from east to west with controlled access. The primitive character of the road will be maintained.

Vassar Connection Road 3347 is a collector road that provides primary access to a large block of state and national forest land. This road connects State Highway 9 near Bovill to State Highway 8 at Deary. The eastern segment of the road is under Forest Service jurisdiction and is cost shared with the Idaho Department of Lands. The road segment that provides access to the private land and dwellings the western end is under county jurisdiction.

Moose Creek Road 381 is a minor collector that connects Road 447 to State Highway 8 near Bovill. The eastern segment is under county jurisdiction. The western segment is under Forest Service jurisdiction and is cost shared with Potlatch Corporation. The road provides access to state and national forest lands in the Moose Creek drainage. There is a recreation site located alongside the road at Moose Creek Reservoir. Recreation traffic also uses the road for pleasure driving during the dry seasons. The Forest Service plans to improve a portion of the segment under forest jurisdiction to improve the drainage and

provide a gravel surface. This road should be reviewed to determine if the collector road standard is appropriate.

East Fork Potlatch Creek Road 512 is listed as a collector road in the transportation inventory. Due to land exchanges that have been completed, there is no national forest land tributary to this road. Since the forest no longer has jurisdiction, this road should be removed from the system.

Potlatch River Road 3332 is shown as a collector road. Road 3332 begins at State Highway 8 west of Bovill and ends at Highway 8 east of Bovill. Jurisdiction is mixed: The first segment of the road crosses private land and is under county jurisdiction; the second segment is located on national forest land and is under Forest Service jurisdiction; the third segment is a primitive road located on private land and is under private jurisdiction; the fourth segment is under county jurisdiction. There is very little recreation traffic on this road other than local residents. The road accesses a small block of forest timber and there is no need for a collector standard road to mange it. A local road standard would be sufficient for the forest needs.

Park Road 1963 is shown as a collector road. This county road extends from Highway 8 near Helmer easterly to Highway 8 near Elk River. A short section on the west end is paved; the remainder has a gravel surface. The road provides access to a large block of state and private timberlands. There is also some national forest land on the west end of the road and small block at the east end. This road had major storm damage during the winter storms of 1996.

Lower North Fork Clearwater River Drainage

Elk Creek Road 382 is an aggregate surfaced collector road. It extends from the end of the county road at Elk River northerly to the forest boundary. The first 11.1 miles of the road is used for resource management and recreational access. There are number of dispersed recreation camping sites that have been surfaced along this segment. The upper 5.3 miles of the road is primarily used for timber management and some recreation traffic. This segment should be reclassified to a local road; both the road standard and use level is lower than the first segment. There is also a primitive road that connects to private timberland north of the drainage. The private timber is, however, hauled out to market on a different road system. .

Beaver–North Fork Road 247 is an arterial road that extends from the end of State Highway 11 at Headquarters across a major portion of the drainage and then connects to Road 250 at Bungalow. The road segment from Headquarters to the Aquarius is a double-lane paved highway that is cost shared with Potlatch Corporation. The first 5.3 miles of the segment from Aquarius to Bungalow is asphalt paved; the remainder of the road is surfaced with crushed aggregate. It is one of the main access roads to both the lower and upper portions of the North Fork Clearwater River drainage. Natural resource management, mining, timber haul, outfitter/guides, hunters, fishermen, hikers, horseback riders and other users use this main access road to get to the forest quickly and safely.

Scofield-Sourdough Road 246 is a major collector road. It begins at State Highway 11 and extends 52 miles to the junction with Road 247 approximately 3 miles south of Aquarius. Road 246 has a gravel surface and provides access to a large block of private timberland and National Forest land. It provides connections to many local roads in the area.

Upper North Fork Clearwater River Drainage

Lolo-Weitas Road 103 is an arterial road. The route begins from Road 100 and extends into the Middle Creek drainage. This high standard road has an aggregate surface. It provides important connections to other roads in the area, including Lolo Trail Road 500. Road 103 provides important access for timber management activities in area. Forest visitors use the road to access dispersed recreation sites and for pleasure driving.

Pierce-Superior Road 250 is an arterial route that extends from State Highway 11 at Pierce to the forest boundary at Hoodoo Pass. It continues on the Lolo National Forest to Superior, Montana. Road 250 provides public and administrative access to a vast area of the upper North Fork Clearwater River drainage. The 18 mile segment to Shanghai is a double-lane asphalt paved highway; the 30 mile segment to Kelly Forks is a single-lane gravel surfaced road; the 15 mile low standard segment that passes through Black Canyon to the junction with Road 255 is not suitable for mixed traffic; the 3 mile segment to Long Creek is a single-lane gravel surfaced road; the 11 mile segment to the forest boundary at Hoodoo Pass is double-lane bituminous surfaced road. Two segments of Road 250 are proposed Public Forest Service Roads: (1) the 18-mile segment from Pierce to Shanghai and (2) the 14-mile segment from Long Creek to Hoodoo Pass.

Deception Saddle Road 255 is an arterial route that extends from Road 250 at Kelly Forks to Road 250 near Deception Creek. Road 255 is an alternate route to the Black Canyon segment of Road 250 for through traffic. Forest visitors use the road to access the Kelly Forks Campground, trailheads leading into the wilderness, and other dispersed recreation sites. It also serves as a haul route for timber management in the area.

Orogrande Creek Road 669 is a main road that extends from Pierce to Road 250 near Shanghai. The majority of the road is a private road used and maintained by a private timber company as a major haul road for timber. The Forest Service has jurisdiction on the 2.5-mile northern segment. Primary use is for timber haul, but local residents also use the route for pleasure driving and access to dispersed recreation sites.

Lochsa River/Middle Fork Clearwater River Drainage

Smith Creek Road 101 is an arterial road that extends from Highway 12 to Canyon Junction. This high standard road has an aggregate surface. It serves as a haul route for timber coming from the tributary area. Forest visitors use the road to access the Lolo Motorway and dispersed recreation sites. The route is also used for pleasure driving.

Saddle Camp Road 107 is a collector road that extends from Highway 12 to Saddle Camp and into the Gravey Creek drainage. This road has an aggregate surface and is suitable for passenger car traffic. Forest visitors use the road to access the Lolo Motorway and other dispersed recreation sites in the area. It is also used for pleasure driving and as a haul road for timber management activities in the area.

Elk Summit Road 111 is an arterial road that extends from Highway 12 into the Colt Killed Creek drainage. This high standard route provides connections to other roads that access national forest land and private timberlands in the area. It has an aggregate surface and is cost shared with Plum Creek Timber Company. The road serves commercial, recreation and administrative traffic. Road 111 provides an important connection to Road 360, which provides access to Elk Summit Campground, trailheads leading into the Selway-Bitterroot Wilderness, and to dispersed recreation sites.

Packer Meadows Road 373 is an arterial road that extends from Highway 12 at Lolo Pass to the forest boundary in the headwaters of Brushy Creek. It connects to Road 451 on the Lolo National Forest that connects to U.S. Highway 12. Road 373 provides access to a large area of the national forest and to private timberlands. It has a gravel surface and is cost shared with Plum Creek Timber Company. It provides access to a large area of national forest land and to private timberlands. The road serves commercial, recreation and administrative traffic.

Parachute Hill Road 569 is a collector road that extends from U.S. Highway 12 to Road 500. It has a gravel surface and is cost shared with Plum Creek Timber Company. Road 569 provides access to national forest and private timberlands area. It road serves commercial, recreation and administrative traffic. The route is also the primary route for access to the eastern portion of the Lolo Motorway.

GT2: How does the road system connect large blocks of land in other ownership to public roads? (Ad-hoc communities, subdivisions, in holdings, and so on)

The U.S. Highways, State Highways and County Roads network described previously provide primary access to the Forest. Depending on the location of the other ownership, the Forest Highways, Public Forest Service Roads, and main National Forest System Roads are used for access to some degree.

A portion of the Clearwater National Forest is a checkerboard of ownership. Inside the forest boundaries the majority of the land is in public ownership and managed by the Clearwater National Forest. The Idaho Department of Lands, Potlatch Corporation, Plum Creek Timber Company, Crown Pacific, and Bennett Tree Farms also own large tracts of timberland. There are numerous small private parcels and scattered patented mining claims on the forest. The Nez Perce Tribe, U.S. Army Corps of Engineers, Bureau of Land Management also manage land in and/or adjacent to the National Forest.

GT3: How does the road system affect managing roads with shared ownership or with limited jurisdiction? (RS 2477, cost-share, prescriptive rights, FLPMA easements, FRTA easements, DOT easement)?

National Forest System Roads located within the boundaries of established cost share agreement areas may be "cost shared" with other major landowners. The forest currently has cost share agreements with Potlatch Corporation, Plum Creek Timber Company, and the Idaho Department of Lands. The agreements cover 530 miles of jointly owned roads located in five separate cost share agreement areas. Parties to cost share agreements share the cost of road construction, maintenance, and surface replacement on jointly owned roads according to the terms of the agreement.

GT4: How does the road system address the safety of road users?

The Clearwater National Forest Service does not have a record of accidents that have occurred on the Forest. Traffic counts showing the traffic numbers on Forest Service roads have been very limited in the recent past. Most data that the Forest currently has is several years old. The average amount of timber hauled from the Forest has significantly decreased in the recent years. As a result of this decrease, overall timber management associated traffic on the Forest system roads has declined. A large portion of the timber currently being hauled on Forest roads is from private timberlands.

Timber hauling over Forest roads should remain a year-around activity. The severity of accidents on Forest roads can be expected to remain unchanged or to show a slight decline if the amount of timber volume hauled and the associated traffic volume continues to decline. Accidents between logging traffic and public users tend to be more serious than accidents between public recreation users.

Recreation use is expected to continue increase. It is estimated that the total Forest traffic use will continue to increase. Therefore, it could be forecast that the accident rate will also continue to increase.

Current safety problems that exist on Forest roads are similar to those found on other public road systems. As the forest roads are being reconstructed to higher standards the speed that vehicles are traveling also increases. Aggregate surfacing on the arterial and collector roads allows for increased speeds so that traffic may be going too fast for existing conditions.

Traffic safety is a bigger problem on roads that have mixed traffic. Traffic composed of both commercial and recreational vehicles present a bigger safety problem than traffic with only one type of user. Safety on these roads can be greatly increased by increasing the minimum design standards. A change of surface type will also present some safety hazards on Forest roads. Travel speeds increase when the surface type is changed from aggregate surfacing to a bituminous asphalt surface. The proposed widening of the narrow sections to a double lane standard before paving will, however, increase the safety of both the commercial and recreational user. Road management objectives are intended

insure that Forest roads are designed, constructed, operated and maintained to standards that serve management needs while protecting public safety.

Administrative Use

AU 1: How does the road system affect access needed for research, inventory, and monitoring?

Road access assists with research, inventories, and field monitoring. Limited or no road access increases time and costs for field observations. Access to individual watersheds depends on the arterial and collector roads. The Forest roads provide access to inventory and monitoring sites throughout the Forest. The Clearwater National Forest Water and Fisheries Monitoring Plan, 2002 gives the location of soils, water, and fisheries monitoring sites throughout the Forest.

AU 2: How does the road system affect investigative and enforcement activities?

The arterial, collector, and local road system on the Clearwater National Forest provides good access for investigative and law enforcement activities on the developed portion of the Forest. Many acres of the Forest are either wilderness or roadless and access to enforce regulations and laws or investigate crimes is often difficult. Enforcement officers either have to hike or ride horses into the wilderness and many of the roadless areas, or use trailbikes or helicopters to access other areas where this type of transportation is allowed and efficient.

The road system also allows increased public access, which may result in violations of laws and regulations. A number of violations committed pertain to access restrictions in place to limit motorized access to sensitive areas. Several National Forests in the northern Rockies are discovering “meth labs” or material dumped from meth labs on the National Forest. This violation has not been found yet on the Clearwater National Forest.

Protection

PT 1: How does the road system affect fuels management?

To implement safe post harvest fuel management activities, it is necessary to have the ability to access treatment units with fire personnel and equipment. The current road system provides access for planned fuel management activities on many parts of the Clearwater NF. The road system plays an integral role in providing defensible boundaries and in some cases will act as control lines for the units that are situated along Forest roads. In other areas where treatment units are not situated next to, or in close proximity to roads, the road system will act as a staging area for helicopter operations to provide access to those treatment units. Fuels management generally focuses on two areas: 1) treatment of activity fuels created by management actions, and 2) treatment of forest types with high fuel levels which have had no previous management actions.

A majority of the fuel management activities on the Clearwater NF have included removal of forest products and are considered “activity” fuels treatment. After the initial treatment of forest products removal, the natural fuels in addition to the activity fuels, are generally treated through one or a combination of the following treatments: prescribed burning, underburning, or handpiling in combination with burning.

The broadcast burning and underburning of activity fuels are generally conducted throughout the spring and fall months as weather permits. To implement a safe burning operation it is necessary to have the ability to access units with engines in case the prescribed burn escaped. This is especially important on the Palouse and other portions of the Forest due to the intermixed ownership and varying degrees of slash disposal/treatment. To reach some units that would lend them to early burning the snowplow maybe used to provide necessary access for vehicles, equipment and personnel. All pile burning will be conducted in the fall after the season ending rain.

Treatment of forest types with high fuel levels focuses on landtype associations (LTAs) with the shortest fire return intervals that have been most influenced by fire suppression. Stream breakland (which have fire return intervals ranging from 25-50 years on thin-soil, south aspects to 76-150 years on deep-soil, north aspects) and colluvial midslope LTAs (fire return intervals range from 0-25 years on extremely dry, basalt areas to 76-150 years on mid-elevations with deep soils) tend to have the highest fuels loadings compared to historical levels due to the effects of fire suppression. Combinations of timber harvest (including pre-commercial and commercial thinning, slashing, and regeneration harvests) and prescribed fire (both underburning and mixed intensity) may be conducted to reduce fuel loadings on these areas. Road access will facilitate some of these actions, but due to the typically steep terrain on these LTAs, aerial fuels management activities will predominate.

Other Forest types with high fuel loadings are areas on colluvial midslope and low relief, rolling hill LTAs where western white pine has largely been eliminated by white pine blister rust, an introduced fungus disease. Many of these areas are already adequately roaded from previous timber harvest activities and fuel hazards are declining as the old white pines decompose.

Fuels management on portions of the Forest without road systems is conducted through consideration of both management ignited burns and natural wildfires. Management ignited fires can be accomplished through aerial and/or ground methods which require no roads. A Forest level review has been conduted to determine areas where natural wildfires can produce resource benefits (including fuels management) in areas without road systems.

PT 2: How does the road system affect the capacity of the Forest Service and cooperators to suppress wildfires?

Road surfaces and road prisms provide a substantial physical fuel break within Forest stands. Depending on their location and orientation on the topography, they may play a significant role in containment and control of wildfires by way of strategic or advantageous location in relation to an emerging fire event. Tactical suppression strategies often depend on road systems used as anchor points, fire control lines, escape routes, and safety zones. Fire suppression forces (both Forest Service and private cooperators) also often require road access to provide logistical support in the form of primary routes for transport of essential equipment and supplies.

The road systems generally complement access to suppress wildland fires when they are situated in the roaded lands on the Clearwater NF. Cooperators that may assist the Clearwater National Forest and other Forest Service crews in suppression of wildland fires would use the road systems to access Forest lands. In the event that a wildland fire is not accessible by road, and aerial suppression tactics are utilized, the road system may be used as a landing or staging area for use of helicopters during suppression efforts.

PT 3: How does the road system affect risk to fire fighters and to public safety?

Fire suppression and prescribed fire are inherently hazardous duties. Good routes in and out typically decrease risks to firefighters safety however the "mix" of activities, fire management and visitor access, increases risks to both fire fighter and public safety. These risks potentially could be from smoke, vehicle accidents, falling snags, entrapment etc.

A minor effect of good road access may be an increase in industrial and non-industrial caused fires. Currently human caused fires account for a small amount of the Clearwater National Forest fires, although several human caused fires have resulted in high suppression costs and resource damage in recent years.

PT4: How does the road system contribute to airborne dust emissions resulting in reduced visibility and human health concerns?

Airborne dust generated by vehicle traffic (or high wind velocity) along Forest roads is comprised of dry, powder-like materials. The amount of particulate matter produced is related to: 1) road surface material, including particulate size, element structure, and ratio; 2) moisture content; 3) volume, weight, and type of traffic over the road surface. When a road surface is designed with features including variable grades of course and dense material, and traffic volume is relatively low, there are generally not sufficient quantities of airborne dust to create a human health concern or visibility issues. This is especially true of road systems in air sheds that are considered remote, with low population, and limited in terms of use or traffic volume, which is the case of many roads on the Clearwater NF.

Other factors include the amount of use in relation to seasonal weather conditions and precipitation amounts effecting moisture quantities on road surfaces. Generally, on administrative use roads, conditions favoring higher levels of suspended dust particles in the air would be limited to the summer months (June, July and August) and subject only to periods between rainfall during those months when dry conditions allow for dust to be airborne. Mitigation measures such as road surface watering have been very effective in suppressing dust created by traffic during dry season conditions. Another mitigation measure that is currently being applied on National Forest Lands is the monitoring of air shed quality and participation in a formal inter-state air shed management cooperative. Air quality is measured daily at specific monitoring stations and advisories are issued accordingly to restrict use, suspend dust or smoke generating operations, or institute additional mitigation actions.

Recreation

UR 1 and RR 1 have been combined: Is there now or will there be in the future excess supply or excess demand for unroaded or roaded recreation opportunities?

Roads are the primary facility used by the public to access the National Forest. Level 3, 4, and 5 maintenance roads are intended to provide passenger vehicle access for most roaded recreation opportunities. Most of the roads on the Forest were built for timber harvesting. Motorized recreation use has increased over the years and so has the need to provide safe access to and through the Forest. When road maintenance is not performed to desired standards, the quality of the recreation experience may decrease and use may be concentrated on better-maintained roads.

To assess the unroaded and roaded recreation opportunities on the Forest information from the roadless area inventory and the Recreation Opportunity Spectrum (ROS) as documented in the current Forest plan was reviewed. The current Forest plan, as amended, described recreation opportunities for developed recreation, roaded natural recreation, semiprimitive recreation, and wilderness recreation. The information describing semiprimitive recreation does not provide a breakdown between motorized and non-motorized opportunities. The discussion of recreation opportunities uses recreation visitor days (RVDs) not acres available for each category. Some management area standards explain if the recreation opportunity is motorized or non-motorized but many do not. For example, the standard for 198,200 acres of roadless areas recommended for wilderness prescribes that semiprimitive settings be retained. The current Forest plan allows motorized use in recommended wilderness.

The Forest has 972,000 acres of inventoried roadless areas, which provide both motorized and non-motorized recreation opportunities. About 69 % of the Forest, including the Selway-Bitterroot Wilderness is roadless and undeveloped. Several primitive roads bisect or penetrate into the large roadless areas, but access is limited. Forest plan analysis in 1987 (page V-5, Forest Plan) and present day review conclude that the Forest has an excess supply of unroaded recreation opportunities. Future management allocation decisions in a revised Forest plan could change the supply of unroaded areas. Standards

in the revised plan may explain where motorized and non-motorized recreation opportunities could be provided.

Roaded recreation opportunities are available across the Forest with the majority existing in the Palouse watershed on the western border of the Forest; in the Lolo Creek, Eldorado, and Orofino creek watersheds in the Clearwater subbasin; and in Crooked Fork, Legendary Bear, Fishing Creek watersheds in the north eastern area of the Lochsa drainage. Roaded natural settings are found on maintenance level 3, 4, and 5 roads where passenger cars have access while level 2 maintenance roads provide a semiprimitive motorized recreation experience.

UR2 and RR2: Is developing new roads into unroaded areas, decommissioning of existing roads, or changing the maintenance of existing roads causing substantial changes in the quantity, quality, or type of unroaded or roaded recreation opportunities?

Approximately 54 miles of road have been constructed in inventoried roadless areas associated with vegetation management since 1987. This impacted the roadless character of roughly 5650 acres or .006 % of the inventoried roadless acreage (972,000 acres) on the Clearwater National Forest. This is not a substantial change to the quantity or quality of unroaded recreation opportunities.

Decommissioning of roads has not caused a substantial change in the quantity or quality of roaded recreation opportunities. Approximately 500 miles of roads have been decommissioned since 1992. This total is evenly split between classified and unclassified roads.

Due to a lack of funds and resources, many roads haven't been maintained regularly. Decreasing maintenance due to funding shortfalls means the intended maintenance standard and desired road condition may not be achieved on many roads. Over time many of these roads have become unusable to passenger car traffic due to growth of trees and brush in the roadbed.

The potential to increase opportunities for roaded and unroaded recreation is dependent on funding, public input and agency policy. Traditionally, road construction and reconstruction have been paid for by timber management activities. Trends in budgets for timber dollars to construct and maintain roads have decreased and funding for road construction might have to come from another source, such as recreation. Opportunities may exist to reconstruct or improve maintenance to facilitate recreation by providing loop opportunities on existing roads or a combination of roads and trails.

UR 3 and RR 3: What are the adverse effects of noise and other disturbances caused by developing, using, and maintaining roads, on the quantity, quality, and type of unroaded and roaded recreation opportunities?

This is not an issue at the Forest scale. It will be addressed if it is an issue at the subforest scale.

UR 4 and RR 4: Who participates in unroaded recreation in the areas affected by constructing, maintaining, and decommissioning roads? Combined with questions UR 5 and RR 5: What are these participants' attachments to the area, how strong are their feelings, and are alternative opportunities and locations available?

All Forest visitors use the arterial, collector and local roads (level 2-5 maintenance level) to access the Forest. Maintenance levels 3-5 are suitable for passenger vehicles while level 2 roads are intended for high clearance vehicles. Some of the primary activities are driving for pleasure, access to hunt and fish, camping, gathering firewood, and travel to trailheads to access the backcountry for dispersed recreation or to use the Selway-Bitterroot Wilderness. Visitors come from local communities in northern Idaho as well as many other states, particularly California, Oregon and Washington. Based on campground fee envelopes about 50% of visitors are local or regional persons within a four-hour drive and the other 50% are non-locals.

Public input over the years during project scoping and analysis indicate that the public has very strong feelings concerning motorized versus non-motorized recreation in many parts of the Forest. This is particularly true for recommended wilderness areas, like the great burn area, where motorized use is allowed by the Forest plan. The roaded areas in the Lolo Creek, Orogrande Creek, Beaver Creek, Washington Creek, and on the Palouse Ranger District are very important to residents of local communities like Pierce, Wieppe, and Orofino for motorized recreation activities. Attitudes of motorized and non-motorized supporters are still strongly polarized.

Passive Use Values

PV 1: Do areas planned for road entry, closure, or decommissioning have unique physical and biological characteristics, such as unique natural features and threatened or endangered species.

This discussion is limited to Clearwater National Forest Management Indicator Species (MIS) and Threatened, Endangered or Sensitive (TES) wildlife species.
MIS species found in the analysis area include elk, white-tailed deer, moose, pileated woodpecker, belted kingfisher and pine marten. TES species known or suspected to reside in the analysis area include wolf, black-backed woodpecker, boreal toad, goshawk, fisher and wolverine.

No T&E plant species are known or expected to occur in or near the analysis area. Sensitive plants known in or near the analysis area, which occur in riparian habitats within older Forest, include: green bug-on-a-stick; mingan moonwart; and naked mnium. Bristle-stalked sedge has been documented in wet meadow habitats in or near the analysis area. Sensitive plant species occurring in drier habitats include: broad-fruit mariposa, Dasynotus, green bug-on-a-stick, Henderson's sedge, lance-leaved moonwort and light

hookeria. Though ICDC records do not indicate presence, based on habitat descriptions, it is possible clustered lady's slipper, deer fern, Idaho strawberry, mingan moonwart, naked mnium, short-styled triantha, spacious monkeyflower and sweet scented coltsfoot also occurs in the analysis area.

PV 2: Do areas planned for road construction, closure, or decommissioning have unique cultural, traditional, symbolic, sacred, spiritual, or religious significance?

The Nez Perce, Coeur D'Alene, and Salish-Kootenai tribes are all historic users of the lands that comprise the Clearwater National Forest. Most of the Forest is ceded territory of the Nez Perce Tribe, who retain strong traditional cultural ties to these lands. This tribe also retains rights to hunt, gather, and fish at usual and accustomed places on these ceded lands through the Treaty of 1855. Northern portions of the Palouse and North Fork districts are within the ceded territory of the Coeur D'Alene Tribe who also maintain traditional ties to these lands.

These tribes have several locations that are significant for traditional gathering, fishing, hunting, and religious purposes. Several locations on the Forest are held to be sacred by members of these tribes. Tribal members are active users of these traditional areas. The Nez Perce, Coeur D'Alene and Salish-Kootenai tribes are routinely consulted on Forest and project analyses, and will be consulted on all road proposals on the Forest.

PV 3: What, if any, groups of people (ethnic groups, subcultures, and so on) hold cultural, symbolic, spiritual, sacred, traditional, or religious values for unroaded areas planned for road entry or road closure?

The Nez Perce, Coeur D'Alene and Salish-Kootenai tribes all have historic, legal, and traditional ties to the lands that make up the Clearwater National Forest. In addition, other groups such as environmental advocates (e.g. Friends of the Clearwater, the Ecology Council, etc), commodity advocates such as logging companies and loggers, and motorized recreationists all have traditional or symbolic interests in the Clearwater National Forest. These tribes, groups and individuals are routine contributors to NEPA analysis and project appeals.

PV 4: Will constructing, closing, or decommissioning roads substantially affect passive-use values?

Passive-use values, existence or bequest of the values, cover a wide spectrum of publics, both nationally and locally. Many people who live in urban areas and may never visit the Forest hold passive use values for the existence of the wide range of opportunities and resources on the Forest. Bequest values, related to passive or active use, are also important to publics for either protecting roadless areas or for future access opportunities. Maintaining roadless areas as roadless is supported by some publics both nationally and locally. There are other people nationally and locally who would like to have roaded access to roadless areas. The Forest Service manages and protects these values in a manner that balances diverse public values.

There are people and organizations that hold high passive values for areas without roads or for future roaded access. The physical and biological characteristics vary across the Forest, as do the passive use values the people hold for them. Subforest scale road analysis will explore passive use values at a more local project scale.

The Clearwater National Forest, including designated areas, is primarily an unroaded Forest. Approximately 69% of the Forest is unroaded. Road building proposals for inventoried roadless areas have resulted, and will likely continue to result in substantial public controversy from passive use advocates.

SOCIAL ISSUES

SI 1: What are people's perceived needs and values for roads? How does road management affect people's dependence on, need for, and desire for roads?

Many visitors from states other than Idaho as well as Idaho residents use roads to drive to their destinations or for commercial activities. Roads are used to transport goods and access recreation and commercial activities. Well-maintained roads facilitate recreation experiences and commercial activities; poorly maintained roads decrease the quality of visitor's recreation experience and may make them difficult or impossible. Roads are not always viewed as a beneficial facility on the Forest. Many people feel the Forest has too many roads and no further road construction is necessary. Some would like to see more decommissioned. Others view roads as a necessary facility for recreation and Forest management.

The Palouse Range District, the western areas on the North Fork and Lochsa Ranger Districts and the northeastern portion of the Powell Ranger District contain most of the roads on the Forest. Continued availability of these roads to access areas, for example the Lolo Motorway Road #500 or the North Fork Road #250, are very important to many people for access for recreation activities. The Nez Perce tribe also values existing roaded access for ongoing uses associated with cultural practices and treaty rights.

SI 2: What are people's perceived needs and values for access? How does road management affect people's dependence on, need for, and desire for access?

Most of the roads on the Forest were built to access timber management projects. Once the public has authorized access by road to an area it is very difficult to close or reduce the roaded access. Summertime access for camping, fishing and ATV use and fall access for hunting are important for many visitors. Access for dispersed non-motorized recreation activities requires roads to trailheads and entry points.

There are many important access roads on the Forest. A few examples are the Elk Summit road, Saddle Camp road to Cayuse Creek, and Gold Hill Road. These and many others provide access to areas of high value to many people.

Many people in local communities feel they are dependent on roads into roadless areas to support existing wood products and other businesses in Clearwater County. Some groups and individuals in the more urban areas maintain views that tend to be more varied.

SI 3: How does the road system affect access to paleontological, archaeological, and historical sites?

Roads not only affect access to archaeological and historical sites, but affect their integrity and preservation as well. Many historic sites are located adjacent to roads. Prehistoric sites were often affected by past road construction since roads were built on landforms frequently utilized by prehistoric occupants. In several cases, the roads themselves (along with features such as bridges) are historic sites.

Roads often provide access to archaeological and historical sites. This has both profound positive and negative effects to these resources. Roads provide easy access to many sites, which allows managers to more effectively monitor the condition of these non-renewable resources. Further, it allows the public to visit sites that represent their history and culture. One of the greatest threats to the integrity of these sites, however, is through illegal collecting, digging and looting. Roads provide greater access to sites for these activities as well. Any analysis of the transportation system will include site-specific analyses of the benefits and effects of constructing or removing road access to archaeological and historical sites.

SI 4: How does the road system affect cultural and traditional uses and American Indian treaty rights?

In the Treaty of 1855, the Nez Perce Tribe retained the right to fish at usual and accustomed places, and also to hunt and gather plants on lands ceded to the United States by the Tribe. Roads often provide improved access to these traditional areas. While roaded access is not a treaty right, in some cases it enhances the ability of the tribe to retain and pass-on traditional beliefs and activities. The Tribe's best source of traditional knowledge and practice is in its elders who may sometimes only be able to access traditional areas when roads are available.

However, roads can also lead to conflicts with traditional uses. In some existing situations on the Forest, roads allow non-tribal members to intrude upon traditional activities. In cases where these activities require isolation and solitude, roads may lead to significant conflicts between traditional uses and other uses.

In addition, roads may lead to increased sedimentation in streams. Since many of the streams on the Forest support anadromous fish populations, additional sedimentation may affect salmon populations both on-Forest and downstream. Salmon, among other fish species, are of significant traditional, cultural and economic interest to the Nez Perce and other tribes of the Columbia River basin.

The Nez Perce, Coeur D'Alene, and Salish-Kootenai tribes are regularly consulted during project planning. Their input will continue to be sought for transportation planning issues on the Forest.

SI 5: How are roads that are historic sites affected by road management?

Some of the roads on the Clearwater National Forest, such as the Lolo Motorway, are historic sites. In other cases, features such as bridges may also be eligible for the National Register of Historic Places even when the road is not. Historic roads and features are subjected to routine maintenance and repair since keeping them open and in use is considered to be a significant part of managing and preserving these sites. For projects where the integrity of the road may be affected by proposed activities, those affects are considered and consultation with the Idaho State Historic Preservation Office, the Advisory Council on Historic Preservation (as appropriate and required) and other interested parties is conducted to address historic preservation concerns and to develop methods to best mitigate effects.

SI 6: How is community social and economic health affected by road management (for example, lifestyles, businesses, tourism industry, infrastructure maintenance?

Communities are culturally and economically tied to the Forest in part by the Forest road system. Commodity users rely on the road system just as do local and non-local Forest visitors for access to desired locations on the Forest. Most of the roads were built to facilitate the transportation of wood products. Today, the Forest is selling less timber, but the roads remain busy as recreation use and other activities continue. Commodity users, resource managers, and the public at large rely on the transportation system of the Clearwater National Forest. The upcoming Lewis and Clark Bicentennial (from 2003 to 2006) is thought to have the potential to bring additional use to Forest roads for several years to come**.**

The Forest road system is very important to the residents of the local communities in and around the Forest. Access for hunting, fishing, firewood gathering and family outdoor activities rely on maintained roads.

SI 7: What is the perceived social and economic dependency of a community on an unroaded area versus the value of that unroaded area for its intrinsic existence and symbolic values?

Communities vary in their dependency and values for unroaded areas. Some communities are more interested than others depending on the diversity of their economy and its dependence on Forest resources. For many local residents, unroaded areas are there for a few visitors to use and enjoy. Many of these residents see roads as imperative to the management of the Forest for timber production to support the local mill or for fighting wild fires. Many believe the opportunity cost of not building roads into unroaded areas outweighs the cost of road development and long-term maintenance. Other publics believe there are too many roads on the Clearwater National Forest.

SI 8: How does road management affect wilderness attributes, including natural integrity, natural appearance, opportunities for solitude, and opportunities for primitive recreation?

There is one designated wilderness on the Clearwater National Forest. The Selway-Bitterroot Wilderness (258,565 acres) accounts for about 14% of the total Forest acreage. Roads provide important access facilities to trailheads for visitors to enter wilderness. In some situations, roads also provide the means for unauthorized motorized activities in wilderness, which would impact opportunities for solitude and primitive recreation.

SI 9: What are the traditional uses of animal and plant species within the area of analysis?

The Nez Perce, Coeur D'Alene and Salish-Kootenai traditionally used the lands of the Clearwater National Forest to harvest camas, biscuitroot, berries, and several other plants for food and construction of shelters and implements. The area was also used traditionally to hunt elk, deer, bear, and other species. Among other fish species, salmon was traditionally harvested from the rivers and streams. Further, many of these streams are spawning areas for Salmon and other anadromous species, and the watersheds of the Clearwater National Forest are important to maintaining viable salmon populations for the Columbia River basin. These traditional uses are ongoing, of considerable importance to the tribes, and in the case of the Nez Perce are protected by treaty.

Hunting and fishing by non-tribal members can also be considered traditional uses of animal species. The Clearwater region has long been known for its elk populations and the hunting opportunities those populations present. Other important game species include deer, bear, mountain lion, and a variety of bird species.

SI 10: How does road management affect people's sense of place?

People's sense of place is directly tied to the characteristics of an area, including unique features and the type of road accessing the area, that contribute to creating a special sense of place feeling to the area. Vegetation, scenic quality, recreation opportunities and special features are some of the important characteristics. Roads provide the means to access areas and by providing for driving comfort influence the type and amount of use. Any change in road management or during the development of a road needs to consider the factors that are important to sense of place for a given area.

Upgrading the maintenance level of a road may change the type and number of visitors to the areas accessed by the road. This could change the character of the users who consider the area to be special; it could change their experience and may displace current users with different values. Conversely, downgrading the maintenance level could result in fewer visitors and displace those visitors whose sense of place values are influenced by the type road accessing an area.

CR 1: Civil Rights and Environmental Justice

The road system allows tribal members to access traditional harvest areas, sacred sites and other traditional sites on the Clearwater National Forest. While roaded access is not required by treaty, the roads do provide increased access for tribal elders to traditional sites. This is important to maintaining and transmitting traditional knowledge to subsequent generations and maintaining the cultural identity of these tribes since elders often are a major source of traditional beliefs and knowledge.

Furthermore, the road system is used by all groups of people. Changes in road management, including closing or decommissioning any of the roads could have significant effects on all groups of people, including minorities and low income groups. In some rural areas as a result of lifestyle and high levels of unemployment, citizens often have a greater need for roads than some more urban citizens.