EFFECTS ON FISH HABITAT AND FISH POPULATIONS.

There is concern about the impacts of roads and trails on fisheries habitats in specific streams as well as across the project area in general. Stream sedimentation and disruption of spawning habitat at stream crossings are the greatest concerns. There is also concern about too much human access to streams supporting sensitive fisheries.

1. EXISTING CONDITION

a. Natural Characteristics, Past Events and Conditions

The project area supports a variety of native and introduced fish species. The streams naturally yield high water quality that is moderately or highly productive of aquatic life (algae, invertebrates, and coldwater fish). Late summer and winter stream flow is the most common natural limiting factor for fish populations in smaller streams in the project area that are affected by drought or subject to natural dewatering due to geology and climate. Lake fisheries are relatively scarce in the project area and generally less affected by roads and trails, except for issues of access and potential overuse.

Fires, floods, and drought have historically affected fish habitat in the project area. These tend to be pulse disturbances that may temporarily reduce the quality of fish habitat in some drainages while leaving other streams largely unaffected. Natural disturbances are typically followed by longer periods of stability, during which fish habitats and populations recover. Population recovery in disturbed streams may be facilitated by fish immigration from nearby drainages less affected by the catastrophic event. However, drought can have a more pervasive effect in the project area and can lead to widespread fisheries declines that require longer recovery times.

The Sandpoint Fire (1985) is probably the most notable wildfire in the project area in recent history that altered miles of fish habitat in the Lost Fork Judith River. The last major flooding took place in the project area in 1981 when Belt Creek greatly overflowed its banks, took out bridges and inundated Highway 89 in several places. These events undoubtedly caused major disruptions of fish habitat which are likely still influencing portions of area streams.

b. Human Influence

Some drainages have been seriously degraded by historic mining activities (e.g., Dry Fork Belt Creek, Carpenter Creek, Yogo Creek, Placer Creek), and many streams are impacted by ongoing livestock grazing which breaks down banks, widens channels and removes vegetative cover. In addition, roads and trails have localized effects on nearby stream segments or at stream crossing sites, especially fords. In some cases, effects are more extensive and may impair fish habitat for longer reaches of streams, such as along Middle Fork Judith River, King Creek, North Fork Running Wolf Creek, Hoover Creek, Jefferson Creek, Sheep Creek, Deadman Creek, lower Tenderfoot Creek, Daisy Dean Creek, and Haymaker Creek. Timber harvests have altered the recruitment of large woody debris and reduced canopy closures for some streams. In most cases, little data is available to quantify the magnitude of these human-caused changes in stream conditions and their effects on fish populations. However, water quality monitoring efforts have documenting the pollution of the Dry Fork Belt Creek drainage from mine effluents, waste rock deposits and old tailings ponds.

The other major human influence has been the introduction of non-native trout species into nearly all project area drainages, primarily rainbow trout, Yellowstone cutthroat trout and brook trout. Rainbow and Yellowstone cutthroat trout have hybridized with the native westslope cutthroat trout in many streams, and brook trout have displaced the native cutthroats in other streams, especially those altered by sedimentation and increased water temperatures due to human activities. Brown trout have colonized lower Belt Creek and been introduced to the Smith, Judith and Musselshell river drainages.

c. Future Trends

Clean-up and rehabilitation of historic mining areas is ongoing in Dry Fork Belt Creek and Carpenter Creek. These activities should gradually improve water quality and allow further recovery of fish populations, but full restoration will take decades to achieve. Improvements in grazing management, off-stream water development, and expanded riparian exclosures are expected to promote stream channel and riparian restoration, and subsequent improvement in fish habitat. Capital improvement funds will continue to be used to address identified road and trail erosion problems through relocation or improvement, while other routes may be decommissioned. However, it is likely that many roads and trails will continue to impact water quality and fish habitat, and the maintenance backlog will persist, given expected funding levels.

d. Desired Condition

Given that access is necessary for public use and forest management, and that all roads and trails are compacted surfaces that alter watershed function and potentially affect aquatic habitats, the desired condition is to provide necessary access and recreation opportunity with the minimum transportation system possible. This condition also recognizes the limited funding available for proper travel way maintenance to avoid adverse effects on aquatic resources, and limited capability of the agencies to enforce travel management regulations. The desired condition for fish habitats would be to provide adequate buffer zones between travel ways and streams, and to minimize stream crossings. Routes with chronic erosion problems that cause stream sedimentation or excessive channel damage would be corrected (repaired, relocated, restricted or closed).

2. ENVIRONMENTAL CONSEQUENCES

a. Summer Alternative 1 - No Action Alternative

Quantitative information relating travel management to fish habitat condition is largely lacking for the project area. The difficulties of modeling sediment delivery to streams from roads and trails, then estimating instream transport and deposition rates in a highly variable natural system were discussed in the WATER QUALITY section. These limitations necessitate a more qualitative assessment of the effects of roads and trails on fisheries, based on field observations of conditions at sites across the project area and impact risk levels tied to the amount of disturbance within 100-foot stream buffer zones (e.g., miles of roads/trails, number of stream crossings).

1. Direct and Indirect Effects

Most Jefferson Division watersheds have moderate to high road and trail densities with an extensive network of non-system or unauthorized routes receiving motorized and non-motorized use. Maintenance work and enforcement actions have been unable to keep up with the need, and as a result, drainage features are lacking or not functioning properly, travel ways have been created in inappropriate locations, ATV use is occurring on trails not designed for such use, and closures or restrictions are being routinely ignored, either willfully or due to lack of clear information and signing. In addition to the unavoidable impacts of designated roads and trails, the use of non-system or unauthorized routes is adversely affecting the quality of fisheries habitats in many parts of the project area.

The effects described in the WATER QUALITY section are generally relevant to fisheries habitat, but the road densities, road/trail mileages within 100' of streams, and number of stream crossings need to be standardized by total stream miles in each watershed to allow more meaningful evaluation of risk levels to fisheries. Effects on fish habitat should reflect spatial considerations, in that individual stream reaches with few crossings or lying upstream from most road and trail impact zones would be less affected and more likely to provide some low-impact "refuge" habitats for fish. The amount, type and season of use will also influence the level of impact of roads and trails on adjacent fish habitats and fish populations, generally increasing from foot to horse or motorized use, and from dry to wet conditions.

Using GIS analysis and a coarse filter of ten or more road miles within 100 feet of perennial streams ("riparian roads") from Table III-71 (WATER QUALITY section) produces a list of watersheds where stream conditions and fish habitat are most likely to be affected by the system road network (Table III-100). Comparing the list with field observations confirms that it includes the watersheds where road impacts to fish habitat have been noted over the years. The only obvious omission would be the lower Middle Fork Judith River. The stream is severely impacted by the encroaching primitive road and its many fords; GIS analysis indicated 9.1 miles of riparian road for this watershed.

Table III-100. Watersheds with Ten or More Miles of Road Within 100 Feet of Perennial Streams (Riparian Roads)

6th Code Watershed	Watershed Square Miles	Major Stream or Streams in Watershed	Road Miles Within 100 ft. of Streams
100301030401	63.34	Newlan Creek	15.8
100301030701	138.02	Sheep Creek (upper)	27.5
100301030702	49.68	Sheep Creek (middle)	14.5
100301030703	95.07	Moose Creek	19.9
100301030903	23.48	Tenderfoot Creek (lower and SF)	17.9
100301050101	106.01	Jefferson Creek	17.1
100301050102	81.91	Belt Creek (upper)	17.1
100301050103	58.00	Belt Creek (middle)	21.0
100301050104	101.37	Dry Fork Belt Creek	27.9
100301050203	70.84	Logging Creek	21.2
100401030102	134.78	Deadhorse Creek	16.1
100401030104	68.00	South Fork Judith River	17.4
100401030105	93.69	Yogo Creek	13.4

6th Code Watershed	Watershed Square Miles	Major Stream or Streams in Watershed	Road Miles Within 100 ft. of Streams
100401031001	64.95	Dry Wolf Creek	10.3
100402010103	31.76	Boulder Creek	14.4
100402010107	81.38	W. & Mid. Fk. Cottonwood Crk.	19.9
100402010204	99.17	Spring Creek	12.4
100402010205	39.86	North Fork Musselshell River	11.0

Although roads have the greater impact, trails that follow and cross streams can also have significant effects on fish habitats. Again, GIS analysis can be used with a coarse filter of five or more trail miles within 100 feet of perennial streams ("riparian trails") to produce a list of watersheds with potential trail effects on fish habitat (Table III-101). This list also is consistent with field observations.

Table III-101. Watersheds with Five or More Miles of Trail Within 100 Feet of Perennial Streams (Riparian Trails)

6th Code Watershed	Watershed Square Miles	Major Stream or Streams in Watershed	Trail Miles Within 100 ft. of Streams
100301030104	30.91	Four Mile Creek	8.3
100301030705	48.78	Sheep Creek (lower)	8.3
100301030901	81.31	Tenderfoot Creek (upper)	11.4
100301030902	31.56	Tenderfoot Creek (middle)	10.7
100301030903	23.48	Tenderfoot Creek (lower and SF)	5.7
100301031005	29.01	Bear Gulch	19.9
100301031006	47.33	Deep Creek	8.9
100301050102	81.91	Belt Creek (upper)	7.1
100301050103	58.00	Belt Creek (middle)	15.6
100301050104	101.37	Dry Fork Belt Creek	10.2
100301050202	22.83	Pilgrim Creek	10.7
100301050203	70.84	Logging Creek	5.0
100401030101	91.69	Cleveland and Harrison Creeks	10.4
100401030102	134.78	Deadhorse Creek	10.1
100401030103	55.96	Lost Fork Judith River	10.9
100401030106	67.14	Middle Fork Judith River	8.3
100401031001	64.95	Dry Wolf Creek	8.0
100402010107	81.38	W. & Mid. Forks Cottonwood Cr.	11.1
100402010204	99.17	Spring Creek	10.8
100402010301	34.56	Daisy Dean Creek	7.1
100402010303	69.82	Haymaker Creek	8.9

The more notable problem areas and impacts on fish habitat from roads or trails are described below (westslope cutthroat trout habitats are discussed in the next issue section).

Smith River – vehicle fording sites in the Deep Creek area disturbs stream substrates and increase bank erosion.

Tenderfoot Creek – escalating ATV trespass and unauthorized use on public and private lands in the lower drainage is directly impacting the stream channel at fording sites; 4WD vehicle and ATV drivers use portions of the stream corridor as a roadway, threatening resident fish habitat and spawning sites for trout from the Smith River.

Sheep Creek and Belt Creek – Highway 89 encroaches on the floodplains of these streams, with grossly inadequate filtering zones for the tons of sand applied to the road surface during winter. Consequently, a large volume of sediment is routed to both streams from sanding operations, in addition to sediment loading from tributary basins with high road and trail densities.

Dry Fork Belt Creek – the heavily-used main access road, popular streamside dispersed recreation sites, unauthorized fords and network of ATV trails all reduce habitat quality for resident fish in this watershed.

Jefferson Creek – the main road and numerous dispersed recreation site access roads are located in the floodplain and are routinely inundated during runoff, increasing sediment delivery to the stream and reducing the quality of fish habitat; fording by motorized vehicles is occurring routinely at several sites, causing further damage to stream banks.

Middle Fork and Lost Fork Judith River – the primitive Middle Fork Road routes motorized traffic right up the stream corridor with little or no sediment filter, no official maintenance, and over 25 fords. Current motorized use churns the streambed, creates a wake effect on raw banks, and produces a deeply-rutted roadway. This disturbance greatly elevates sediment loads in the river, causing severe sedimentation and degrading fish habitat. Fish populations have been shown to be depressed in this reach of stream. ATV trespass into the Lost Fork basin is converting a single track trail to a two-track motorized route, thus increasing potential impact to adjacent streams.

Daisy Dean Creek – high ATV use (authorized) of trail in the stream corridor along with multiple fording sites have destabilized stream banks, increased sedimentation and reduced fish habitat quality.

East Fork Haymaker Creek – high ATV use of streamside trail with multiple fords threatens stream stability and habitat for a unique Yellowstone cutthroat trout fishery.

Hoover Creek – the main trail is located in the stream corridor and requires over 20 fords, which reduce bank stability, increase sediment delivery rates, and disturb cutthroat trout spawning gravels which often occur at fording sites; trail bike and horse traffic occurs during the incubation period for cutthroat trout (May-August) and can displace or crush trout embryos; brook trout spawn in fall and would be less affected.

Alternative 1 will result in a continuation and acceleration of the existing level of impact of roads and trails in all of these drainages.

2. Cumulative Effects

Grazing, mining, past and current timber harvests, fires and recreational uses all have cumulative effects with the transportation system on fish habitats and fisheries, but available data does not allow for a meaningful analysis across the project area. For some streams, the risk of significant cumulative effects can be inferred from the level of other activities (past, present and foreseeable) in the immediate area. Trampling of stream banks, loss of riparian vegetation and channel alterations caused by grazing contribute to cumulative effects on fish habitat in Newlan Creek, Sheep Creek, Tenderfoot Creek, Eagle Creek, Oti Park Creek,

Logging Creek, King Creek, Harrison Creek, Lost Fork Judith River, Spring Creek, Daisy Dean Creek and Haymaker Creek. Historic mining activities contribute to cumulative effects on fish habitat in Belt Creek, Dry Fork Belt Creek and Yogo Creek. Impacts from dispersed recreation are often related to the development of unauthorized ATV trails but also include damaged stream banks and loss of riparian vegetation at dispersed campsites. These problems are most evident in Dry Fork Belt Creek, Jefferson Creek, and South Fork Judith River.

b. Summer Alternative 3

1. *Direct and Indirect Effects*

Table III-73 (WATER QUALITY section) shows that about 47 miles of riparian road and 13 miles of riparian trail would be eliminated under Alternative 3. An additional 21 miles of riparian trail would be restricted yearlong to trail bikes but 19 more miles of riparian trail would be available to ATV users. Road decommissioning would eliminate 371 stream crossings while trail decommissioning would remove 143 stream crossings (Table III-74). Consequently, effects on fish habitats from roads and trails in the project area overall would be expected to decrease. However, impacts to streams and fish from more or new ATV traffic on some trails are likely to increase. Effects in specific areas include:

Smith River – vehicle fording sites would continue to disturb stream substrates and increase bank erosion; effects could intensify with increasing motorized use.

Tenderfoot Creek – without more cooperative and effective enforcement among public agencies and landowners, effects of illegal ATV use on fish habitat (see Alternative 1) are likely to worsen.

Sheep Creek and Belt Creek – continued problems with sediment from winter road sanding (no change from Alternative 1).

Dry Fork Belt Creek – if the network of unauthorized ATV trails is not controlled and other impacts of dispersed streamside camping are not reduced, fish habitat would continue to be adversely impacted in this drainage (also see westslope cutthroat trout issue).

Jefferson Creek – adverse effects on fisheries habitat from the main road and dispersed recreation sites would continue (no change from Alternative 1).

Middle Fork and Lost Fork Judith River – rerouting the lower Middle Fork Road through Arch Coulee would alleviate most of the damage to fish habitat in that area; however, continued motorized use of the upper portion of the Middle Fork Road to private property, and construction of new motorized trails around private property would impact aquatic resources when the routes cross or enter streamside zones; if ATV trespass continues into the Lost Fork basin, effects on fish habitat are expected.

Daisy Dean Creek – bank damage and sedimentation from continued high ATV use of streamside trail with multiple fording sites would continue to limit habitat for larger brook trout through reduced pool depths and loss of bank cover; mitigation is possible with partial rerouting away from the stream, hardened fords, and bridge construction.

East Fork Haymaker Creek – continued high ATV use of streamside trail with multiple fords threatens stream stability and habitat for a unique Yellowstone cutthroat trout fishery; mitigation may be possible with improved crossing sites.

Hoover Creek – adverse effects on fish habitat would continue (no change from Alt. 1).

Castle Lake – improved motorized accessibility could result in overuse of this small alpine lake; the fishery could be maintained by stocking but the physical setting and aesthetics of the lake are vulnerable to excessive use.

2. Cumulative Effects

These effects are similar to Alternative 1, but would be lessened by the positive effects of roads and trails decommissioned.

c. Summer Alternative 4

1. Direct and Indirect Effects

Table III-73 shows that about 47 miles of riparian road and 17 miles of riparian trail would be eliminated under Alternative 4. An additional 114 miles of riparian trail would be restricted yearlong to trail bikes and 4 more miles of riparian trail would be restricted yearlong to ATV users. Road decommissioning would eliminate 383 stream crossings while trail decommissioning would remove 171 stream crossings (Table III-74). Consequently, effects on fish habitats from roads and trails in the project area overall would be expected to decrease significantly. Although restrictions on trail bikes may increase security slightly for some sensitive fish populations, impacts to fish habitat would likely remain the same for most trails, especially those used for horse travel. Effects in specific areas include:

Smith River/Tenderfoot Creek/Deep Creek area – effective conversion of this part of the Smith basin into a non-motorized travel zone and cessation of ATV trespass would significantly reduce existing road and trail impacts on fish habitats (see Alternative 1) and improve security for sensitive fish populations; the Smith River fishery would benefit from improved spawning and rearing habitat in lower Tenderfoot Creek; however, effects from trails that continue to be used for horse travel are not likely to decrease.

Sheep Creek and Belt Creek – problems with sediment from winter road sanding would continue (no change from Alternative 1).

Dry Fork Belt Creek – a reduced emphasis on motorized recreation in this basin could result in less impact to fish habitats (also see westslope cutthroat trout issue).

Hoover Creek – discontinuing trail bike use on this travel network is unlikely to reduce impacts on fisheries because moderate use by horses and packstock would continue to deliver sediment and disturb spawning gravels.

Jefferson Creek – adverse effects on fisheries habitat from the main road and dispersed recreation sites would continue (no change from Alternative 1).

Middle Fork and Lost Fork Judith River – effective conversion of most of the Middle Fork basin to non-motorized travel (except for landowners with inholdings) would produce the greatest reduction in impact to fish habitats and provide more security for fish populations than any alternative; eliminating trail bike travel in the Lost Fork would not likely lessen trail impacts on fish habitat because horse use would continue at current or higher levels.

Daisy Dean Creek – cessation of motorized travel through the streamside corridor would significantly reduce effects on fish habitat and promote channel recovery which lead to deeper pools, more stable banks and improved overhead cover.

East Fork Haymaker Creek – restricting this trail to non-motorized use would result in less sedimentation, increased channel stability and improved riparian conditions, all of which would benefit the Yellowstone cutthroat trout fishery.

2. Cumulative Effects

These effects are similar to Alternative 1 but lessened by the reduced impacts from roads and trails described above.

d. Summer Alternative 5

1. Direct and Indirect Effects

Table III-73 shows that about 54 miles of riparian road and 25 miles of riparian trail would be eliminated under Alternative 5. An additional 69 miles of riparian trail would be restricted yearlong to trail bikes but 4 more miles of riparian trail would be available to ATV users. Road decommissioning would eliminate 528 stream crossings while trail decommissioning would remove 232 stream crossings (Table III-74). Consequently, effects on fish habitats from roads and trails in the project area overall would be expected to decrease very significantly. Although restrictions on trail bikes may increase security slightly for some sensitive fish populations, impacts to fish habitat would likely remain the same for most trails, especially those used for horse travel. Effects in specific areas include:

Smith River – development of an ATV loop in Deep Creek Park with a connector trail to Monument Peak is likely to increase vehicle fording across the Smith River on the primary access road; this will result in more streambed disturbance and bank erosion, which reduces habitat quality for the Smith River fishery.

Tenderfoot Creek – without more cooperative and effective enforcement among public agencies and landowners, effects of illegal ATV use on fish habitat (see Alternative 1) are likely to worsen.

Sheep Creek and Belt Creek – problems with sediment from winter road sanding would continue (no change from Alternative 1).

Dry Fork Belt Creek – restriction of vehicle/ATV use to authorized routes and closure of user-created fords would reduce impacts on fish habitats (see westslope cutthroat trout issue).

Jefferson Creek – adverse effects on fisheries habitat from the main road and dispersed recreation sites would continue (no change from Alternative 1).

Middle Fork and Lost Fork Judith River – rerouting the lower Middle Fork Road through Arch Coulee would alleviate most of the damage to fish habitat in that area; however, continued motorized use of the upper portion of the Middle Fork Road to private property would impact aquatic resources; elimination of ATV trespass into the Lost Fork basin would prevent future damage to fish habitat, but other trail impacts in the area would remain largely unchanged due to continued horse use.

Daisy Dean Creek – bank damage and sedimentation from continued high ATV use of streamside trail with multiple fording sites would continue to limit habitat for larger brook trout through reduced pool depths and loss of bank cover; mitigation is possible with partial rerouting away from the stream, hardened fords, and bridge construction.

East Fork Haymaker Creek – continued high ATV use of streamside trail with multiple fords threatens stream stability and habitat for a unique Yellowstone cutthroat trout fishery; mitigation may be possible with improved crossing sites.

Hoover Creek – adverse effects on fish habitat from current trail use patterns would continue (no change from Alternative 1). Partial mitigation may be possible with trail relocation and reduction or improvement of stream crossings.
Castle Lake – if motorized trespass is controlled, accessibility would be limited and the physical setting preserved.

2. Cumulative Effects

These effects are similar to Alternative 1 but lessened by the reduced impacts from roads and trails described above.

e. Winter Alternatives 1-3

1. Direct and Indirect Effects

Because winter routes are greatly restricted by snow and ground disturbance is generally not a concern for that time of year, effects of winter travel on water quality were not considered to be a significant issue for this analysis. Although snow compaction on recreational trails used by snowmobilers and skiers can alter local runoff patterns, the effects are considered minor in the context of natural events. Consequently, the effects of winter travel and recreation in the project area were not deemed to be a significant issue for fisheries. Streams are closed to fishing and generally unfishable (ice cover, cold water) during winter, so accessibility and security of sensitive fisheries is also not a concern.

EFFECTS ON WESTSLOPE CUTTHROAT TROUT.

There is concern about the impacts of roads and trails on habitat for westslope cutthroat trout (WCT), especially in Tenderfoot Creek/Smith River, S.F. Judith River, N.F./S.F. Deep Creek, Hoover Creek and Graveyard Creek. The primary concerns are sedimentation, damage to spawning gravels, and population security.

1. EXISTING CONDITION

a. Natural Characteristics, Past Events and Conditions

Nearly all of the Belt Creek, Smith River and Judith River basins were historically occupied by WCT. However, only about 15% of Belt Creek, 3% of Smith River, and 2% of Judith River drainages currently support genetically unaltered WCT. The pure populations are distributed across 28 streams, with an additional 42 streams supporting nearly pure (90-99.9%) WCT in the project area (map to be provided in FEIS). The reasons for the decline of native WCT include overharvesting, introduction of non-native trout, and habitat degradation. Most remaining pure WCT populations exist upstream of natural or manmade barriers that block non-native trout invasions. This largely isolated condition precludes population recovery by immigration from other streams after loss of resident fish due to natural disturbances like fires, floods, and drought. Due to population threats and a limited amount of occupied habitat, WCT are designated a Forest Service Region 1 Sensitive Species.

b. Human Influence

Although the introduction of competing or hybridizing non-native species like brook and rainbow trout has had a major impact on native WCT populations, the displacement appears to have been facilitated or accelerated by habitat changes due to land management activities. Among these, development of an extensive road and trail system inevitably increased sediment delivery to adjacent streams, raised water temperature by reducing overstory shading, and exposed vulnerable WCT populations to overharvest. Collaborative efforts by state, private and federal entities have recently begun to protect and restore WCT populations and habitat in the project area. Barriers have been built to stop non-native fish invasions, some riparian areas have been exclosed to livestock grazing, and intensive efforts to remove non-native trout are underway.

c. Future Trends

Trends for WCT habitat are similar to those discussed for fish habitat in general in the previous section. Due to a conservation agreement and higher priority for WCT fisheries, some WCT streams may improve more rapidly than streams supporting other fisheries. However, WCT populations may decline in streams where the influence of non-native trout can not be controlled.

d. Desired Condition

The desired condition would be to ensure that WCT habitats in the project area are not being adversely affected by the road and trail system. Where impacts are occurring, travel management would be used to reduce effects to acceptable levels by restricting seasons and type of use, relocating or closing routes, or employing other mitigation measures to offset the impacts. In some cases, access may be reduced to protect WCT populations from threats like disease introduction and illegal harvest.

2. ENVIRONMENTAL CONSEQUENCES

a. Summer Alternative 1 - No Action Alternative

The lack of quantitative information and reliable modeling tools limits the ability to analyze road and trail effects on WCT habitats, but empirical observations of erosion problems, stream conditions, and current use patterns allow some assessments to be made. Where native WCT are forced to compete with introduced brook trout, the effects of roads and trails can tip the balance toward the more sediment-tolerant brook trout, which also favor higher water temperatures and are more resistant to angling pressure than WCT.

1. Direct and Indirect Effects

As described in the previous section, the existing network and type of use of roads and trails in the project area affects water quality and fish habitats, including watersheds that support WCT. The following situations are most notable and typically reflect road/trail miles shown in Tables III-100 and III-101:

Deep Creek – security for WCT populations is reduced by increased accessibility.

Harley Creek – ATV trail on closed road does not have adequate sediment filter between stream and trail; former road prism is unstable, erodable and vulnerable to flood damage.

Sawmill Gulch – old jeep trail encroaches on stream channel and requires multiple fording which has jeopardized bank stability (now closed to motorized use).

Bender Creek – limited habitat for WCT potentially impacted by steep erodible trail sections and lack of sediment filtering zones.

Dry Fork/Oti Park/Villars Creeks – coupled with grazing impacts, the expansion of motorized use in this area has created erosion problems which increase sediment loads to adjacent streams and threaten WCT rearing habitat in Villars Creek.

Jefferson Creek – same problems described previously for all fish habitat, plus potential impacts on primary WCT habitat in headwater zone from motorized trail in upper basin.

King and Harrison Creeks – multiple-user trail encroaches on and repeatedly crosses King Creek, delivering sediment from uncontrolled rutting and rill erosion and degrading WCT rearing habitat; fords and close trail proximity to stream creates risk for WCT populations in upper Harrison Creek.

NF Running Wolf – access road to private inholdings requires multiple fords which deliver sediment directly to limited habitat occupied by a small isolated remnant WCT population.

2. Cumulative Effects

Grazing, mining, past and current timber harvests, fires, recreational uses and competing or hybridizing non-native species all have cumulative effects with the transportation system on WCT habitats and populations, but available data does not allow for a meaningful analysis across the project area. For some streams, the risk of significant cumulative effects can be inferred from the level of other activities in the immediate area. Livestock grazing is likely to have the most significant cumulative effect on WCT habitat in Oti Park, Villars, King and Harrison Creeks. Damage from livestock grazing exacerbates the adverse effects of trails and roads on fish habitat. Other land management activities are largely mitigated to minimize impact on WCT fisheries.

Table III-102. Summary of Roads and Trails Within 100 Feet of Perennial Streams and Perennial Stream Crossings for Watersheds that Contain WCT Habitat.

6th Code Watershed	Watershed Square Miles	Major Stream or Streams in Watershed	Total Road Density (mi/mi²)	Road Miles within 100 ft. of Streams	Trail Miles within 100 ft. of Streams	Stream Crossings By Trails	Stream Crossings By Roads
100301030104	30.91	Four Mile Creek	0.25	5.4	8.3	27	24
100301030105	9.92	Smith River	0.25	2.5	1.0	4	9
100301030203	5.19	Cottonwood Crk (Smith basin)	0.91	8.0	0.7	0	13
100301030702	49.68	Sheep Creek (middle)	0.55	14.5	0	0	44
100301030901	81.31	Tenderfoot Creek (upper)	0.80	4.8	11.4	62	25
100301030903	23.48	Tenderfoot Crk (lower and SF)	1.46	17.9	5.7	27	68
100301031006	47.33	Deep Creek	0.79	0	8.9	90	0
100301050101	106.01	Jefferson Creek	0.70	17.1	2.1	13	99
100301050102	81.91	Belt Creek (upper)	0.40	17.1	7.1	40	66
100301050103	58.00	Belt Creek (middle)	0.74	21.0	15.6	118	87
100301050104	101.37	Dry Fork Belt Creek	0.57	27.9	10.2	103	132
100301050202	22.83	Pilgrim Creek	1.18	0.6	10.7	32	0
100301050203	70.84	Logging Creek	1.07	21.2	5.0	23	82
100401030101	91.69	Cleveland and Harrison Crks	1.14	2.4	10.4	82	33
100401030102	134.78	Deadhorse Creek	0.55	16.1	10.1	40	83
100401030104	68.00	South Fork Judith River	0.78	17.4	2.4	44	124
100401030105	93.69	Yogo Creek	0.66	13.4	2.6	34	118
100401031001	64.95	Dry Wolf Creek	0.76	10.3	8.0	34	75
100401031003	26.93	North Fk Running Wolf Crk	0.25	3.3	0.2	26	37

b. Summer Alternative 3

1. *Direct and Indirect Effects*

Deep Creek – increased ATV accessibility reduces security for WCT populations.

Harley and Graveyard Creeks – ATV trail on the old Harley Creek road remains a sediment source due to inadequate filter zone and unstable road prism; a new motorized trail down the steep narrow valley bottom of Graveyard Creek would increase sediment loading on a rare genetically-pure population of WCT; the new ATV loop system would also reduce security for WCT populations in both creeks.

O'Brien Creek – a new motorized trail down this stream would greatly increase sediment loading on WCT habitat and decrease population security.

Sawmill Gulch – trail would remain non-motorized (no change from Alternative 1).

Dry Fork/Bender/Oti Park/Villars Creeks – the ATV loops through Bender Creek and Oti Park/Villars Creeks are likely to cause increased sediment loading and threaten their small isolated WCT populations (escalation of effects described for Alternative 1).

Jefferson Creek – impacts on WCT habitats continue (no change from Alternative 1).

King and Harrison Creeks – trail closures in this area alleviate threats to WCT populations.

SF Judith River – a new motorized loop paralleling and crossing SF Judith River and Deadhorse Creek through the heart of the WCT restoration area will cause major impacts due to lack of sediment filtering zones, fords, increased tread widths and erodible soils; security for WCT populations will be greatly reduced.

NF Running Wolf – existing threats to isolated WCT population from access road continue (no change from Alternative 1).

Fourmile and SF Willow Creeks – new ATV loops in the headwater reaches of these streams would reduce WCT security and potentially increase sediment delivery.

2. Cumulative Effects

Cumulative effects on WCT can not be quantified but would be similar to Alternative 1 except that trail closures mitigate impacts in Harrison and King Creeks.

c. Summer Alternative 4

1. Direct and Indirect Effects

Pilgrim and NF/SF Deep Creeks – evidence of effects on fish habitat from motorbike use is lacking, and restricting use is unlikely to reduce trail impacts; however, restricting motorized travel in these areas reduces accessibility and therefore could increase security somewhat for the WCT populations that occur there.

Harley and Graveyard Creeks – ATV trail on the old Harley Creek road remains a sediment source due to inadequate filter zone and unstable road prism (no change from Alternative 1); no connector trail down Graveyard Creek would mean no additional threat to WCT populations.

O'Brien Creek – no motorized trail to create new threats to WCT habitat.

Sawmill Gulch – trail would remain non-motorized (no change from Alternative 1).

Dry Fork/Bender/Oti Park/Villars Creeks – Bender Creek trail would become non-motorized, reducing impacts to the isolated WCT population from steep trail grades; no ATV loops would be created in this area but Oti Park and Villars Creeks would continue to be impacted by sediment from ATV trails (no change from Alternative 1 for these two streams).

Jefferson Creek – impacts on WCT habitats would continue (no change from Alternative 1).

King and Harrison Creeks – trail closures in this area would alleviate threats to WCT populations.

SF Judith River – as in Alternative 3, a new motorized loop paralleling and crossing SF Judith River and Deadhorse Creek through the heart of the WCT restoration area would cause major impacts due to lack of sediment filtering zones, fords, increased tread widths and erodible soils; security for WCT populations would be greatly reduced.

NF Running Wolf – existing threats to isolated WCT population from access road would continue (no change from Alternative 1).

Fourmile Creek – conversion to non-motorized travel in the headwater reach would increase WCT security.

2. Cumulative Effects

Cumulative effects on WCT can not be quantified but would be reduced from the existing situation proportionately to reduced impacts from motorized use described above.

d. Summer Alternative 5

1. Direct and Indirect Effects

Deep Creek – increased ATV accessibility overall would reduce security for WCT populations in isolated reaches of both forks.

Pilgrim Creek – evidence of effects on fish habitat from motorbike use is lacking, and restricting use is unlikely to reduce trail impacts; however, restricting motorized travel would reduce accessibility and therefore could increase security somewhat for the WCT population that occurs there.

Harley and Graveyard Creeks – ATV trail on the old Harley Creek road would remain a sediment source due to inadequate filter zone and unstable road prism (no change from Alternative 1); no connector trail down Graveyard Creek would mean no additional threat to WCT populations.

O'Brien Creek – no motorized trail to create new threats to WCT habitat.

Sawmill Gulch – trail would remain non-motorized (no change from Alternative 1).

Dry Fork/Bender/Oti Park/Villars Creeks – realignment and improved drainage of the Bender Creek trail would reduce erosion and sediment delivery to Bender Creek; restriction of ATV travel to authorized roads and trails in the upper Dry Fork, and elimination of motorized use in the Oti Park/Villars Creek area would significantly reduce impacts to WCT habitats.

Jefferson Creek – impacts on WCT habitats would continue (no change from Alternative 1).

King and Harrison Creeks – trail closures in this area would alleviate serious erosion/sedimentation problems for WCT populations.

SF Judith River – conversion of most of the trail system along the SF Judith River, Deadhorse Creek and Russian Creek to non-motorized use would increase security for the fishery in this WCT restoration area; other trail impacts are likely to remain unchanged unless horse travel increases, causing more sedimentation.

NF Running Wolf – closing the last section of the road along the stream to motorized use (except for property owners) would reduce the adverse effects of multiple fords on a small isolated WCT population.

Fourmile and SF Willow Creeks – while a new ATV loop would reduce WCT security and potentially increase sediment delivery for SF Willow Creek, restricting motorized use in the core areas of Richardson and Fourmile Creeks would reduce impacts and increase security for WCT.

2. Cumulative Effects

Cumulative effects on WCT can not be quantified but would be reduced from the existing situation (described for Alternative 1) in proportion to the reduced impacts described above. Overall, the very significant reductions in riparian road and trail mileages and stream crossings shown for Alternative 5 in Tables III-73 and III-74 would have beneficial effects on WCT habitat and populations across the project area.

e. Winter Alternatives 1-3

1. Direct and Indirect Effects

Because winter routes are greatly restricted by snow and ground disturbance is generally not a concern for that time of year, effects of winter travel on water quality were not considered to be a significant issue for this analysis. Although snow compaction on recreational trails used by snowmobilers and skiers can alter local runoff patterns, the effects are considered minor in the context of natural events. Consequently, the effects of winter travel and recreation in the project area were not deemed to be a significant issue for westslope cutthroat trout. Streams are closed to fishing and generally unfishable (ice cover, cold water) during winter, so accessibility and security of sensitive fisheries is also not a concern.